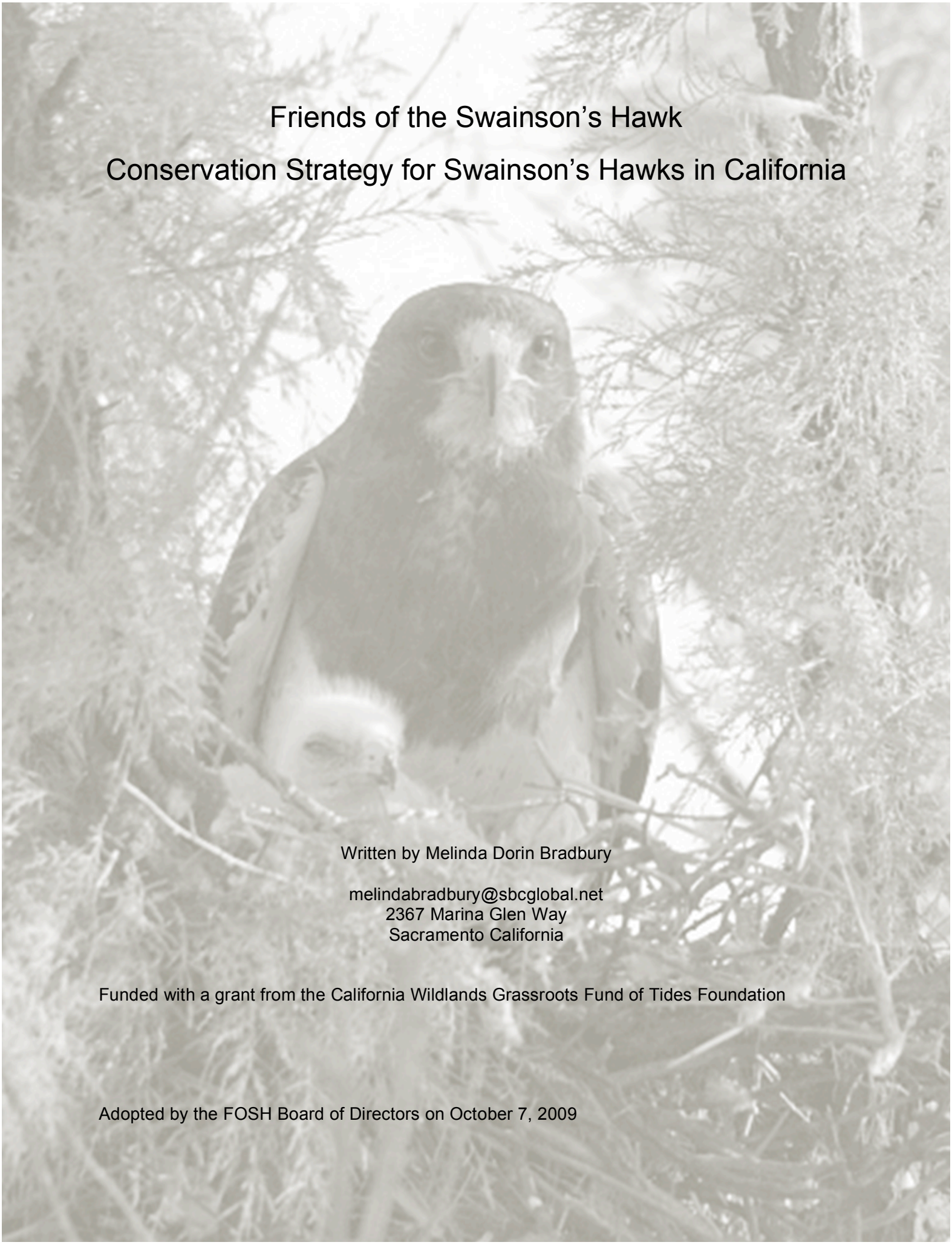
Friends of the Swainson's Hawk

Conservation Strategy for Swainson's Hawks in California

The goal of this document is to provide the Friends of the Swainson's Hawk organization with a conservation strategy for Swainson's Hawks and wildlife in California



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Conservation Strategy for Swainson's Hawks in California

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Acknowledgements

Thank you to all the people who provided insight into the issue of conserving Swainson's hawks. As a small organization, Friends of the Swainson's Hawk has relied on the expertise of volunteers, conservation biologists and ornithologists in the region for help in understanding the issues. Thanks to the generosity of the Tides Foundation Friends of the Swainson's Hawk can continue to educate the public and work to conserve Swainson's hawks in California.

Table of Contents

Executive Summary: Our Findings and Objectives

Conservation of Swainson's hawks, and the open space habitats upon which they depend, is an integral part of ensuring a good quality of life for the State's people and wildlife. Friends of the Swainson's Hawk (FOSH), a California 501(c)(3) organization, was incorporated in 1994 in response to the need to protect the Swainson's hawk, a Threatened species under California law. This Conservation Strategy is being prepared so FOSH has a plan that will inform the organization of the priority issues facing the hawk, ways to address them, and to encourage citizens to become involved in protecting this species.

