

## 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 is currently found in the Central Valley where agricultural conversion has replaced virtually all native grassland foraging habitat. Agricultural cropping patterns currently influence the distribution and abundance of the Swainson's Hawk in the Central Valley. 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 where Swainson's Hawk densities are currently 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 is 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 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. Several crop-types common to the Central Valley 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. The Swainson's Hawk is adapted to hunting in open grasslands and shrublands; hence any crop-type that closely resembles natural habitat is compatible. Examples of compatible crops include pastures and alfalfa fields. Areas where Swainson's Hawks are currently most numerous in the Central Valley are the same areas when widespread urban growth is occurring. As development continues, reducing Swainson's Hawk foraging and nesting habitat, a reduction of breeding pairs will 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, a principal food 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 (Bloom, pers. comm.), probably due to greater prey densities and availability.

Government regulated pesticide use (such as the current use of compound 1080 in Butte Valley) 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 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 utilized 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. 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 north and south of this area. 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 region of western Tulare and eastern Kings Counties. 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 remnant 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).

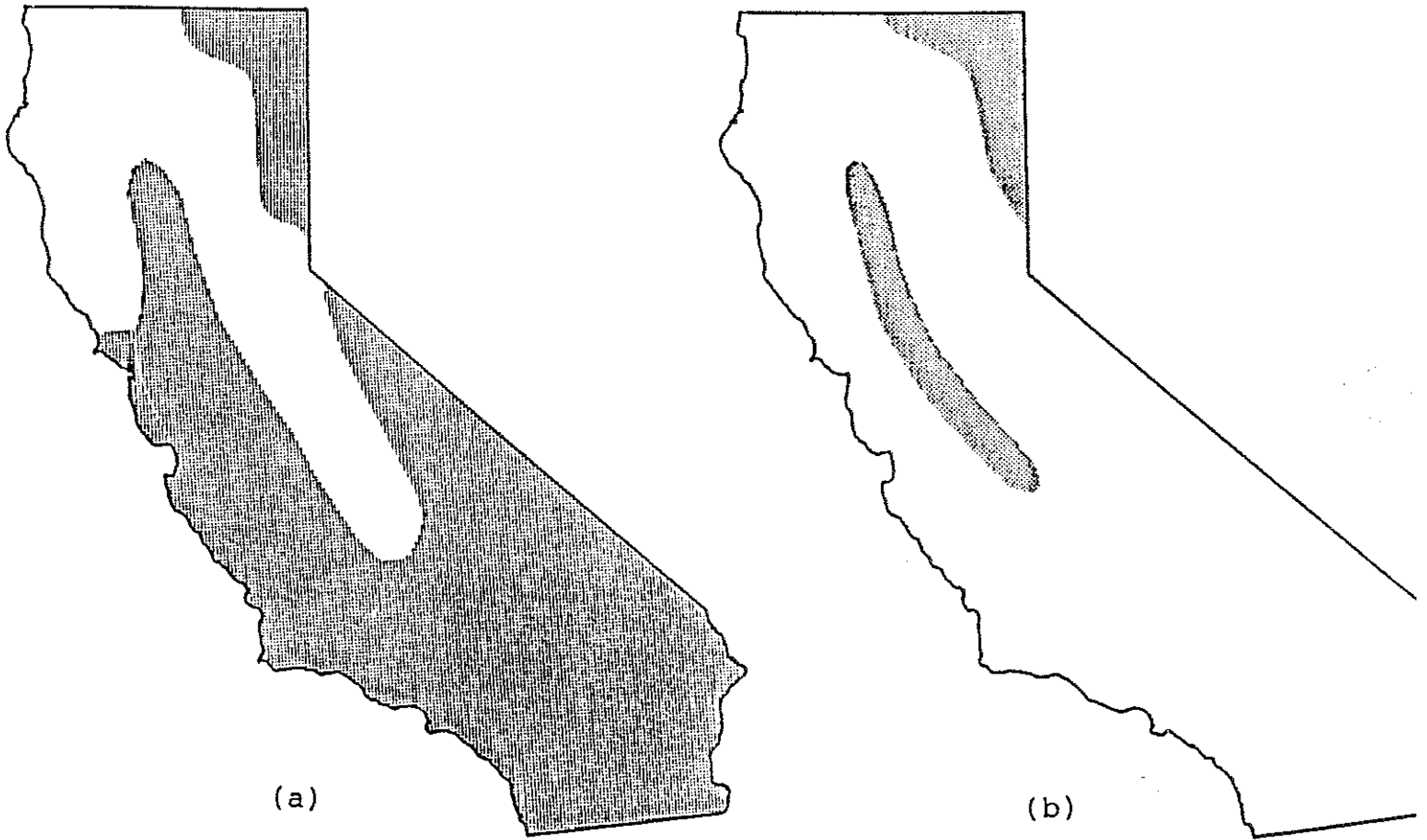


Figure 1. Historic (a) and current (b) (shaded area) range of Swainson's Hawk in California.

## 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 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 (Estep in prep.) revealed breeding densities as high as 1.45 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 0.81 territories/sq km (0.31/sq mi) (the lowest breeding density of four 93.6 sq km (36.0 sq mi) study areas in the Central Valley)). The result was a Central Valley population of 430 pairs. 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. The total state-wide population is estimated to be 550 breeding pairs in 1988.

