

# PETITION

Before the California Fish and Game Commission



To De-List the Swainson's Hawk  
Under the California Endangered Species Act

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June 10, 2026

FGC-670.1 (3/94)

**NOTICE OF PETITION TO THE STATE OF CALIFORNIA  
FISH AND GAME COMMISSION**

For action pursuant to Section 670.1, Title 14, California Code of Regulations and Sections 2072 and 2073 of the Fish and Game Code relating to listing and delisting endangered and threatened species of plants and animals.

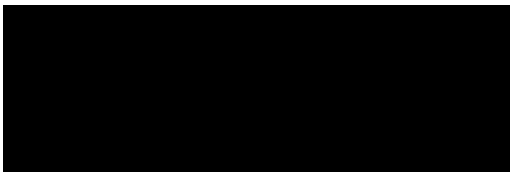
- i. SPECIES BEING PETITIONED:  
Common name: Swainson's hawk  
Scientific name: *Buteo swainsoni*
  
- ii. RECOMMENDED ACTION:  
De-list the species

The California Building Industry Association ("CBIA" or "Petitioner") submits this petition to de-list the Swainson's hawk pursuant to the California Endangered Species Act (California Fish and Game Code §§ 2050 et seq.). This petition demonstrates that the species clearly warrants delisting based on the factors specified in the statute and the code of regulations.

- iii. AUTHOR OF PETITION:  
  
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I hereby certify that, to the best of my knowledge, all statements made in this petition are true and complete.

Signature:



Date: June 10, 2026

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## **I. Executive Summary**

This petition to delist the state threatened Swainson's hawk is submitted by the California Building Industry Association ("CBIA" or "Petitioner"), which represents homebuilders, trade contractors, architects, engineers, designers, suppliers, and other professionals involved in homebuilding, multi-family, and mixed-use development. CBIA members are responsible for the production of nearly 90% of new housing units sold annually in California, encompassing a range of projects from charity homes and affordable housing to middle-class market-rate and luxury residences. As an industry intimately familiar with the relative abundance of the Swainson's hawk over many decades and across vast California landscapes, and as an industry tasked with solving the housing crisis in the State, the homebuilding industry is uniquely positioned to submit this delisting petition – an action we do not take lightly. The population of Swainson's hawk in the state has rebounded to pre-historic levels, and the species is no longer under threat. Historic threats to the species have been eliminated through legislative action, and land use trends mandated by legislative action favor expanded foraging and nesting opportunities for the Swainson's hawk throughout the state into the future. Factors cited in the most recent five-year review of the species as potential ongoing threats no longer pose actual threats, and substantial evidence of these claims is provided throughout this petition.

California is currently facing one of the most severe housing shortages in the nation. The California Department of Housing and Community Development has determined that millions of additional housing units are needed statewide to meet existing and projected demand. Housing affordability remains severely constrained in California, where only approximately 18 percent of households could afford the median-priced home in 2025, requiring an annual household income exceeding \$213,000.

Regulatory burdens associated with threatened and endangered species listings, including extensive biological review requirements, habitat mitigation obligations, land-use restrictions, permitting delays, and litigation exposure, substantially increase the cost and uncertainty of housing production. Maintaining species listings that are no longer scientifically justified unnecessarily constrains residential development and undermines the State's efforts to address its ongoing housing affordability and supply crisis.

Delisting recovered species is consistent with both the scientific objectives of the California Endangered Species Act and the State's broader obligation to promote housing availability and affordability for Californians.

## **II. Petitioner**

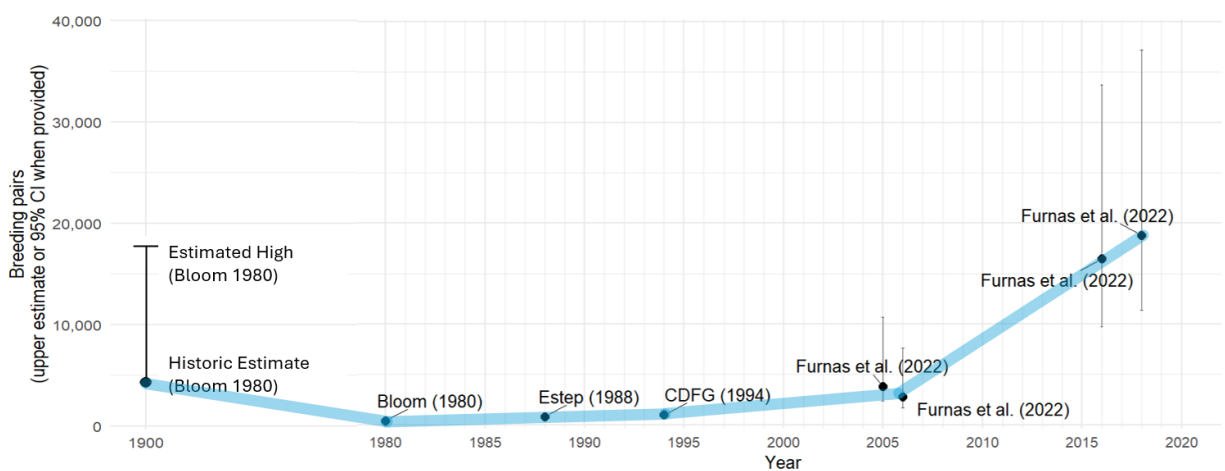
CBIA formulates policies that protect and advances the interests of the new home building industry to introduce more flexibility into land use and production decisions, and we support research, development, and testing to balance the concern for the environment with the need for housing that Californians can afford.

CBIA is dedicated to advocating for policies that enhance housing production of all types, ensuring “Housing for All” while driving economic sustainability in the construction sector.. Committed to overcoming challenges such as barriers to home construction, limited insurance access, and the transition to sustainable energy, we strive to create a balanced environment that meets housing demand and climate goals. In response to the ongoing housing policy crisis, we are focused on facilitating the development of over 2.5 million homes by 2030 to alleviate the current housing shortage and improve living conditions for all Californians. Many of our members have become keenly aware of the Swainson’s hawk’s population boom in the Central Valley as they continue to bring new housing development projects to the region. CBIA can provide housing for all Californians, but to do so. constraints that are no longer warranted, including complying with California Endangered Species Act requirements for species that have fully recovered and and are no longer under threat must be removed. It is for this reason that we submit this important delisting petition. We urge the Commission to timely process this request.

### III. Population Trend of Swainson’s Hawk

Bloom (1980) estimated a historic abundance of Swainson’s hawk between 4,284 and 17,136 breeding pairs in California in the late nineteenth and early twentieth centuries. But only approximately 400 breeding pairs of Swainson’s hawk were estimated to have remained statewide in 1979 (ibid). A decade later, Estep (1989) estimated approximately 800 breeding pairs statewide by 1988. By 1994, California Department of Fish and Game (CDFG) suggested that breeding pairs had increased to 1,000 statewide. Based on a recent analysis by Furnas et al. (2022), Swainson’s hawks increased by 13.9 percent statewide between 2005 and 2018, with 3,838 breeding pairs estimated in 2005 and 18,810 in 2018.

Using the historic population estimate from Bloom (1980) as the baseline, the Swainson’s hawk breeding population in California has declined and subsequently recovered to the point that the upper estimate produced by Furnas et al. (2022) exceeds that of historic estimates by Bloom (1980) (Figure 1).