The greatest immediate issue facing Swainson's hawks in the Sacramento region is loss of habitat from urbanization. Other issues include large scale changes to agricultural lands due to crop changes, conversion of agricultural to other habitat types, lack of water availability for crops, and climate change. Additionally harassment, injury/death from collisions, pesticide use and disease in the Swainson's hawk's summer and winter ranges can impact the species.

Since Swainson's hawks are listed as Threatened under the California Endangered Species Act they are afforded special protection from harassment and in the conservation planning process. While there is a legal foundation to protect the species, FOSH has encountered situations that illustrate gaps in protection. Most of the gaps occur because of a lack of enforcement of California Environmental Quality Act conditions, not enough coordination by projects with the California Department of Fish and Game, and a lack of quality mitigation requirements under the federal Habitat Conservation Planning process. Although the organization prefers to use other methods first, it is committed to and has been successful in litigating for additional protections in the past. **FOSH Conservation Objective:** *Use legal means as necessary to protect Swainson's hawks and their habitat in California*

Swainson's hawks were listed in California by the California Fish and Game Commission as a Threatened species in 1983. Results from a statewide census that was conducted in 1979 showed the population was declining from historical levels. Several censuses have been conducted since then, the latest in 2005-2006, with the results estimating a population of between 1770-2393 pairs. Since the listing there has been an effort by researchers to learn about the natural history of the bird and answer questions about its reproduction, foraging needs, migration patterns and genetics. The research is an integral part of understanding the species' needs and to developing a good conservation strategy. **FOSH Conservation Objective:** *Support Swainson's hawk research*

Urbanization is permanently removing farm land and affecting nest trees which used to provide quality habitat. Promoting urban infill and urban limit lines has long been a FOSH priority. Conserving agricultural land and nest trees is the way to conserve Swainson's hawks and ensure species survival. Projects on farmland should be mitigating for loss of farmland, and conservation easements should be placed on farmland with willing owners. Researchers have conducted several foraging studies and in all of them Swainson's hawks have preferred to forage in irrigated hay crops (alfalfa). Row crops, irrigated pasture, and dryland farming such as wheat also provide valuable habitat. **FOSH Conservation Objective:** *Work with the resources agencies, partner organizations, and the public to preserve agriculture and promote quality mitigation for loss of farmland within the Swainson's hawk's range*

People can become involved in conserving agricultural land in many ways including providing citizen input at local government hearings and workshops, advocating for conservation of open

space, and buying locally grown agricultural products (especially from crops which provide preferred habitat for the Swainson's hawks). **FOSH Conservation Objective:** *Help citizens get involved, to understand the legal processes and protections, and how and when to get Swainson's hawk protection measures in place*

Preserving agricultural land will provide California's people and wildlife with a better quality of life. There are many ways that farming is valuable to the state including being a sustainable industry for generations to come, providing income for the state, helping to lower climate change impacts by growing products that people can buy locally, and providing open space. Working together with other organizations to promote the value of agriculture lands will provide a strong voice for conservation. **FOSH Conservation Objective:** *Continue existing and develop new partnerships with farming groups, conservation organizations, and educators to promote the value of agricultural lands in California*

The effects of climate change are still being studied, but sea level rise, a rise in temperature and water supply shortages are probable outcomes. One of the areas most likely affected by climate change is the Sacramento-San Joaquin Delta which could have an effect on the population of Swainson's hawks. Impacts from increasing temperatures and changes in rainfall patterns will not only occur in the Delta but throughout the species range in California. Drought may add pressure to switch from alfalfa to less water-intensive crops. Other potential impacts from climate change come from trying to slow down, or reverse the effects. Changing crop types to ones less frequently irrigated and harvested that would store carbon for a longer time period could still provide habitat, but research is needed to understand the potential scale of the changes and how that could affect the range and reproductive success of the species. **FOSH Conservation Objective:** *Keep Swainson's hawks and agricultural practices upon which Swainson's hawks depend at the forefront of climate change science*

Friends of the Swainson's Hawk continues to partner with groups that are preserving agricultural land and open space and educating the public about Swainson's hawks. Friends of the Swainson's Hawk also wants to work with groups in the Swainson's hawk wintering grounds to provide education and outreach opportunities as well as information on conserving agricultural land there. **FOSH Conservation Objective:** *Continue to increase outreach and education to share FOSH's story and information on Swainson's hawks*

Introduction

Friends of the Swainson's Hawk (FOSH), a California 501(c)(3) organization, was incorporated in 1994. It incorporated in response to the need to protect the Swainson's hawk, a Threatened species under California law. FOSH has historically focused on the Sacramento region as the Swainson's hawk breeding population in California is concentrated in Yolo, Sacramento, Solano, and San Joaquin counties making its survival a responsibility of this region.