## 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 phases: 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 phase 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 phase adults. The wings are bicolored underneath, the wing linings generally lighter than the dark gray flight feathers. Adults weigh from 800 to 1100 grams (25 to 34 oz). Females are heavier, ranging between 900 and 1100 grams (28 to 34 oz), and males from 800 to 1000 grams (25 to 31 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 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, and row crops. Alfalfa is the preferred foraging cover-type in the Central Valley (Estep in prep.). Unsuitable foraging habitat includes any crop-type in which prey are not available, or which do not support adequate prey populations, such as, vineyards, orchards, rice, and cotton. Suitable nesting habitat includes mature riparian forest, lone trees and oak groves, and mature roadside trees. Over 85% of the known Swainson's Hawk nests in the Central Valley are in riparian systems (Estep 1984), making this habitat-type critically important (Schlorff and Bloom 1983).

Even low density urban development will preclude Swainson's Hawk foraging. 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. A similar study by U.S. Forest Service personnel is currently being conducted in Butte Valley, Siskiyou County.

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.

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 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.

Where Swainson's Hawks are most common, the conversion of agricultural lands to urban development is becoming widespread. 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.

There is also a need to assess the impacts of pesticide 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

Bloom, P.H. 1980. The status of the Swainson's Hawk in California, 1979. Federal Aid in Wildlife Restoration, Project W-54-R-12, Nongame Wildl. Invest. Job Final Report 11-8.0. 24p. + appendix.

DWR, California Water Plan, 1983. Projected use and available water supplies to 2010. Calif. Dept. of Water Resources Bulletin 160-83.

Detrich, P.J. 1986. Status of the Swainson's Hawk (Buteo swainsoni) in the upper Sacramento Valley - Shasta and Tehama Counties, California. Biology Dept., Calif. State Univ., Chico.

Estep, J.E. 1984. Diurnal raptor eyrie monitoring program. Calif. Dept. Fish and Game, Nongame Wild. Investigations. Prog. W-65-R-1, Job No. II-2.0, 22pp.

\_\_\_\_\_. In prep. Biology, movements and habitat relationships of the Swainson's Hawk in the Central Valley of California, 1986-87. Report for the California Department of Fish and Game, Nongame Bird and Mammal Section.

Schlorff, R.W. and P.H. Bloom. 1983. Importance of riparian systems to nesting Swainson's Hawks in the Central Valley of California. pp. 612-618. In: R.E. Warner and K.M. Hendrix (Eds.). California Riparian Systems (University of Ca. Davis, Sept. 17-19, 1981). University of California Press, Berkeley.

Sharp, C.S. 1902. Nesting of Swainson's Hawk. Condor 4:116-118.

Woodbridge, B. 1985. Biology and management of Swainson's Hawk in the Butte Valley, California. U.S. Forest Service Report, 19 pp.

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