

CALIFORNIA DEPARTMENT OF
FISH AND GAME
WILDLIFE MANAGEMENT
DIVISION
NONGAME BIRD AND MAMMAL
PROGRAM
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5 - Year Status Review:
SWAINSON'S HAWK (*Buteo swainsoni*)
Reported to:

California Fish and Game Commission

1993

FIVE-YEAR STATUS REPORT

I. COMMON NAME: Swainson's Hawk
SCIENTIFIC NAME: *Buteo swainsoni*
CURRENT CLASSIFICATION: Threatened

II. RECOMMENDED ACTION:

Retain Threatened classification

III. SUMMARY OF REASONS FOR RECOMMENDED ACTION:

Loss of nesting and foraging habitat due to agricultural and urban expansion has greatly reduced the breeding range and abundance of the Swainson's Hawk in California. Bloom (1980) estimated a 90% decline in the breeding population between 1900 and 1979. Approximately 80% of the total state-wide population of 550 pairs is currently found in the Central Valley where agricultural conversion has replaced virtually all native grassland foraging habitat (Estep 1989). Agricultural cropping patterns directly influence the distribution and abundance of the Swainson's Hawk in the Central Valley (Estep 1989). This dependence on agriculture poses a continuing threat to a large percentage of the remaining population based on current trends toward cultivation of incompatible (with Swainson's Hawk habitat requirements) crop-types. The trend toward dependence on agricultural foraging habitat is also affecting the population in the Great Basin region of the state (northeastern Counties) as conversion of native communities to croplands continues in that area. The lack of suitable nesting habitat throughout much of the Central Valley, due to agricultural conversion of riparian systems and woodland communities, also limits the distribution and abundance of Swainson's Hawks. In addition, reduced prey populations, possibly due to a combination of drought conditions and overgrazing, and loss of historic sage-steppe/grassland foraging habitat may be factors in a continuing decline of Swainson's Hawks in portions of the Great Basin region of the state. Urban development also continues to reduce Swainson's Hawk nesting and foraging habitat in the Central Valley, particularly in the southern Sacramento Valley counties of Yolo, Sacramento, and San Joaquin where Swainson's Hawk densities are the greatest. Based on continuing loss of nesting and foraging habitats, and fragmentation of those habitats, the Department recommends retaining the Threatened classification for this species.

Habitat loss due to residential and commercial development is currently the most significant threat to the remaining population. In addition, low reproductive success, probably due to sub-optimal habitat conditions; possibly pesticide use which may reduce prey populations and cause secondary poisoning of Swainson's Hawks in some areas; and, the possibility of disturbances on the South American wintering grounds, or during migration may also contribute to population declines.

IV. NATURE AND DEGREE OF THREAT:

If current trends of habitat loss through incompatible agriculture and urban expansion continue, the Central Valley Swainson's Hawk population will continue to decline. Since the last status review in 1987, significant loss of foraging habitat due to residential development has occurred in Yolo, Sacramento, and San Joaquin counties. Several crop-types common to the Central Valley generally are incompatible with the needs of foraging Swainson's Hawks. These include rice, cotton, orchards, and vineyards. These crops are incompatible primarily due to the intensity of their cultivation, lack of available prey, and density of the vegetative cover. These crops have been increasing in acreage in the Central Valley, and are projected to continue to increase in the future (DWR 1980). These are the major crop-types in the southern San Joaquin Valley and the northern Sacramento Valley. Even though these incompatible crops exist in the range of the Swainson's Hawk, some may be used as habitat under certain limited circumstances. Also, they do not represent the complete and permanent loss of habitat that residential and commercial development does. The Swainson's Hawk is adapted to hunting in open grasslands and shrublands; therefore, any crop-type that closely resembles natural habitat would be considered compatible. Examples of compatible crops include pastures, certain row crops, and alfalfa fields. Areas where Swainson's Hawks are currently most numerous in the Central Valley are the same areas where widespread urban growth is occurring. As development continues, reducing Swainson's Hawk foraging and nesting habitat, a significant reduction of breeding pairs will likely follow.