The Objectives and Purposes of FOSH as identified in its bylaws are:

> *To promote public awareness and understanding of the Swainson's Hawk, its environmental, habitat and flyway requirements, and the measures needed for the protection and restoration of the Swainson's Hawk; and to undertake any lawful activities permissible under Section 501(c)(3) of the Internal Revenue Code for the protection and restoration of the Swainson's Hawk and the habitat and ecosystem values necessary for its protection and restoration.*

Although a small organization, FOSH has been successful in coalition building and informing larger organizations about the FOSH purpose and mission. FOSH in the past has relied on local donors and volunteer efforts to further its objectives; but as the organization matures more planning and funding is needed to continue and broaden its successes and engage support beyond the Sacramento region. For that reason FOSH applied for a grant from Tides Foundation to undertake a conservation agenda planning process. FOSH's goal is to use this Conservation Guide in conjunction with the Strategic Plan that was adopted by the Board in August 2008 to realize the FOSH mission in the near term:

"Friends of the Swainson's Hawk is dedicated to seeing the California population of Swainson's Hawks flourish for all generations to come."

This conservation strategy is being prepared so FOSH has a plan to inform the organization and share with citizens the priority issues facing the hawk and to encourage citizens to become involved in protecting this species.

Summary of Swainson's Hawk's Natural History

Figure 1. Range map of *Buteo swainsoni* (from Cornell lab species account)

The Swainson's hawk (*Buteo swainsoni*) is found throughout western North America and is a relatively common hawk in much of its range (**Figure 1**). This natural history focuses on the California population of Swainson's hawks. Swainson's hawks in California were listed by the California Fish and Game Commission as a Threatened species in 1983; for more information on legal protections see the section on Legal Background and Protection on page 9.

Population Status

The California Fish and Game Commission listed Swainson's hawks in 1983 in response to a statewide estimate that was conducted in 1979 by Pete Bloom (Bloom 1980). The inventory occurred on both public and private lands and documented a continued decline in the species. The survey estimated the population at 375 pairs, with a known count of 110 pairs. They also estimated the historical population between 4,284 to 17,136 pairs (Bloom 1980).

There have been a number of statewide censuses completed since then. The most recent one was conducted in 2005-2006 by CDFG through its Resource Assessment Program. Statewide this census estimated 1912 pairs in 2005 and 2251 pairs in 2006. For both years combined they estimated between 1770-2393 pairs (Anderson et. al. 2007). For complete study results and survey methodology see www.dfg.ca.gov/rap/projects/swainsonhawk/.

There was concern about Swainson's hawk population declines in the mid 1990s due to pesticide contamination on the wintering grounds in Argentina. In the winter of 1994-1995 4,000 hawks were found dead and the following year 20,000 dead Swainson's hawks were found. The mortality was caused by highly toxic insecticides called monocrotophos that farmers were using to control grasshoppers on alfalfa crops. Argentina enforced use restrictions on the pesticide in the Swainson's hawk wintering ground in 1996 due to talks between the Argentinean government, American Bird Conservancy, scientists, the company that made most of the insecticide, and toxicologists, and in March 2000 the pesticide was banned entirely in Argentina (Woodbridge 2001). U.S. EPA classifies monocrotophos as a Class I toxin, the most potent toxicity category -- it is not registered for use in Canada or the U.S. Since Central Valley Swainson's hawks are not known to migrate to the affected areas of Argentina it is thought that the poisoning events did not affect this population.

Range in California

The majority of Swainson's hawks in California nest in Sacramento, San Joaquin, and Yolo Counties with Solano, Merced, Stanislaus, Sutter, Glenn, and Colusa Counties all important to the central range of the bird. Also important are the Swainson's hawks found in Owens Valley and Klamath Basin, though these are classified as part of the Great Basin population since they nest east of the Sierra crest. Preserving all of the breeding areas is important to keep the California range as large as possible. **Figure 2** is a current range map of Swainson's hawks in California.

The current range is much reduced from the historical range, which included most of California. Much of the historical decline can be attributed to changes from seasonal wetlands and grasslands to agriculture and the influx of settlers. Since the historical decline, Swainson's hawks have adapted to agricultural practices and now maintain populations primarily in agricultural areas. They are presently highly dependent on agricultural practices.

Figure 2. Range map of *Buteo Swainsoni* in California (from Fish and Game webpage www.dfg.ca.gov/rap/projects/swainsonhawk/

Throughout their range in California they are found using alfalfa and other hay crops as well as many row crops that are important foraging habitat at specific times of the year. Swainson's hawks are also found using grassland habitats, but in much lower densities then are supported by hay crops.

Migration

In the Central Valley, birds leave their nesting territories and start grouping up for migration in September. A study undertaken by the Swainson's Hawk Technical Advisory Committee in which Central Valley adults were fitted with satellite transmitters showed that most of the Central Valley birds stayed in Mexico or Central America and did not go as far as Argentina (Bradbury pers. com 2008). Outside of California's Central Valley Swainson's hawks migrate to the pampas region of Argentina.