**Figure 11.** Estimated number of Swainson's hawk breeding pairs in California from published studies.

It is therefore evident, as is further described in this petition, that the California population of Swainson's hawk has rebounded and is no longer in peril. This is evident today despite the most recent five-year status review describing numerous potentially ongoing threats to the species as of 2016 (CDFW). Both the physical and policy landscape in California has changed since 2016, and substantial Swainson's hawk population data have continued to be collected since that time. This petition shows that the threats described in the 2016 status review are threats that have been either (1) managed through policy interventions or (2) determined through detailed analysis to not, in fact, be threats at all, and both cases are described in detail in Sections VIII and X of this petition.

## **IV. Range of Swainson's Hawk**

Swainson's hawks breed broadly across the temperate zone of western North America, with core nesting areas in the Canadian prairies and much of the western United States, including intermountain and adjacent grassland and agricultural landscapes where suitable prey and nest sites occur (Bechard et al. 2020). Nearly the entire breeding population undertakes long-distance, bi-continental migration to wintering areas in South America, a movement that from some breeding areas (e.g., prairie Canada) can exceed 10,000 kilometers one way (Bechard et al. 2020). Swainson's hawks commonly travel and forage in large flocks, with notable migration counts recorded at bottlenecks in Central America and Mexico, including nearly 350,000 birds at a single point in Panama and up to 845,000 counted in one autumn in Veracruz, Mexico (Bechard et al. 2020).

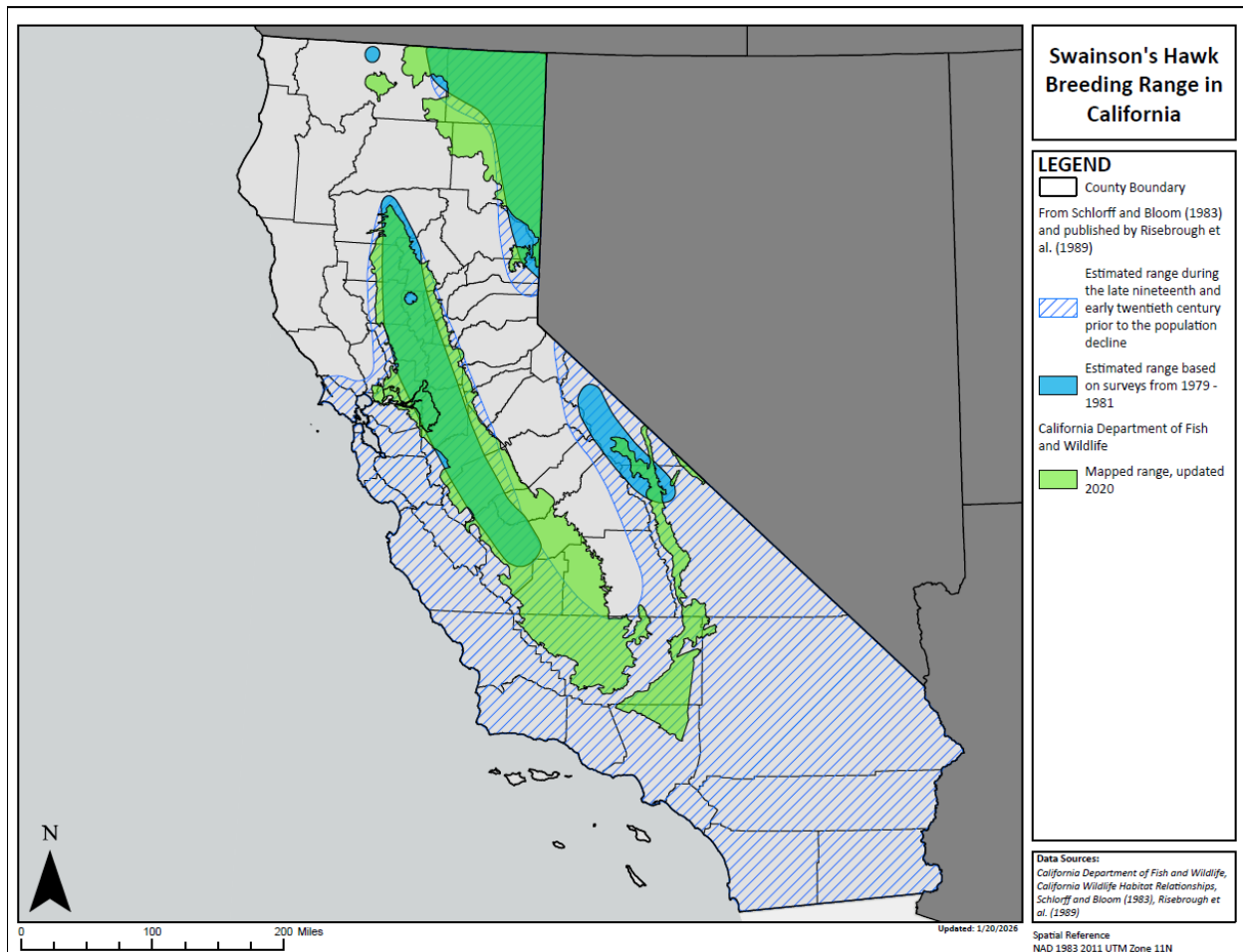
## **V. Distribution of Swainson's Hawk in California**

In California, the Central Valley (including the Sacramento Valley to the north and the San Joaquin Valley to the south) has always been the core of the Swainson's hawk breeding range (Schlorff and Bloom 1983, Risebrough et al. 1989, Anderson et al. 2007). Bloom (1980) and Schlorff and Bloom (1983) estimated that in the late nineteenth and early twentieth centuries the Swainson's hawk population extended from the Central Valley to coastal California, to the Antelope Valley, and throughout the Sonoran and Mojave Deserts possibly occupying all southern California to the Nevada border (Figure 2). The range estimated by Bloom (1980) was based on several factors including naturalists' descriptions and suitable breeding habitat, but occupancy wasn't verified across the estimated range. Based on surveys from 1979 – 1981, the distribution contracted and the breeding range was limited to the Central Valley and areas along the Nevada border (Schlorff and Bloom 1983, Risebrough et al. 1989; Figure 2) when it was listed in 1983. The current breeding range has expanded throughout the Central Valley and into the Antelope Valley but does not include the extent estimated by Bloom (1980) and Schlorff and Bloom (1983).

There has been a recent emphasis to conserve Swainson's hawk breeding in the Antelope Valley though hawks nesting in the Antelope Valley are not recognized as a distinct population

segment. While Bloom has noted that only one nesting pair remained in the Antelope Valley in 1979 (Bloom et al. 2023), it is unclear whether the Antelope Valley supported a higher number of breeding pairs prior to the rise of anthropogenic agriculture in the Antelope Valley. Indeed, it is possible that the Swainson's hawks that have tended to nest in the Antelope Valley were attracted to the area entirely due to an anthropogenic land transformation. Water use in the Antelope Valley peaked in 1956 when groundwater-fed agriculture, namely alfalfa production, was the primary economic land use (Templin et al. 1995). However, by the 1970s, when Bloom's Swainson's hawk census noted the sharp decline in Antelope Valley nesting pairs, severe over-pumping of groundwater supplies had led to land subsidence and increased electrical costs of continued pumping, resulting in substantially curtailed agricultural production in the Valley from 50,000 irrigated acres in 1959 to fewer than 16,000 in 1987 (ibid).

Though the distribution of the Swainson's hawk across the state has perhaps contracted somewhat from its historic distribution, this has no bearing on its statewide recovery given that the species breeds across its entire range and is not subdivided into subspecies or distinct population segments, either biologically or under the law.