Native foraging habitat in the lowland areas of the Great Basin also continue to undergo a conversion to agricultural land. The smaller Great Basin population, while not subject to the same urban development pressures as the Central Valley, is becoming more dependent on the agricultural system of the region to provide suitable foraging habitat. Swainson's Hawks inhabit the plains and valleys of the region, including Butte Valley, Surprise Valley, Klamath Basin, and southern Modoc and eastern Lassen Counties. As agricultural conversion continues to replace the native vegetation in these areas, the suitability of crop-types will determine the level of Swainson's Hawk foraging use, and ultimately it will be agriculture that determines the distribution and abundance of Swainson's Hawks in the Great Basin as it does in the Central Valley.

There has been a steady decline in active Swainson's Hawk territories occupying rangeland habitat in the Great Basin region of the state. Overgrazing and fire suppression has caused an increase in Juniper forest and sagebrush communities. Swainson's Hawks have probably declined as this Juniper/Sage habitat increased at the expense of sage-steppe/grassland communities and resulting in a reduction of microtine rodents and ground squirrels, principal foods of the Swainson's Hawk in the Great Basin (Woodbridge, pers. comm.). While Swainson's Hawks have steadily declined in rangeland habitats of the Great Basin, there has been an apparent increase of breeding pairs utilizing agricultural foraging habitats such as alfalfa fields (Bloom, pers. comm.), probably due to greater prey densities and availability.

Government regulated pesticide use in Great Basin valleys to reduce Belding's Ground Squirrel populations may also be a factor in reducing the number of successfully breeding Swainson's Hawk pairs by reducing prey populations and possibly contributing to secondary poisoning of adult Swainson's Hawks.

V. HISTORIC AND CURRENT DISTRIBUTION:

Historic

Historic breeding population information, gathered through an extensive search of the literature and museum records, allowed Bloom (1980) to estimate the historic range of the Swainson's Hawk in California (Figure 1). Swainson's Hawks were found throughout the State except in the Sierra Nevada, North Coast Ranges and Klamath Mountains. Found most commonly in large, open grassland valleys with scattered trees or groups of trees, Swainson's Hawks also established breeding territories in foothill and canyon habitat (Bloom 1980). The valleys and deserts of Southern California and the coastal valleys from the Santa Rosa Valley south to the border with Mexico supported significant populations of Swainson's Hawks.

Current

Bloom (1980) surveyed much of the state to determine the current distribution of Swainson's Hawks. In 1988, Nongame Bird and Mammal Section personnel surveyed the entire Central Valley, coastal valleys, and parts of Southern California and were provided with information from cooperators in the Great Basin region of the state. In addition, information has been gathered by the Nongame Section since 1979 on Swainson's Hawk activity throughout the State. These data revealed no change in the distribution of the Swainson's Hawk in California since Bloom's (1980) distribution estimate which included the Central Valley and northeastern California from Butte Valley east to Nevada, south-central Modoc County and eastern Lassen County (Figure 1).

While Swainson's Hawks can be found throughout most of the Central Valley, the nesting population is fragmented and irregularly distributed. Approximately 85% of the Central Valley population is in the southern Sacramento-northern San Joaquin Valley region, where irrigated farmland is the primary land-use (Estep 1989). Within this area, most Swainson's Hawks nest in Yolo, San Joaquin, and Sacramento counties. A relatively large amount of potential nesting habitat remains in this area in the form of riparian forest, lone trees, oak groves, and roadside trees. Numbers of breeding pairs drop off sharply to the north and south of this area. Also, no significant foothill region breeding populations of Swainson's Hawks have been documented. The Southern San Joaquin Valley is nearly devoid of suitable nesting habitat and suitable foraging habitat is limited due to incompatible crop-types, primarily cotton, vineyards, and orchards. A small, isolated population is found in the dairy pasture region of western Tulare and eastern Kings Counties. Largely incompatible foraging habitat, primarily rice and orchards, is also widespread in the northern Sacramento Valley. Conversion of the native grassland to

dryland pasture in Glenn and Tehama Counties may also be a factor in declining Swainson's Hawk populations in that area by causing a reduction in microtine rodent prey populations (Detrich 1986).