After the young of the year have fledged, Swainson's hawks start forming flocks and using communal roost sites instead of spending the night at the nesting territory. The best time of year to see Swainson's hawks at roost sites in the Sacramento area is in August and September. As Swainson's hawks move south through the Central Valley on the way to the wintering grounds they use well-known roost sites along the way. Most of the roost sites are adjacent to agricultural areas where they can feed along the way. Birds usually return to the Central Valley in mid-March.

Genetics

Due to the Central Valley Swainson's hawk's different migration behaviors and their relative geographic isolation a genetics study was undertaken to determine whether the population is a subspecies. Results showed that there are generally two population clusters; one in the Central Valley and one in the Great Basin/Great Plains. This means that genetically, the birds

Swainson's Hawks in California have been studied since they were identified as a Threatened species by the CDFG. Although research has been conducted to establish population trends, genetics, migration patterns and foraging behavior there are still research questions to be answered. The Swainson's Hawk Technical Advisory Committee (TAC) biologists have taken the lead on developing research questions and conducting the research. FOSH relies on the Swainson's Hawk TAC biologists to conduct the research so FOSH can disseminate information to the public in understandable terms. FOSH also seeks to work collaboratively with University researchers, foundations and wildlife agencies to promote funding for the research needs.

FOSH CONSERVATION OBJECTIVE: *Support Swainson's Hawk research*

in the Central Valley are more like each other than they are to the Great Basin/Great Plains birds and vice versa. Although the genetics shows clusters, they were too weak to determine that the Central Valley birds are an evolutionary significant unit (Hull et. al., 2007). An evolutionary significant unit is usually regarded as a genetically distinct population.

Genetics also showed that in the last century there was a range-wide "bottleneck". A bottleneck occurs when the population declines enough to reduce the genetic pool. A bottleneck can reduce the bird's ability to adapt and respond to changes in the environment. It can also isolate populations if the range becomes smaller. Using the present genetic variability of a species and working backwards a bottleneck can be identified if it is large enough. Based on a three year generation time, it would have taken about 200 years for the existing genetic differentiation to take place, roughly the same period that Europeans have settled here.

Foraging

It has been well documented that Swainson's hawks prefer to forage in irrigated hay crops (alfalfa). Alfalfa, because it stays in the soil for several years at a time, provides for a good prey base which then becomes available regularly when the fields are flooded and mowed. Data on foraging behavior in California was first collected by Estep (1989) and has long been the basis for mitigation ratios developed by CDFG staff (1994). More recently a study was completed looking at foraging use of vineyards in Northern San Joaquin County (Swolgaard et al., 2008). Their analysis shows that Swainson's hawks use irrigated hay/alfalfa and dryland grain more than expected and vineyards less than expected. They also found that Swainson's hawks shifted their foraging patterns depending on the crop planted and the cover heights. Groups of Swainson's hawks were more often seen in alfalfa fields after they were mowed. In the study Swainson's hawks used a variety of habitats including annual grassland, ag-urban, blue-oak woodland, idle farmland, irrigated field crops, and irrigated pasture. Even though vineyards were used Swolgaard does not recommend using them as a crop on mitigation lands since they are used so much less than other crop types.

Another recent study in Yolo County enforces the theory that alfalfa and other irrigated hay crops have consistently high foraging value, with other crop types being valuable at certain times of the year when harvesting makes prey available (Estep 2009). Estep attributes the high foraging value of alfalfa to a combination of things including: relatively low stature of the crop, mowing and flooding which forces prey to move, and a stable prey base due to plants being left in the soil for extended time periods.

Figure 4. Example of dark morph taken by George Jameson and found on the USGS website www.mbr-pwrc.usgs.gov/Infocenter/i3420id.html

Some other cover types did not provide the consistent foraging opportunities irrigated hay did, but were important for short periods of time. For example, Estep found that wheat was harvested in June, which would provide a short period of time that prey was being made available. The same was true for tomatoes, although harvest, and therefore prey availability was in August – past the nesting season. Other crops such as sunflowers, safflower and corn are not harvested until September and are too tall/dense for Swainson's hawks to forage in for most of the breeding season, thus they do not provide a benefit to the species.

An additional study is underway to look at foraging use through the CDFG Resource Assessment Program. This is a multi-year study (2007-2008) with results being made available

through the CDFG website. The researchers have found that Swainson's hawks use irrigated hay in higher rates than other crops (Anderson pers. com. 2008).

Swainson's hawks forage much of the time in groups. They use fields that are being flooded, plowed, or harvested, where prey is being flushed and is relatively easy to capture. In their summer range they eat and feed their young small mammals such as voles and mice but will take larger mammals (rabbits) if they can catch them. Swainson's hawks forage opportunistically and will eat other prey such as pigeons, bats, snakes, etc. if they are available. They will also eat insects and insect larvae and on their wintering grounds primarily forage in crops such as alfalfa eating insects such as grasshoppers. **Figure 3** shows a Swainson's hawk carrying a rabbit.