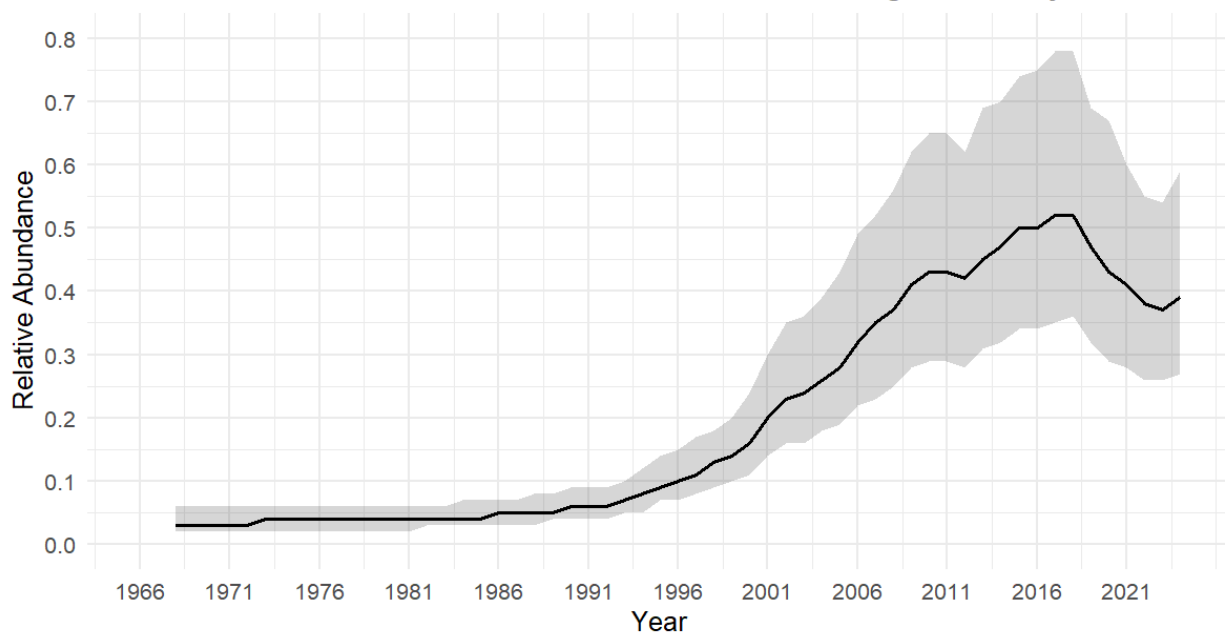


**Figure 22.** Breeding range of Swainson's hawk in California as estimated by Schlorff and Bloom (1983) and published by Risebrough et al. (1989) and mapped by California Department of Fish and Wildlife in 2020.

## VI. Abundance of Swainson’s Hawk

Furnas et al. (2022) estimated population growth rate of 13.9 percent between 2005 and 2018, with a confidence interval ranging between 7.8 and 19.2. This confidence interval does not include zero or negative values, which means there is evidence suggesting the growth rate is increasing and not static. Other data sources providing insight into population increases include growth rate estimates and relative abundance estimates from the Breeding Bird Survey – a systematic survey (Ziolkowski et al. 2025) and eBird – records from citizen science (Sullivan et al. 2009). The Breeding Bird Survey published analytical results for relative abundance estimates and trends, which are the results of Bayesian hierarchical models fit to model population change over time (described in Link and Sauer 2020). The Breeding Bird Survey reports an estimated relative abundance for every year since 1968, which is based on the mean annual count of birds on a typical route in the selected region. The Breeding Bird Survey estimates a state-wide growth rate of 4.48 percent between 1966 and 2024 (95 percent CI: 3.13, 5.92). Within eBird, relative abundance is the product of count data and encounter rate, with the result representing the expected number of birds encountered on an average survey. Growth estimates provided by eBird are based on percent change in relative abundance and have a greater amount of uncertainty, with an estimated growth rate of 4.2 percent statewide and a large 95 percent confidence interval of between –0.86 percent and 21.7 percent. The Breeding Bird Survey’s relative abundance estimates by year along with 95 percent confidence intervals are shown in Figure 3. Public data sources such as the Breeding Bird Survey and eBird add additional perspective on these trends, with relative abundance estimates suggesting that the population increased exponentially after listing through the early 2000s until reaching a point after 2008 where relative abundance showed some fluctuation.

**Summarizing Current Knowledge:  
Statewide Relative Abundance from the Breeding Bird Survey**



**Figure 33.** Annual relative abundance estimates and 95 percent confidence intervals from the Breeding Bird Survey (1968-2024) show a sharp increase since 1988. The Breeding Bird Survey ranks California's Swainson's hawk survey data with a 'yellow' credibility level, suggesting that some routes have small sample sizes.

## VII. Life History of Swainson's Hawk

### Taxonomy

Swainson's hawk is recognized as a single species within the genus *Buteo* and is treated as such for the purposes of regional monitoring and management (Battistone et al. 2019). Taxonomic treatments used in California's inventory do not subdivide *Buteo swainsoni* into formal subspecies; instead, the species is managed and reported at the species level while acknowledging geographic variation in plumage and demography. For monitoring and conservation purposes, the focus is therefore on population-level units (breeding aggregations, regions) rather than on formally named intraspecific taxa (Battistone et al. 2019).

### Seasonal Movements

Swainson's hawks breeding in California's Central Valley arrive on the breeding grounds in March–April and typically depart for migration between mid-August and October, resulting in an absence from the breeding grounds of roughly five to six months (Battistone et al. 2019). Satellite-tracking and migration studies summarized for North American populations show that Central Valley birds make prolonged use of stopover and austral non-breeding areas and, in available datasets, spend more time in stopover and wintering areas than many Great Plains birds (Kochert et al. 2011; Battistone et al. 2019). By contrast, Great Plains birds, while undertaking very long transcontinental migrations to core wintering areas in central Argentina, tend on average to spend a larger proportion of the annual cycle on the breeding grounds and shorter cumulative periods on stopovers and the non-breeding grounds (Kochert et al. 2011).

## VIII. Habitats Necessary for Swainson's Hawk Survival

### Nesting Habitat Requirements

Breeding habits of Swainson's hawks in California have shifted from native grasslands and open woodlands to agricultural mosaics that offer predictable, high-value foraging opportunities. The shift in nesting habits was first documented in Bloom (1980) with a subsequent paper published by James (1992) that documented five successful urban nests between 1988 and 1991 in Regina, Saskatchewan (England and Holt 1995). In a study of urban nesting Swainson's hawk from 1900 – 1994 in Davis and Stockton, California, England and Holt (1995) documented 65 nesting attempts at 40 sites. California's Central Valley, with its vast fields of diverse crop mosaics interspersed with windrows (trees planted along the margins of fields to slow wind speeds) and punctuated with small agricultural towns often with mature shade trees, serve Swainson's hawk habitat requirements well.

Swainson's hawks are highly tolerant of anthropogenic activities and multiple studies found nesting near human structures and roads. In North Dakota, approximately 75% of 270 nesting areas were in planted trees and nest success within 500 m of farmhouses did not differ from nests >500 m away (Gilmer & Stewart 1984). In Washington, 42% of Swainson's hawk nests were within 1.0 km of buildings; they nest closer to roads/structures than red-tailed or ferruginous hawks (Bechard et al. 1990). Alsup (2012) identified 20 breeding attempts in the suburban Boise, Idaho landscape and nest success was higher in the suburban landscape than in a paired agricultural landscape. In the Central Valley, 35% of 61 nest trees were  $\leq 0.4$  km from homes and 32%  $\leq 0.4$  km from busy roads; productivity did not differ by proximity to human activity (Estep 1989).