The northeastern California population occupies the Juniper-Sagebrush rangeland and agricultural valleys typical of this region. Much of the lowland and valley areas have been converted to intensive agriculture, primarily irrigated alfalfa. This region of the state includes the area from Butte Valley to the Klamath Basin and east to Surprise Valley, and from the Alturas area south across the Likely Tablelands into Eastern Lassen County as far south as Doyle.

In addition, a few scattered Swainson's Hawk territories were located in 1988 in Shasta Valley (1 pair), Owens Valley (4+ pairs), the Mohave Desert (1 pair), and southwest San Joaquin Valley (1 pair).

VI. HISTORIC AND CURRENT ABUNDANCE:

Bloom (1980) estimated as many as 17,136 pairs of Swainson's Hawks nested historically in California (Ca. 1900). Swainson's Hawks were considered to be one of the most common nesting buteos in California (Sharp 1902). Bloom (1980) determined that large populations historically inhabited the Central Valley, Great Basin, coastal valleys, and most of lowland Southern California. The Mojave/Colorado Desert and the Southern Sierra Nevada/White Mountains regions supported smaller populations.

The growing interest in the Swainson's Hawk since Bloom's (1980) report, in which he found 110 active territories and from those data estimated 375 (\pm 50) breeding pairs of Swainson's Hawks remaining in California, has resulted in regular and intensive surveying by state and federal agencies and the reporting of information by birders and other cooperators. These increased survey efforts have resulted in higher breeding densities reported from certain areas in the state. A 1987-88 study of the Central Valley Swainson's Hawk population revealed breeding densities as high as 0.22 active nests/sq km (0.56/sq mi) in areas of high quality nesting and foraging habitat. High breeding densities have also been reported from the Butte Valley area in the western Great Basin region (Woodbridge pers. comm.). Swainson's Hawk breeding surveys conducted in 1988 throughout the Central Valley provided information on 241 active Swainson's Hawk territories. Cooperators in northeastern California reported 78 active breeding pairs. The 1988 statewide survey conducted found 320 active territories. This apparent increase in active territories found does not indicate an increasing population since 1979. Instead, it is related to an increase in survey intensity. However, a revision of Bloom's (1980) statewide population estimate is warranted due to the information now available on Swainson's Hawk abundance.

To estimate the Central Valley population, an area estimate of the most suitable nesting and foraging habitat was multiplied by a breeding density of 0.12 territories/sq km (0.31/sq mi) (the lowest breeding density of four 93.2 sq km (36.0 sq mi) study areas in the Central Valley)). The result was a Central Valley population of 430 pairs.