Figure 3: Dark morph carrying a baby rabbit to the nest. Photo by Robert Sewell

Nesting

Bloom (1980) looked at nest tree types in historical egg collections and during his surveys. He found that the four predominate nest trees in the historical egg collections were: cottonwood (*Populus sp.*) 48.7 percent (N=60), oaks (*Quercus sp.*) 20.3 percent (N=25), sycamore (*Platanus racemosa*) 16.3 percent (N =20), and willow (*Salix sp.*) 8.1 percent (N=10). Other trees were used regionally. He also found that only trees were used as nesting substrate in California (no telephone poles, electrical transmission line towers, platforms, etc.) (Bloom 1980). Trees types were similar during his surveys, but varied by region.

For the nest sites that he was able to find during surveys, the predominate tree species in the Central Valley was cottonwood 70.6 percent (N=24) of 34. While in the southern transverse ranges there was a relatively even division of 46 nests between cottonwoods, 41.3 percent (N=19), sycamores, 30.4 percent (N=14), and oaks 28.3 percent (N=13) (Bloom 1980). Since then nests have also been well documented in pine and eucalyptus. CDFG's latest inventory confirms that valley oak and cottonwood continue to be favorite nesting species, but also found significant use of willow and eucalyptus (Anderson 2007).

CDFG's inventory of Swainson's hawks in California estimated that 95 percent nest in the Central Valley. The highest nesting densities were also found in this area. Sixty percent of the nesting pairs were found in the four-county region of San Joaquin,

FOSH has found that citizens in the Central Valley of California take pride and pleasure in identifying and monitoring the nest progress of Swainson's hawks. FOSH typically leads a nest tour in late June to educate citizens on the bird's natural history and discuss ways that citizens can get involved in conserving nest sites and the species.

Citizens have found nesting sites on their farms, near their homes, favorite recreation spots and even at their work places. To learn more about citizen nest monitoring activities or the next nest site tour go to www.swainsonshawk.org

FOSH CONSERVATION OBJECTIVE: *Continue to increase outreach and education opportunities to share the FOSH story and information on Swainson's hawks*

Sacramento, Yolo and Solano, which is why this is considered the core breeding area for Swainson's hawks in California.

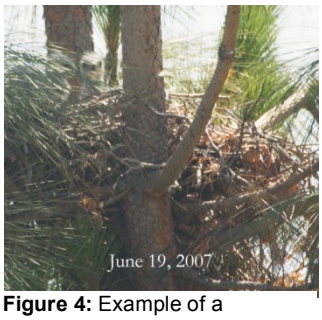

Figure 4: Example of a Swainson's hawk nest. Photo by Anita Scuri

Most Swainson's hawks prefer to nest in solitary trees, or riparian areas adjacent to foraging areas. There are some urban nesters but they are a small percentage of the population. Many of the hawks that now nest on the edge of urban development inhabit historical nest sites that were at one time in open space. They have been able to continue to nest in these historical locations since foraging areas are still relatively close and the area is known to the pair. Some Swainson's hawks choose to nest in urban areas; there are known sites in areas such as Davis, Sacramento and Stockton.

Nests are usually in the top third of the tree, and are large stick nests (approximately 2' in diameter). They can be hard to see as pairs will use mistletoe clumps or a cluster of branches to help support the nest structure. Since pairs normally show nesting territory fidelity the best way to look for nest sites is to find historical nests before trees leaf out in the spring and then visit the location when birds return and look for nesting activity. **Figure 4** shows an example of a nest.


Figure 5: Example of wings in a dihedral. Available at www.swainsonshawk.org/id.html. Photo by Chris Conard

Identification

Swainson's hawks exhibit a large array of color morphs from light to dark. Adults exhibit a dark chest and lighter belly with a white chin patch and yellow cere. Even in dark morph birds the darker chest can still be visible. California has the highest percentage of dark morph birds with light morphs comprising only 10-15% of the summering birds (Wheeler 2003).

Swainson's hawks fly with their wings in a dihedral pattern (an upward tilt of their wings) (**Figure 5**). Red-tailed hawks fly with their wings flatter. In flight Swainson's hawk wings also look more pointed than a Red-tailed hawk. The underside of their wings has a dark trailing edge (primary feathers) which can contrast with the leading edge which then looks lighter. **Figures 6** and **7** show color morph examples of Swainson's hawks.


Figure 6: Perching dark morph. Available at www.swainsonshawk.org/id.html. Photo by Chris Conard


Figure 7: Light morph taken by George Robertson. Picture available at swainsonshawk.org

When perched Swainson's hawk wing tips are longer than their tail feathers. Swainson's hawks in the Central Valley rarely perch on utility wires or poles, preferring trees and snags. Swainson's hawks in Klamath Basin and Owens Valley do use utility poles as perches.