## **Foraging Habitat Requirements**

Swainson's hawks primarily forage in open habitats with low-structure vegetation such as alfalfa, fallow fields, row crops, and irrigated pastures when not flooded (CDFW 2025), and concentrate foraging in actively managed or disturbed fields (harvested, disced, mowed, irrigated) where prey is exposed or concentrated (Estep 1989, Cahill 2014). Across seasons and regions, alfalfa, hayfields, and low row crops are consistently preferred for foraging (Babcock 1995, Briggs et al. 2011, Cahill 2014, Bloom et al. 2023), while migration and wintering research indicates reliance on diverse agricultural mosaics (Kochert et al. 2011, Airola et al. 2019).

Crop growth and field operations strongly influence foraging patterns as foraging expands as crops mature and contracts post-harvest, though prey accessibility often peaks immediately after cutting (Babcock 1995). In the Central Valley, 73.4 percent of prey captures occurred in actively managed fields (Estep 1989). Swainson's hawks show positive associations with crop diversity and the presence of alfalfa, and negative associations with orchards and vineyards (Cahill 2014, Fleishman et al. 2016, Battistone et al. 2019, Furnas et al. 2022). Alfalfa fields in the Antelope Valley support higher rodent densities and are associated with increased abundance (Bloom et al. 2023), and proximity to agriculture improves survival in Butte Valley (Briggs et al. 2011).

## **IX. Factors Affecting the Ability of Swainson's Hawk to Survive and Reproduce**

The five-year review (CDFW 2016) listed nine factors affecting the ability of Swainson's hawk to survive and reproduce. The following section examines each threat to evaluate the evidence used to determine whether the threat existed and to incorporate new information to determine if the threat persists or that there is no ongoing evidence of the threat or positive evidence that the threat has been extinguished. Each threat is reviewed here based on current information.

1. Conversion of foraging habitat to urban land and non-suitable habitat. The five-year review considered conversion of foraging habitat a threat because urbanization was ongoing at the time of review. In Section XI we analyzed habitat variables that were important for Swainson's hawk exponential population growth from 2008 – 2018 and

found that even when important foraging habitat (diverse crops and alfalfa) was reduced by 50 percent, Swainson's hawk populations still showed positive growth trends. Additionally, foraging habitat variables identified by Furnas et al. (2022) like crop diversity and alfalfa cover have not decreased in recent years. A more complete analysis is presented in Section XI.

2. Conversion of habitat to vineyards and orchards. The five-year review considered conversion of habitat a threat because vineyards and orchards are not suitable habitat and these land uses were increasing through 2010. In Section XI we analyzed important habitat variables (diverse crops and alfalfa) from 2018 – 2024 and found there has been no change over time in alfalfa cover and increasing crop diversity. Thus, any on-going expansion of vineyards and orchards has not affected the exponential population growth from 2008 – 2018 and the important foraging habitat has not decreased.
3. Conversion of breeding habitat. The five-year review considered breeding habitat conversion a threat because of the potential loss of nesting trees. In Section XI we analyze habitat variables that are associated with tree presence as modeled by Furnas et al. (2022). We find that potential nesting habitat cover initially decreased but has been consistently increasing since 2022. Therefore, there is evidence that this threat does not persist.
4. Climate change. The five-year review considered climate change a threat because it is on-going. However, how climate change could affect Swainson's hawk populations in California has not been investigated and potential climate effects remain unresolved. The Swainson's hawk breeding population in California has grown exponentially from 2008 to 2018 during which time climate change was on-going. Further, Swainson's hawks are highly adaptable, associate with agriculture and anthropogenic features, and nest in a wide range of substrate and habitat types, potentially mitigating climate effects. California has the most robust climate adaptation laws on the books relative to any other state, requiring all cities and counties to have climate adaptation plans, many of which include tree planting measures to alleviate heat stress, which would be expected to benefit Swainson's hawks. Climate change does not represent a predictable ongoing threat to Swainson's hawks.
5. Renewable energy facilities. The five-year review considered renewable energy facilities a threat because of potential mortality at wind energy facilities and potential loss of foraging opportunities from the conversion of agricultural landscapes to utility-scale solar facilities. In a summary of 336 fatality monitoring studies at 227 wind projects in the U.S., 52 Swainson's hawk mortality were detected representing 0.5 percent of all fatalities indicating Swainson's hawk mortality is uncommon at wind projects. Utility scale solar energy development was limited at the time the five-year review was completed, however, raptor mortality at utility scale solar not considered a risk (Kosciuch et al. 2020, Kosciuch et al. 2021, Kosciuch et al. 2025). Agricultural lands in the southern San Joaquin Valley are known foraging habitat for Swainson's hawk, and population increases may partly reflect improved Central Valley foraging conditions (Bechard 1982; Smallwood 1995). Converting low-growing row crops to solar development could remove some foraging habitat, but studies show solar facilities support Swainson's hawk foraging at rates greater than expected relative to

surrounding agricultural habitats, as described in detail in Section XI. These behaviors are not wholly unexpected as Swainson's hawks are highly adaptable and associate with agriculture and anthropogenic features. Further, the Swainson's hawk population growth from 2008 – 2018 overlaps expanded installation of PV solar energy in the U.S. (Kosciuch et al. 2025). Given the low mortality rates, exponential population growth since 2008, and observed foraging at PV solar facilities, renewable energy should not be considered a threat to Swainson's hawk.

6. Disease. The five-year review considered West Nile Virus (WNV) a threat to Swainson's hawks as 11 mortalities were detected over 5 years and acknowledged that the vulnerability of Swainson's hawks is unknown. Research on WNV in raptors is limited since the mid-2000s. A study of raptor carcasses from the Rocky Mountain Raptor Program in Fort Collins, CO, found that 13 Swainson's hawk carcasses tested positive for WNV. However, the authors do not present the number of carcasses tested but stated that the proportion infected was below 26 percent (Kritzik et al. 2018). The authors did not conclude that the mortality was due to WNV. A study of free-ranging Swainson's hawk in Argentina found that 85 percent were seropositive and the authors concluded that they could not determine where the birds were infected (Mansilla et al. 2020). Overall, similar to all raptors, Swainson's hawk could become infected and die from WNV, but the overall risk to the species has not risen to the level to result in population modeling studies. Given the exponential population growth from 2008, WNV has not affected the population in California and does not represent a credible ongoing threat.
7. Contaminants. The five-year review considered contaminants a threat because of widespread pesticide poisoning in Argentina in the 1990s and the application of anti-coagulant rodenticide in agricultural systems. The five-year review states that the Central Valley population largely over-winters in Mexico and would not be exposed to pesticides in Argentina. While other species and regions have experienced mortality events for raptors caused by organochlorines, there is no evidence of organochlorine-caused declines and mortality in California (Risebrough 1989, Bloom et al. 2023). Since the five-year review in 2016, California has enacted strict laws, notably [AB 2552](#), banning nearly all uses and sales of first-generation (e.g., chlorophacinone, warfarin) and second-generation (e.g., brodifacoum, bromadiolone) anticoagulant rodenticides (ARs) which became effective January 1, 2025. The population has grown exponentially since 2008, possibly reflecting a change in pesticide practices either on the wintering or breeding grounds. Either way, given California's new laws, anticoagulant rodenticides do not represent an ongoing threat to the California breeding population of Swainson's hawk.
8. Other direct mortality agents. The five-year review considers mortality a threat because it occurs; however, no analysis is provided and the review states that shot or electrocuted Swainson's hawks are found "occasionally". Illegal shooting was historically a large threat to Swainson's hawks, but mortality resulting from shooting in hawks' breeding range has declined since the early 20<sup>th</sup> century (Houston and Schmutz 1995). When installing new or upgraded utility infrastructure in California, General Order 95 and CEQA both require that new electrical lines are designed to eliminate electrocution risk of wildlife (both for electrical reliability and wildlife protection reasons). Further,

certified arborist regulations in the state and other Fish and Game Code sections protect nesting raptors. Given the exponential population growth from 2008, it is clear that other direct mortality agents have not affected the population in California and do not represent ongoing threats.