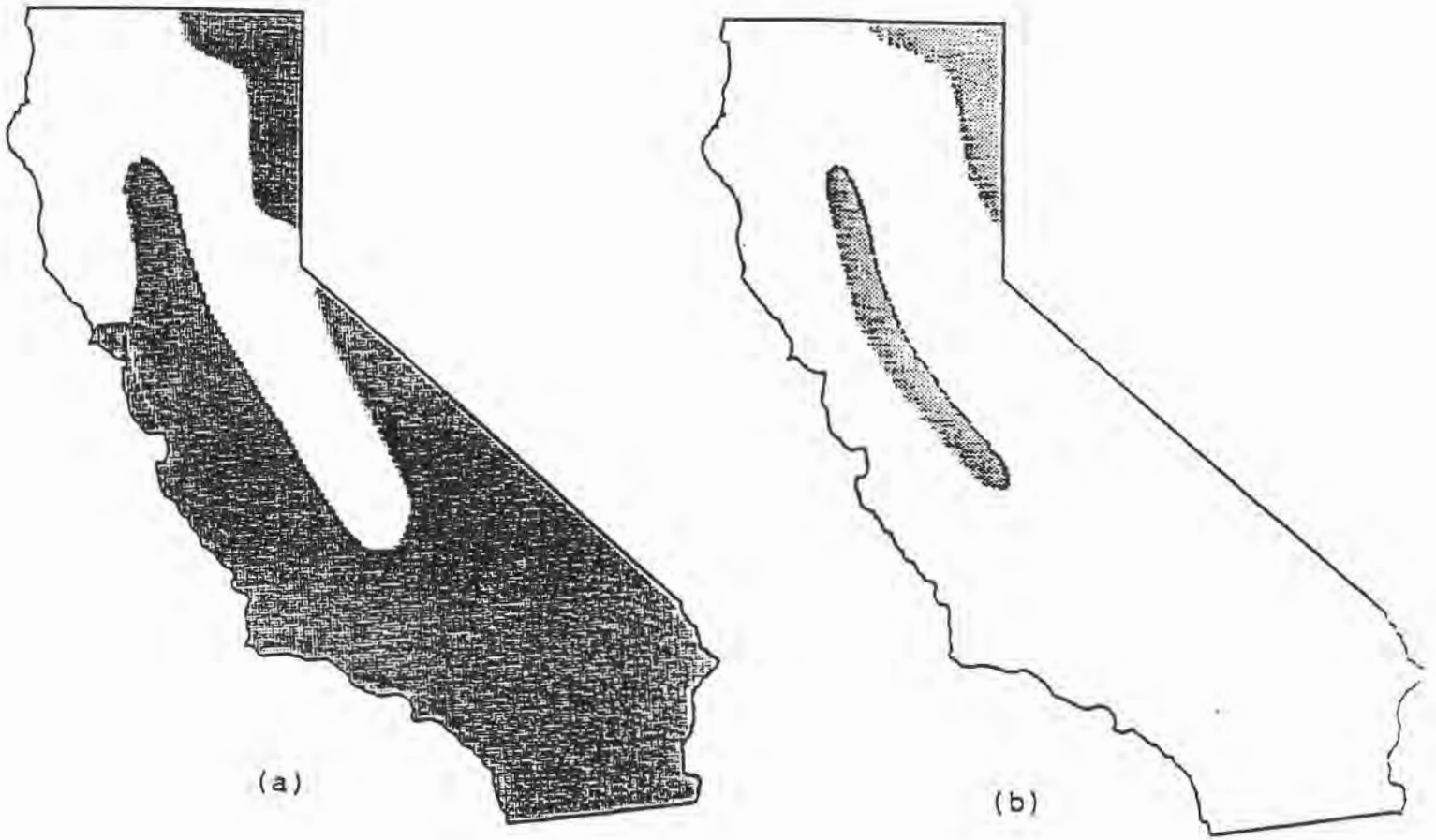


Figure 1. Historic (a) and current (b) (shaded area) range of Swainson's Hawk in California.

Divided into three main regions of the Central Valley, 80 pairs are estimated south of and including the Merced River, 35 pairs north of Sutter Buttes in Sutter County, and 315 pairs between these areas. Utilizing survey data and population estimates derived by biologists working in the Great Basin region, the population for that area is estimated at 110 pairs.

In addition, five pairs are estimated for the Owens Valley area, and five for the Mojave Desert area. The species is considered extirpated from Southern California and coastal valleys. During 1991 and 1992, one or two pairs nested in a location in Antelope Valley that was first documented as a breeding site in 1979. The total state-wide population is estimated to be 550 breeding pairs in 1988. Subsequent survey and monitoring confirm these five year old estimates. However, due to the accelerating loss of habitat to development a survey to re-estimate the statewide population will be undertaken in 1994-95.