Since Swainson's hawks migrate out of the Central Valley after nesting season and Red-Tailed hawks migrate into the Central Valley, Red-Tailed hawks are often misidentified as Swainson's hawks. Red-Tailed hawks are often found perching on poles and fences along agricultural areas. There are some Swainson's hawks

that overwinter in the Sacramento-San Joaquin Delta, so it is possible to see Swainson's hawks in the winter if you know where to look for them. For a complete description and a guide to identifying raptors visit the FOSH website www.swainsonshawk.org/id.html.

Legal Background, Protections and Gaps

This section summarizes the legal framework within which FOSH has been working to protect Swainson's hawks. While there is a good legal foundation to protect the species, FOSH has encountered situations illustrating gaps in protection. The legal gaps listed below are based on experiences that FOSH has had while working within the legal framework.

Swainson's hawks in California are protected by the California Department of Fish and Game (CDFG). CDFG does not have a recovery plan for the species, but they have developed a wildlife action plan for the State called *California Wildlife: Conservation Challenges* which is available at www.dfg.ca.gov/wildlife/wap/report.html. In the document they discuss the threats to California's species and CDFG policies which should be put in place to help recover them.

State Laws

California Endangered Species Act
Swainson's hawks are a California State listed Threatened Species (listed in 1983) under the California Endangered Species Act (CESA) which first became a law in 1970. California Fish and Game Code define "threatened" as:

> *a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter [Code section 2050-2068]. Any animal determined by the commission as "rare" on or before January 1, 1985, is a "threatened species"*

Being a protected species prohibits their take. "Take" in the context of the CESA is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

Projects can apply for and receive an Incidental Take Permit from the Department of Fish and Game for otherwise legal activities that can result in take. The Incidental Take Permit is sometimes referred to as a Section 2081 permit.

<u>Legal Gaps</u>
FOSH has encountered problems in the use and enforcement of CESA in the following areas:

- The law does not specifically protect known nesting trees and they are being destroyed by landowners when the hawks are away on migration, with no mitigation
- The CESA statue does not reference habitat protection per se, covering only mortality to individuals, so habitat protection has fallen under the purview of CEQA alone. Given that survival of young depends on available foraging habitat, and loss of foraging habitat leads to nesting failure and young mortality, we believe foraging habitat should be protected under CESA. The present state interpretation of the law has prevented Cal Fish and Game from requiring permits for, and thereby regulating, take of habitat. The exception is in the joint habitat conservation plans which CDFG has done with U.S. Fish and Wildlife Service (USFWS) that do regulate changes of land use that destroy habitat. There is a wildlife action plan for the State which identifies CDFG policies that should be used to protect the State's wildlife. However, CDFG has not developed a recovery plan

for Swainson's hawks. Without a recovery plan there are insufficient criteria for entities to follow statewide that will ensure protection for the species.

California Environmental Quality Act (CEQA)

The CEQA was passed in 1972. The basic premise of CEQA is to require public disclosure of potential significant environmental impacts for projects that either are being undertaken by or require approval from a state or local agency. The agency has to either avoid those impacts, or mitigate for them to a less than significant level. The agency doing the work, or requiring the permit normally acts as the "lead agency". They are required to determine whether the "project" falls under CEQA and if it does, complete the environmental analysis.

The procedure is for the lead agency to do an Initial Study first and determine whether there will be any environmental impacts from the project. If it is known that there are significant impacts, then the Initial Study can be skipped. Based on the Initial Study findings either a Negative Declaration (no significant impacts), a Mitigated Negative Declaration (less that significant impacts with mitigation implemented), or an Environmental Impact Report (detailed mitigation measures usually presented and project alternatives addressed) is prepared.[1]

Because the Swainson's hawk is a Threatened species in California CEQA requires that any impacts to the species be disclosed and mitigation measures implemented. In CEQA a finding of significance is required if:

> *The project has the potential to: substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; substantially reduce the number or restrict the range of an endangered, rare or threatened species; or eliminate important examples of the major periods of California history or prehistory.*

A finding of significance means that mitigation measures must be put in place to lower the impacts. In the case of Swainson's hawks, this usually means agricultural land is permanently protected from development by conservation easement on private farmland which prohibit activities which are incompatible with Swainson's hawk foraging (e.g. vineyards, orchards). Land can also be transferred to a conservancy, and management for habitat value and/or trees planted that in the future could be used as nest trees. In Yolo, San Joaquin, Solano and Sacramento Counties Swainson's hawk impacts are routinely evaluated under CEQA and policies are in place to define adequate mitigation. In other counties, CEQA review and mitigation measures are often project by project and may be inadequate.

[1] CEQA does not just focus on biological impacts, but includes other areas such as air quality, archeology, water, traffic, noise, visual, cumulative and growth inducing impacts. For more information on the categories addressed and for the complete law and guidelines see http://ceres.ca.gov/ceqa/.