9. Stochastic events. The five-year review considers stochastic events a threat because a single hail event in Argentina was observed. Given the exponential population growth from 2008, it is clear that stochastic events have not affected the population in California and do not represent an ongoing threat.

## **X. Degree and Immediacy of Threat to Swainson's Hawk**

The five-year review identified nine possible threats to Swainson's hawk with many threats lacking evidence that the threat existed and new evidence and public policy indicating that the threats have been eliminated. Further, as the population has experienced exponential population growth and because the abundance estimate by Furnas et al. (2022) for 2018 is higher than the upper estimate produced by Bloom (1980), which was likely an overestimate, this evidence indicates that the threats identified are not ongoing threats to the California population of Swainson's hawk.

## **XI. Impact of Existing Management Efforts of Swainson's Hawk**

Water management programs, solar energy development, changes to agricultural practices, and maturation of landscaping and restored habitat could affect Swainson's hawk foraging and breeding habitat. In the following sections, trends in land use were examined and data were analyzed to identify trends in both foraging and nesting habitat.

### **Management of Foraging Habitat**

Foraging habitat for Swainson's hawk could be modified based on land use changes including the sustainable groundwater management act (SGMA), utility scale solar energy, and reduction in crop diversity, in particular loss of alfalfa.

### **Land Use Changes: Sustainable Groundwater Management Act**

SGMA aims to stop long-term groundwater overdraft in California by requiring local Groundwater Sustainability Agencies (GSAs) to set and enforce sustainable pumping limits through Groundwater Sustainability Plans (GSPs), which generally reduces the groundwater available for irrigation compared with historical, overdrafted conditions. The result will be uneven: some areas will see modest adjustments while others—especially heavily overdrafted basins with little surface-water access—will face significant reductions in pumped water, higher costs, or fallowed acreage.

California's Mediterranean climate is characterized by extended periods of drought punctuated by occasional wet years, which occur on average every ten years. Prior to SGMA, agricultural growers with inferior surface water contracts, such as many of those along the western side of the San Joaquin Valley in Fresno and Kings Counties, would make up for deficient surface water supplies by pumping groundwater during prolonged periods of drought. This enabled investment in permanent crops such as grapes, almonds, pistachios which require annual irrigation and take several years to bear fruit. However, fewer opportunities exist to rely on groundwater under a restricted groundwater pumping regime in these regions today, and investment in permanent crops is a far riskier proposition in many parts of the San Joaquin Valley. The five-year review listed conversion of habitat to vineyards and orchards as a threat to Swainson's hawk. However, with the implementation of SGMA, it is likely that these crops will either not be planted or will be fallowed. Therefore, SGMA's land use changes are unlikely to adversely affect, and may even improve, habitat conditions for Swainson's hawks.

### **Land Use Changes: Solar Land Management**

California has far-reaching renewable energy goals that will help mitigate climate change established in the Renewables Portfolio Standard that directs state energy agencies to plan for renewable and zero-carbon resources to supply all retail electricity by 2045. Senate Bill ("SB") 100 (2018 DeLeon) as modified by SB 1020 (2022 Laird) requires the electric system to be 90% clean by 2035, and 100% clean by 2045. According to the California Public Utilities Commission ("CPUC"), this will require approximately 39 GW of new, utility-scale PV solar to come online by 2035 and another 30 GW by 2045, requiring an estimated 500,000 to 1 million acres of land for solar. PV solar energy facilities provide foraging opportunities for Swainson's hawk and prevent housing developments, which do not provide foraging opportunities.

Recent studies have demonstrated that solar facilities provide foraging habitat for Swainson's hawk, documenting successful Swainson's hawk foraging within solar development areas. A foraging analysis conducted in south Sacramento County (Estep 2013) encompassed an area that included three solar array fields and found that Swainson's hawks foraged in solar facilities 1.8 times as frequently as would be expected based on the proportion of solar facility acreage to the total study area; 12.8% of Swainson's hawk habitat use occurred in the solar array field despite it comprising only 7% of the study area. In the same study, other raptor species, including American kestrels (*Falco sparverius*), northern harrier (*Circus hudsonius*), and red-tailed hawks (*Buteo jamaicensis*) also used solar arrays as foraging habitat; American kestrels also appeared to selectively forage within the solar array. Additionally, these raptors were able to use the panels as perches for hunting, including Swainson's hawk, which typically hunts from the air (Estep 2013).

A 2021 follow-up to the 2013 study included two additional solar array fields to the same study area, and again Swainson's hawks demonstrated a similar level of usage relative to the proportion of the solar array in the study area. In the 2021 study, Swainson's hawks foraged in solar facilities 2.8 times as frequently as would be expected, i.e., 11% of their habitat use, even though the solar array comprised only 3.7% of the study area. Although both studies documented perching, only the 2021 study included perching as a component of habitat use while the 2013 study did not, which could have affected calculation of the use frequency, and

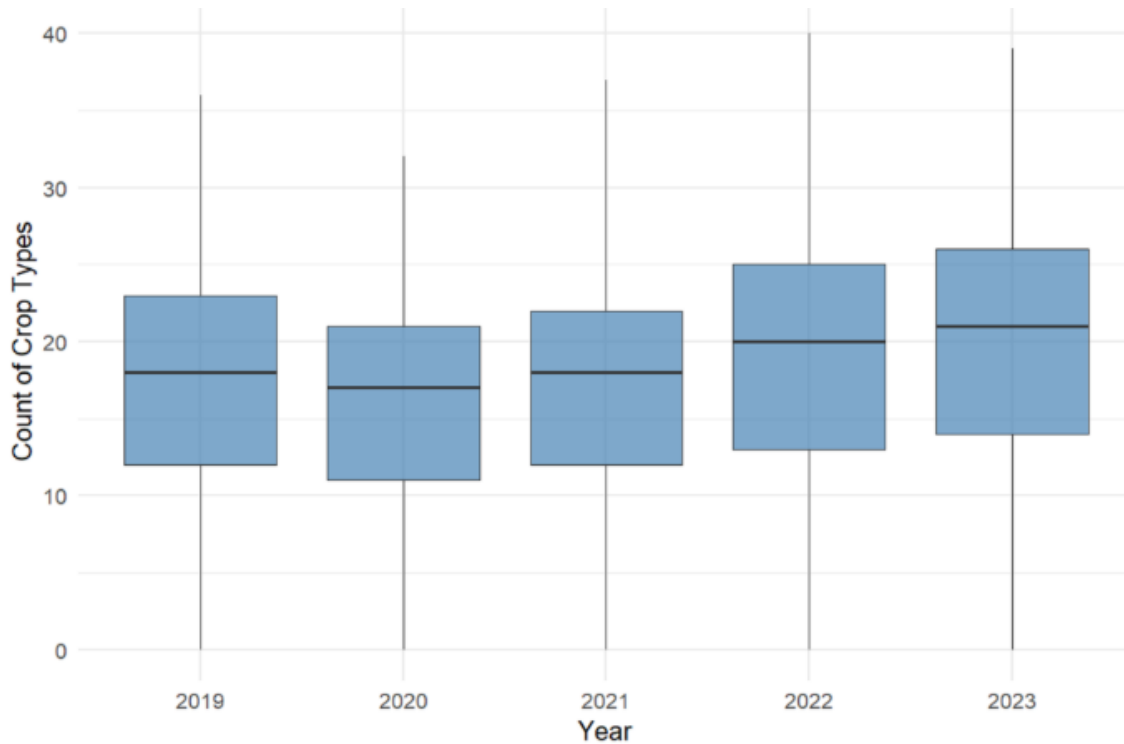
therefore comparability, between the studies. Observations of Swainson's hawk perching on the solar panels to hunt did increase in 2021 compared to those in the 2013 study. The proportion of perching occurrences in 2021 was almost four times as observed in 2013, 7.7% compared to 2.1, respectively (Estep 2021). Overall, both studies show more frequent use of solar arrays than expected in relation to their availability within the study area, as well as continued and increasing use of the panels themselves during foraging.