VII. SPECIES DESCRIPTION AND BIOLOGY:

The Swainson's Hawk is a medium-sized buteo with relatively long, pointed wings which curve up somewhat in a slight dihedral while the bird is in flight. There are three main plumage morphs: light, rufous and dark, with several intermediates (Woodbridge 1985). Adults have dark heads and a dark breast band, set off distinctively from the lighter colored belly. In dark morph birds, however, the entire body of the bird may be a sooty black. The cere is bright yellow, also set off distinctively from the dark head. The throat is white, or partially white in dark morph adults. The wings are bicolored underneath, the wing linings generally lighter than the dark gray flight feathers. Adults weigh from 800 to 1100 grams (28 to 39 oz). Females are heavier, ranging between 900 and 1100 grams (32 to 39 oz), and males from 800 to 1000 grams (28 to 35 oz).

The Swainson's Hawk breeds in the western United States and Canada and winters in South America as far south as Argentina. A raptor adapted to the open grasslands, it has become increasingly dependent on agriculture as native communities are converted to agricultural lands. The diet of the Central Valley population is varied. The California Vole (*Microtus californicus*) is the staple of the diet; however, a variety of other small mammals, birds, and insects are also taken. Swainson's Hawks in the Central Valley often nest peripheral to riparian systems. They will also use lone trees in agricultural fields or pastures and roadside trees when available and adjacent to suitable foraging habitat. Valley Oak (*Quercus lobata*), Fremont Cottonwood (*Populus fremontii*), Walnut (*Juglans hindsii*), and Willow (*Salix sp.*), with an average height of 17.6 m (57.7 ft) and range from 12.6 - 25 m (41.3 - 82.0 ft), are the most commonly used nest-tree species. Swainson's Hawks in the Great Basin occupy the Juniper/Sagebrush community typical to the area. However, much of the lowland areas have been converted to agriculture. Junipers (*Juniperus occidentalis*), with an average height of 4.6 m (15.0 ft) are most commonly used as nest trees in the Great Basin. The diet of the Great Basin population consists largely of Montane Meadow Voles (*Microtus montanus*) and Belding's Ground Squirrels (*Spermophilus beldingi*).

VIII. HABITAT REQUIREMENTS:

Large, open areas of foraging habitat, an abundant and available prey base, in association with suitable nesting habitat are basic requirements for Swainson's Hawk nesting. Suitable foraging habitat includes native grassland or lightly-grazed dryland pasture, alfalfa and other hay crops, and combinations of hay, grain, rice (after harvest), and row crops. Alfalfa is the preferred foraging cover-type in the Central Valley (Estep 1989). Unsuitable foraging habitat includes any crop-type, such as vineyards, orchards, and cotton, in which prey are not available during most of the breeding season (March through September), or which do not support adequate prey populations. Suitable nesting habitat includes trees within mature riparian forest, lone trees and oak groves, and mature roadside trees. Over 85% of documented Swainson's Hawk nests trees in the Central Valley have been found in riparian systems, making this habitat-type critically important (Schlorff and Bloom 1983).

Even low density urban development will preclude Swainson's Hawk foraging opportunities; however, some nest sites have been found in close proximity to human habitation (Estep 1989). Large, open expanses of suitable foraging habitat adjacent or close to suitable nesting habitat are required for successful reproductive performance.

IX. CURRENT AND RECOMMENDED MANAGEMENT:

In 1983, the California Fish and Game Commission designated the Swainson's Hawk a state Threatened bird species. Subsequently, efforts have been made by the Department of Fish and Game, other state and federal agencies, and private citizens to document Swainson's Hawk territories throughout the breeding range in California.

During 1986-87, a Department of Fish and Game study was conducted in the Central Valley to investigate Swainson's Hawk movements and habitat relationships in agricultural environments (Estep 1989). A similar study by U.S. Forest Service personnel was conducted in Butte Valley, Siskiyou County (Woodbridge 1985).

In 1987 a project was initiated to increase available Swainson's Hawk nesting habitat in Butte Valley by planting trees in selected locations.

There is an ongoing project to band adult and juvenile Swainson's Hawks, and color-band adults in both the Central Valley and Great Basin populations to study territorial movement, nest and mate fidelity, and dispersal of young (Bloom pers. comm.).