Legal Gaps

FOSH has encountered problems in the implementation and enforcement of CEQA in the following areas:

- Except for State projects, local government has the responsibility to comply with and enforce CEQA with only an advisory role by CDFG. The results have been mixed since the local agencies have no biological mission and are focused on urban growth. There has been difficulty achieving consistent, biologically sound mitigation, with adequate provisions for monitoring, operations, maintenance and enforcement. Local governments tend to accumulate mitigation fund balances without acquiring land and mitigation fees often are set too low to achieve the mitigation objectives. Delays in implementation devalue the mitigation fees paid. Without CDFG veto on acquisition choices, there is no guarantee of biological value. Certain environmental consulting firms which are hired by local government or developers to develop information for environmental review documents will often understate the presence of Swainson's hawks and overstate the purported benefits of seriously inadequate proposed mitigation measures.
- CEQA mitigation requirements proposed in draft (and final) environmental review documents often lack specificity for timing, location, and other criteria for conservation easements and/or land acquisition and lack requirements for monitoring and enforcing the mitigation requirements.
- California Fish and Game guidance on mitigation ratios do not provide a sustainable base for protecting Swainson's hawk. At a 1:1 (1 acre preserved for each acre of habitat paved over), results in the loss of half the habitat. As habitat is lost to development FOSH is concerned that species declines will occur, and it will be too late to reverse the trend and recover the species.
- Interested citizens almost always are the only parties who monitor the CEQA process to ensure that impacts are evaluated and mitigation measures are complied with. But they have no enforcement rights under state law should mitigation monitoring programs not be implemented as promised. Citizens should engage competent legal counsel with biological expertise to ensure that legal challenges to inadequate CEQA impact analysis and mitigation programs are successful.

Natural Communities Conservation Plan

The Natural Communities Conservation Plan (NCCP) is a program administered by CDFG. The goal is to work with local agencies and private partners to undertake a broad-based ecosystem approach to planning for the protection and perpetuation of biological diversity while allowing for development. NCCP usually results in a coordinated effort to preserve important areas over a large region while streamlining the permitting process and allowing for development within the planning area. The NCCP must address ecosystem integrity and function, and must provide for conservation of the covered species. The goal is for impacts to be mitigated and for the plan to contribute to the recovery of the covered species. The program is more encompassing than the California Endangered Species Act, and can focus on important habitats, not just specific State listed species. Because the Swainson's hawk is a State-listed species it is usually covered in NCCPs, if the species occurs in the area of a specific NCCP.

NCCPs are often undertaken as a joint effort with the federal resources agencies through the Habitat Conservation Planning Act and the Federal Endangered Species Act (see below for information on those laws). CDFG can also issue State permits to allow the take of State listed species in the federal planning area. In that case the plan is solely an HCP with State permits

covering the State listed species. See **Table 1** for Plans which include Swainson's hawks. For more information on the NCCP program see www.dfg.ca.gov/habcon/nccp.

Legal Gaps

Because NCCPs are usually developed in conjunction with Habitat Conservation Plans (HCPs) FOSH has found that State listed species can become secondary as federally listed species are accorded greater protections. In some cases, years pass while a NCCP/HCP is being developed and mitigation lands are slow to be acquired and fees are devalued before land is purchased. Also CDFG has not assessed the cumulative impact/benefit of HCP/NCCPs on Swainson's hawks and whether they will be enough to conserve and recover the species. If they are not, CDFG has not identified additional measures that are needed to protect the species.

Table 1: Summary of NCCPs/HCPs that include Swainson's hawks

Name	**NCCP/HCP**	**Status**	**Acres Covered***
Bay Delta Conservation Plan	NCCP&HCP	In development	Legal Delta
Butte Regional HCP/NCCP	NCCP&HCP	In development	564,270 acres
East Contra Costa NCCP	NCCP	Approved / Being Implemented	174,000 acres
Natomas Basin Habitat Conservation Plan	HCP with 2081 Permit	Approved / Being Implemented	53,341 acres
Placer County Conservation Plan	NCCP&HCP	In development of three phases	Phase 1: 273,983 acres Phase 2: 273,717 acres Phase 3: 412,153 acres
San Joaquin County Multi-Species Habitat Conservation and Open Space Plan	MSHCP with 2081 Permit	Approved/Being Implemented	+/-900,000 acres
Solano County Water Agency Multi-Species HCP	HCP with 2081 Permit	In development	580,000 acres
Yolo County HCP/NCCP	NCCP&HCP	In development	653,820 acres
Yuba/Sutter HCP/NCCP	NCCP&HCP	In development	200,100 acres

* Acres covered refers to land area covered by the plan including identified developable acres, unidentified acres to be preserved in perpetuity for habitat, and land that is neither to be developed nor preserved which is the great bulk of the land covered by the plan.