In a study conducted in 2017 in Kings County, a pair of Swainson's hawks was observed foraging within an approximately 1,100-acre solar facility near Lemoore Naval Air Station near the City of Lemoore, California. The pair spent approximately one hour within the solar facility site between late May and late June 2017. This level of use was compared to use of adjacent active and inactive agricultural fields with non-native forb and grass cover, what fields, disked fields, orchards, and cotton crops. Although the Swainson's hawk pair spent nearly the same amount of time in both areas, the adjacent fields comprised an area 4.4 times larger than the solar facility, suggesting the hawks were preferentially using the solar facility. Additionally, the pair continued to use the site despite being harassed and often chased off the site by red-tailed hawks, blackbirds, and kingbirds. The authors suggested that solar facilities could potentially enhance foraging habitat if maintained with low vegetation cover, which in this case was more suitable than the dense and tall (greater than 12 inches) vegetation in the adjacent areas (Helix 2018).

### **Land Use Changes: Alfalfa and Crop Diversity**

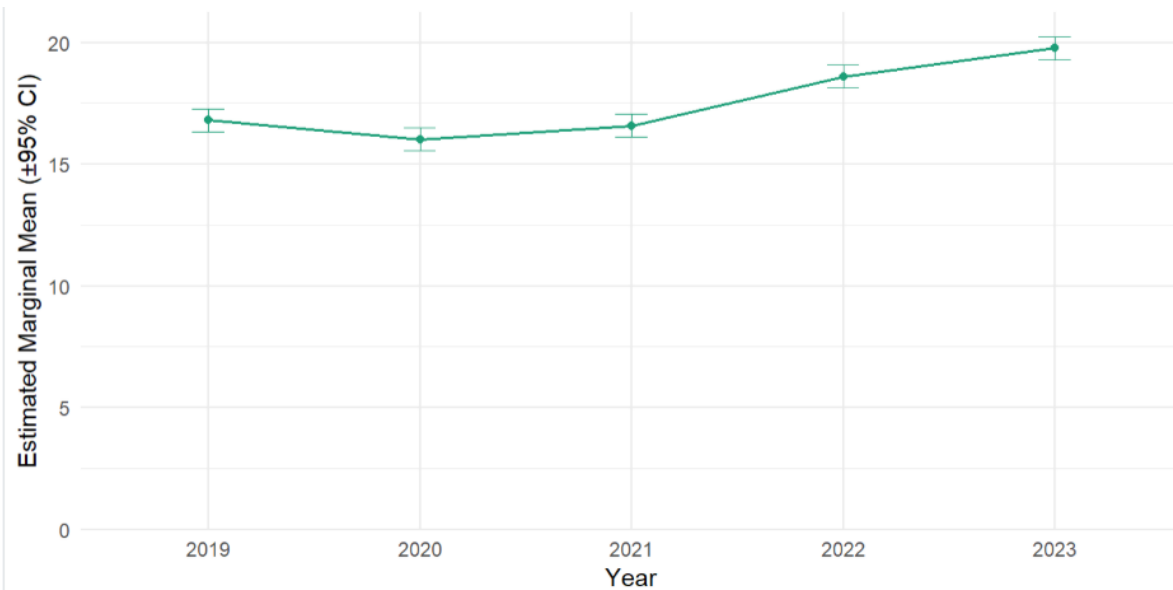
Furnas et al. (2022) found that number of crop types (crop diversity) in surveyed sections was the most important environmental variable in increasing breeding pair counts. We examined current agricultural trends in the Public Land Survey Sections (PLSS) used to build the final abundance model in Furnas et al. (2022), which only used data up to 2018. CropScape data (USDA National Agricultural Statistics Service 2015) for 2019 through 2023 was used to count number of crop types in the same PLSS squares Furnas et al. (2022) used in their model. Crop diversity was influential in significantly increasing estimated abundance, and the purpose of this analysis was to determine if there is a significant change in crop diversity in more recent years.

Crop diversity was normally distributed across years (Figure 4). Since there were repeated counts for each section each year, to test for more recent differences in crop type counts we used a linear mixed effects model with the formula  $\text{crop.div} \sim \text{Year} + (1 | \text{MTRS})$  in R package lme4 (Bates et al. 2015) and lmerTest (Kuznetsova et al. 2017).



**Figure 44.** Crop diversity in modeled sections by Furnas et al. (2022) by year

After accounting for repeated measurements of crop diversity in sections each year, mean crop diversity significantly increased from 2019 for the two most recent years, 2022 and 2023 (Figure 5). Given crop diversity is a significant predictor of breeding pairs in the Furnas et al. (2022) model, this suggests a positive effect on breeding pairs since 2018.



**Figure 55.** Estimated marginal means for crop diversity by year based on linear mixed model results.

Analysis by Furnas et al. (2022) used breeding pair counts from systematic surveys in 2005, 2006, 2016, and 2018. However, breeding pair counts from the same systematic surveys were not available in more recent years so new breeding pair counts could not be re-fit to the model with updated predictor variables. Instead, we tested how sensitive the estimated breeding pairs and growth trends were to changes in the significant predictors. While crop diversity and alfalfa cover were not decreasing in recent years, we simulated systematic reductions in the publicly available input data used to fit the Furnas et al. (2022) final model and recorded changes in the model output.

First, 10 percent, 20 percent, 30 percent, 40 percent, and 50 percent reductions in the input crop diversity data were applied and the new population estimates, and growth rates were recorded. The simulated changes in crop diversity were expected to be greatest, because this was the environmental covariate with the largest predicted increase in breeding pair counts, holding other covariates constant. These reductions were applied to simulate how much the estimated breeding pairs each year and growth rate estimate could change if the final model were generalized to a theoretical new location with similar breeding pair counts in each year but with negative changes in important predictors.

A 50 percent reduction in crop diversity resulted in an approximate 10 percent decrease in the population growth trend (Table 1). Even with a 50 percent reduction in crop diversity, the most significant environmental variable in the model by Furnas et al. (2022), there was a 12.5 percent predicted annual growth rate from 2005 – 2018.