Future management of the Swainson's Hawk should address the need for habitat preservation through legislation, acquisition, and land-owner cooperation. Developing a cooperative effort with private landowners is crucial to effective management since over 95% of the known Swainson's Hawk territories in the Central Valley are on private land.

In general, management needs of the Central Valley population of Swainson's Hawks include ensuring the availability of suitable nesting habitat through the preservation of existing nest trees and potential nesting habitat and maintaining compatible agriculture. In areas where nesting habitat is limiting and suitable foraging habitat remains, a program of tree planting and riparian restoration should be implemented. Swainson's Hawks have shown an ability to adjust to certain types of agricultural land-use patterns. Compatible agriculture must be maintained to sustain current population levels. A program of incentives for the private landowner should be developed for this purpose so that compatible crops are not replaced by incompatible ones.

In areas where Swainson's Hawks are presently most common, the conversion of agricultural lands to urban development is becoming widespread and could reduce current populations significantly. At the local governmental level, where development pressures are greatest, the foraging and nesting habitat needs of the Swainson's Hawk should be recognized and the preservation of those habitats required. State sponsored projects such as bank protection, levee repair and maintenance, highway construction, and facilities construction of various types all have had impacts on Swainson's Hawk habitat. State lead agencies must consult with the Department of Fish and Game on projects that would impact habitat and/or cause disturbance. Compliance with the provisions of the State Endangered Species Act has not been perfect and each agency offers considerable resistance to providing needed mitigation to offset project impacts. During a major project in 1990-1992 along a levee system near Sacramento overall cooperation to avoid impacts to nesting Swainson's Hawk documented during the breeding season by U.S. Fish and Wildlife Service biologists was satisfactory. However, other projects such as a highway widening in eastern Sacramento County resulted in no suitable mitigation for lost habitat. Overall cooperation and compliance with the State Endangered Species Act by State lead agencies requires significant improvement. Agencies such as the Department of Water Resources have had at least a fair record of compliance since 1987. However, there have been some instances of habitat loss due to maintenance activities on certain levees and lack of compliance with certain Code sections regarding mitigation planning. Agencies such as Caltrans have had a poor record since 1987 due to lack of consultation and resistance to mitigation suggested by the Department.

Projects sponsored by local county and city planning agencies have had the greatest negative impact on Swainson's Hawk habitat since 1987. Efforts are underway to develop local agency planning to set aside important areas of habitat for Swainson's Hawks while steering future developments into less sensitive areas. Progress on this front is spotty thus far but it is believed that this approach offers the best chance to conserve critically important foraging and nesting habitat for Swainson's hawks. Despite the Department's best efforts, and the development of mitigation guidelines to assist the project reviewer and project sponsor alike in development of suitable mitigation, most projects approved by local governments destroyed significant amounts of habitat without providing suitable compensation for the loss. Continuation of this trend unabated may result in the need to

reclassify the Swainson's Hawk as an Endangered species before the next five-year status review occurs in 1998. During 1987 to 1992, half of the breeding territories in Sacramento County were lost to residential developments. The County slipped from second most important for Swainson's Hawks to third most important, behind Yolo and San Joaquin counties. Based on current land-use plans and the apparent desire for further residential development, Swainson's Hawks are expected to decline still further in Sacramento, San Joaquin, and Yolo counties in the next five to eight years. Therefore, if current trends continue and no progress is made on certain local habitat conservation planning efforts currently underway within the next few years then the Swainson's Hawk may be reclassified to Endangered status within the next decade.

In addition to the serious threats posed by habitat loss, there is a need to assess the impacts of rodenticide use in the Great Basin region. The process of reducing populations of Belding's Ground Squirrels and other prey animals as agricultural pests may deplete important food resources of the Swainson's Hawk. Also secondary pesticide poisoning of adult Swainson's hawks and its effect on reproduction should be investigated further.

X. SOURCES OF INFORMATION

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