**Table 1.** Changes in estimated Swainson’s hawk growth rate trends based on proportional reduction in crop diversity.

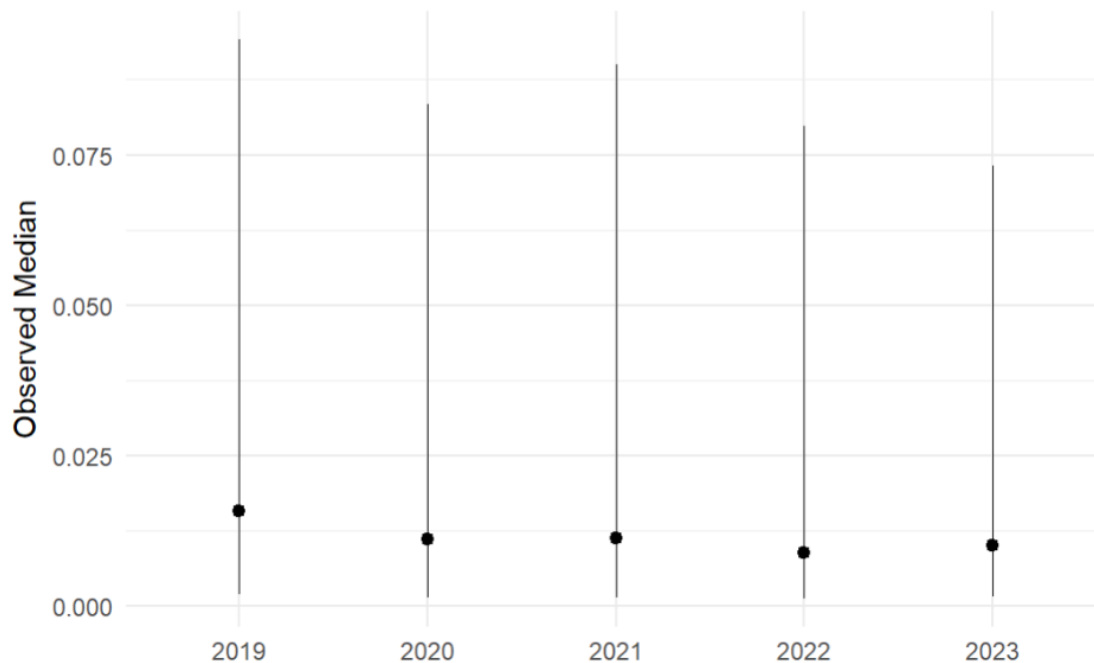
Percent Reduction in Crop Diversity	Trend (average annual growth rate)	Trend Lower	Trend Upper
Original model (Furnas et al. 2022)	13.9	7.8	19.2
10	13.7	7.5	18.9
20	13.4	7.2	18.8
30	13.1	7.0	18.6
40	12.9	6.6	18.3

50	12.5	6.3	18.0
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The last CDFW 5-year status review strongly asserted that maintaining a high percentage of alfalfa fields in large, heterogeneous agricultural habitats should be a priority for Swainson’s hawk conservation (CDFW 2016). Furnas et al. (2022) also found that alfalfa cover in survey sections significantly increased breeding pairs.

We extracted proportion of alfalfa cover data between 2019 and 2023 to test if alfalfa cover was significantly changing in the PLSS squares used to build the Furnas et al. (2022) model. The proportion of alfalfa data was significantly more skewed than the crop diversity data and not conducive to linear modeling. Instead, testing for differences in median alfalfa cover indicated that alfalfa cover was neither consistently increasing nor decreasing since 2019. A pairwise comparison between 2019 and 2022 was the closest to having significantly different distributions ( $p=0.06$ ).

Median alfalfa cover by year is presented in Figure 6, along with interquartile range to further visualize the overlap in distributions. The interquartile range represents the middle 50 percent of the data, as it is calculated by subtracting the 25<sup>th</sup> percentile (Q1) from the 75<sup>th</sup> percentile (Q3).



**Figure 66.** Median alfalfa cover and interquartile range (IQR = Q3 – Q1) by Year. Survey units were based on Public Land Survey Sections, which were approximately 1 square mile in area.

This analysis suggests that changing cover in alfalfa should not cause any declines in the abundance estimates provided by Furnas et al. (2022) in 2018.

Next, in addition to the systematic reductions in the Furnas et al. (2022) input crop diversity data, alfalfa proportions were also manipulated in the input data to simulate zero percent alfalfa cover. Alfalfa cover was not as influential in increasing breeding pair counts as other

variables, but it still added some explanatory information to the model. The final model was re-ran to simulate potential breeding pair counts under new agricultural conditions, and new estimated growth rates were calculated (Table 2). However, given the relatively small effect alfalfa had in the Furnas et al. (2022) final model compared to crop diversity and other variables, reducing its input values increases the relative influence of the other important variables and growth rates are largely unaffected.

**Table 2.** Changes in estimated Swainson’s hawk growth rate trends based on proportional reduction in crop diversity and eliminated alfalfa crops.

Simulated Alfalfa Cover in Survey Sections	Percent Reduction in Crop Diversity	Trend (average annual growth rate)	Trend Lower	Trend Upper
Original Model (Furnas et al. 2022)	Original Model (Furnas et al. 2022)	13.9	7.8	19.2
0	10	14.4	8.2	19.8
	20	14.1	7.9	19.6
	30	13.8	7.6	19.3
	40	13.5	7.3	19.1
	50	13.2	6.7	18.7

Ultimately, this analysis suggests that not only is important foraging habitat not significantly declining, but also that any changes in the future are not expected to reverse an exponentially growing Swainson’s hawk population.

## Management of Nesting Habitat

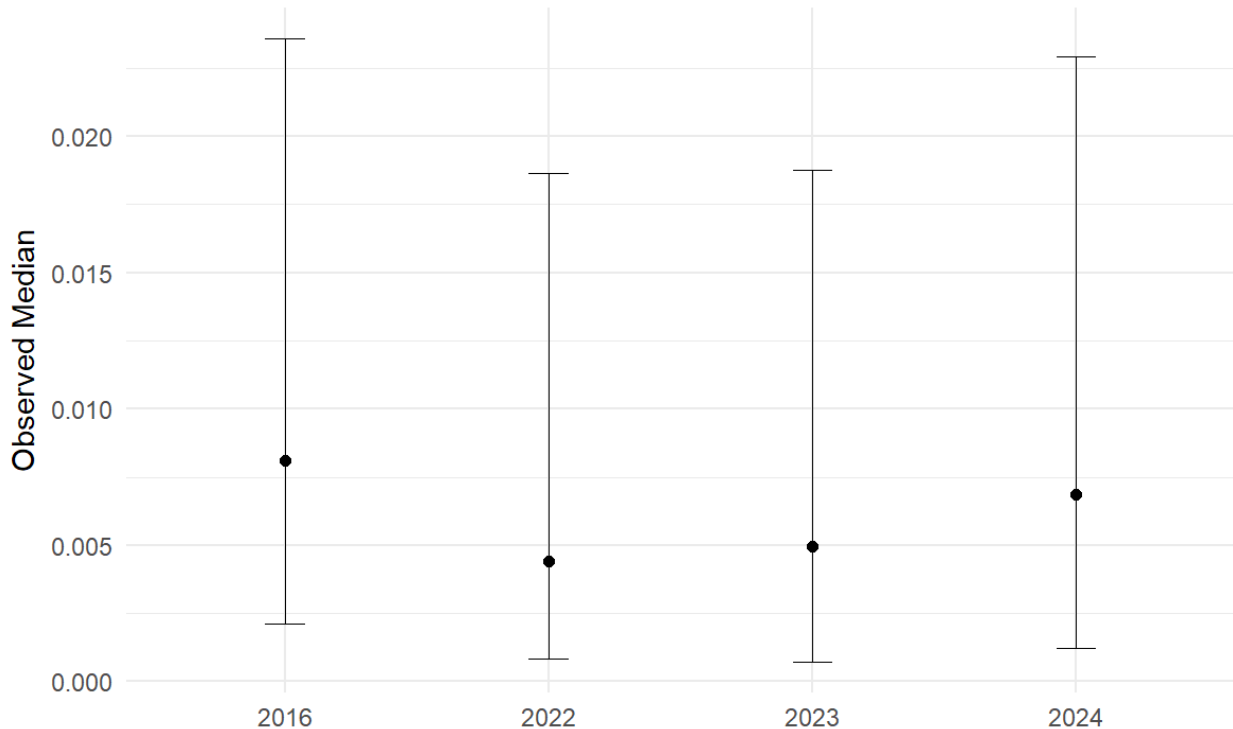
### Nest Tree Availability

If nesting habitat was limiting, we would expect to see persistent low population numbers or decreases. Furnas et al. (2022) also tested the importance of nest tree availability by assigning section a 1 if it contained a habitat type that was predominantly tree or a 0 if it did not. Thus, if any habitat type that was predominantly tree occurred in the section, regardless of if it was one pixel or all pixels, a section was coded as having potential nest trees. We followed this approach and acquired vegetation type data from the LANDFIRE database for 2016 (closer to when Furnas et al. (2022) data was collected), 2022, 2023, and 2024 (LANDFIRE 2016 - 2024). Furnas et al. (2022) considered the presence of habitat that could provide nesting trees, not the proportion of the habitat within each PLSS square. To examine if potential nesting habitat changed over time, we calculated the proportion of non-agricultural tree cover for each PLSS square that Furnas et al. (2022) used in their model. It is important to note that Swainson’s hawk also nest in suburban areas that are not well represented by this analysis (Gilmer & Stewart 1984, Estep 1989, England & Holt 1995, Alsup 2012).

To determine if nesting habitat has changed since the analysis completed by Furnas et al. (2022), we tested for differences in median potential nesting habitat cover across years using tests appropriate for skewed, zero-inflated distributions. Pairwise comparisons demonstrate

that the median proportion of potential nesting habitat cover was significantly higher in 2016, decreased in 2022, but the median proportion of potential nesting habitat cover is significantly increasing since 2022.

Median potential nesting habitat cover by year is presented in Figure 7, along with interquartile range to further visualize the overlap in distributions. The interquartile range represents the middle 50 percent of the data, as it is calculated by subtracting the 25<sup>th</sup> percentile (Q1) from the 75<sup>th</sup> percentile (Q3).



**Figure 77.** Median potential nesting habitat cover and interquartile range (IQR = Q3 – Q1) by Year. Survey units were based on Public Land Survey Sections, which were approximately 1 square mile in area.

The RPS goals and expanded PV solar deployment could provide counterintuitive benefits for Swainson’s hawks. To meet the 100% retail energy by 2045, it will 70 gigawatts of new utility-scale PV solar installations, which will require about half a million acres of conversion. An estimated 300,000 acres will occur in the San Joaquin Valley on retiring agricultural lands. Many of these agricultural lands have historic windrows (plantings of mature trees, typically blue gum eucalyptus and other fast-growing species) which currently serve as nest tree habitat for Swainson’s hawk. As these lands are converted from agriculture to solar, there is an incentive for such wind rows to be removed outside of the Swainson’s hawk nesting season to avoid the liability of solar energy construction projects being faced with having to implement large nest avoidance buffers that can significantly slow down projects and cost millions of dollars in damages. By delisting the Swainson’s hawk, the incentive to remove this source of mature nest

trees on private lands is also removed, encouraging the preservation of long-term nest habitat on private lands.

### **Conservation: 30x30 Goals**

Further, natural landscape conservation is a priority in the state, and California committed to conserving 30 percent of land and coastal waters by 2030. As of June 2025, 26.1% of California's lands and 21.9% of its coastal waters are under long-term conservation and care, and the 30x30 goal is on track to being achieved ahead of schedule. A strong emphasis of the 30x30 initiative includes conservation of rivers and riparian ecosystems for fish habitat, which incidentally protects nesting habitat for raptors including Swainson's hawks.

## **XII. Suggestions for Future Management of Swainson's Hawk**

Recent studies on Swainson's hawk populations have not identified a specific cause of the population decline but have identified agriculture (Furnas et al. 2022) and increase in non-native nest trees (Bloom et al. 2023) as possible factors responsible for population growth. The population has increased exponentially despite threats identified and without specific management actions for Swainson's hawk in some regions like the Antelope Valley. While de-listing will remove protection as a threatened species by the California Fish and Game Commission pursuant to CESA, Swainson's hawks, their nests, and eggs, will still be protected under California Code, Fish and Game Code (FGC) Sections 3503, 3503.5, 3508, 3511, 3513 and the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 USC. 703-711). FGC Section 3503 states that "it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird". FGC Section 3513 states "it is unlawful to take or possess any migratory nongame bird as designated in the federal Migratory Bird Treaty Act (16 U.S.C. Sec. 703 et seq.), or any part of a migratory nongame bird described in this section, except as provided by rules and regulations adopted by the United States Secretary of the Interior under that federal act." The MBTA states that "it is unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in Section 50 of the Code of Federal Regulations (CFR) Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21)."

AB 454 (Kalra) was enacted in California in 2025, which decoupled state law from the federal MBTA and the federal Courts' interpretation of this statute, ensuring that any weakening of MBTA by the Trump Administration (including the Administration's withdrawal of Solicitor Opinion M-37065) would not affect protections under state law.

## **XIII. Conclusion**

As specified in Section 670.1, Title 14, California Code of Regulations, a species may be delisted as threatened if the Fish and Game Commission determines that its continued existence is no longer threatened by any one or any combination of the following factors: present or

threatened modification of habitat, overexploitation, predation, competition, disease, other natural occurrences or human-related activities.

1. "Present or threatened modification of habitat" is not a threat to the continued existence of the Swainson's hawk as demonstrated in Sections IX – XI of this petition.
2. "Overexploitation" was never cited by the Department as a threat to the Swainson's hawk as the species has never been of interest for recreational hunters in the State and overexploitation is therefore not an ongoing threat to the continued existence of the Swainson's hawk.
3. "Predation" was never cited by the Department as a threat to the Swainson's hawk, there has been no change in circumstances that would indicate any future increase in predation, so predation is therefore not an ongoing threat to the continued existence of the Swainson's hawk.
4. "Competition" was never cited by the Department as a threat to the Swainson's hawk, there has been no change in circumstances that would indicate any future increase in competition, so competition is therefore not an ongoing threat to the continued existence of the Swainson's hawk.
5. "Disease" is not a threat to the continued existence of the Swainson's hawk as demonstrated in Section IX of this petition.
6. "Other natural occurrences or human-related activities" are not threats to the continued existence of the Swainson's hawk as demonstrated in Sections IX – XI of this petition.

A combination of the above factors is not a threat to the continued existence of the Swainson's hawk as demonstrated by the rebound of the population of breeding pairs in the State as described throughout this petition. In light of the foregoing, this petition provides substantial evidence that the Swainson's hawk warrants delisting.

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