Other Important Fish and Game Code Sections
There are other Fish and Game Code Sections in California that protect raptors and birds. Although these are not always the primary laws that are enforced they are important to protect California's species. To look for other code sections that protect California's birds, fish, amphibians, reptiles, mammals and habitats see www.leginfo.ca.gov/.html/fgc_table_of_contents.html.

Section 3503 – It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.

Section 3503.5 – It is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of

any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.

Section 3513 – It is unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Treaty Act.

Section 3801.6 – (a) Except as otherwise provided in this code or regulations made pursuant thereto, it is unlawful to possess the carcass, skin, or parts of any nongame bird. The feathers, carcass, skin, or parts of any nongame bird possessed by any person in violation of any of the provisions of this code shall be seized by the department and delivered to a California Native American tribal government or a scientific or educational institution, used by the department, or destroyed.

Legal Gaps
In FOSH's experience, the State does not enforce these sections as they apply to Swainson's hawk nesting even when there is a citizen complaint. If these codes were enforced on a regular basis they would add a strong element to CDFG's ability to conserve and recover the species.

International (Treaty) and Federal Laws

Endangered Species Act
The Federal Endangered Species Act (ESA) was passed in 1973. Depending on the species, either the U.S. Fish and Wildlife Service, or the National Oceanic and Atmospheric Administration (NOAA) Fisheries Services have jurisdiction for implementing the law. The Swainson's hawk is not on the ESA list, but it does co-exist with some species that are federally-protected. The ESA authorizes the determination and listing of species as Endangered and Threatened. It also prohibits the unauthorized taking, possession, sale, and transport of listed species. Like CESA, the ESA also allows for authorized take with a permit to ensure that any Federal agency taking an action does so without jeopardizing the continued existence of the listed species, or that their critical habitat is modified. This is referred to as a Section 7 permit. If there is no federal agency involved a Section 10 permit is needed, which is a lengthier permitting process (HCP).

Legal Gaps
Biologists have made an effort to determine if California Swainson's hawks can be separately listed as federally Threatened through their research on genetics, migration and nesting, and habitat use patterns. To date, a petition package has not been developed for submission to the USFWS. Therefore

Litigation is part of FOSH's history and future. In the past FOSH has been successful in pursuing mitigation for the species through litigation on behalf of wildlife and habitat. FOSH prefers to succeed in securing mitigation and habitat protection using other means such as persuasion, education and outreach, attending local agency meetings, providing comments on CEQA documents, and involving citizens' help to ensure laws are complied with.

FOSH CONSERVATION OBJECTIVE: *Use legal means as necessary to protect Swainson's Hawks and their habitat in California*

Swainson's hawks are not protected by federal law unless they are a covered species in a NCCP/HCP.

Migratory Bird Treaty Act of 1918

The Migratory Bird Treaty Act was written to end to the commercial trade in birds and their feathers that, by the early years of the 20th century, had decimated the populations of many native bird species. The Migratory Bird Treaty Act established a Federal prohibition, unless permitted by regulations, to "pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird . . . for the protection of migratory birds . . . or any part, nest, or egg of any such bird." The Migratory Bird Treaty Act is the domestic law that affirms, or implements, the United States' commitment to four international conventions (with Canada, Japan, Mexico, and Russia) for the protection of a shared migratory bird resource.

Habitat Conservation Plan (HCP)

The HCP process was developed to allow landowners flexibility to conduct their activities while providing conservation for species on the federal endangered species list. The HCP process is usually targeted at large landscapes and focuses on an ecosystem approach. In reality HCP's usually are mitigation programs for development, and are supported by developer fees and dedication of mitigation land by developers. The HCP process is also important to Swainson's hawks as the plans can protect large areas that are also used by the hawk, even if they are not a species covered in the plan. The HCP Handbook issued by the USFWS and NOAA Fisheries is at www.fws.gov/Endangered/hcp/hcpbook.html.

This handbook ensures that federal agencies will respect and work with state wildlife regulatory agencies (citation) and include state listed species. So although Swainson's hawks are not federally-listed under the ESA they do get included in an HCP when the CDFG gives an HCP a State permit (Section 2081 permit) for take of Swainson's hawks. As an example the Natomas Basin Habitat Conservation Plan was developed before the NCCP process was chaptered into law. It has state permits, but is not an NCCP. Swainson's hawks are covered through the permitting process, which includes the HCP provisions and the Implementation Agreement which is signed by the permittees as well as the permitting agencies.

Legal Gaps

Again, the difficulty with habitat conservation planning is the relative status achieved by state- and federally listed species. In the case of the Natomas Basin Conservancy, FOSH twice litigated its terms in order to improve the protections that would be afforded Swainson's hawk in the process. In HCPs the Swainson's hawk mitigation ratios may be insufficient to protect the population in the covered area.

Other International Legal Issues

FOSH lacks the expertise in the legal structure affecting Swainson's hawks in the wintering grounds. Research is needed to develop a strategy for addressing legal protections in Mexico, Central and South America.

Threats Facing the Swainson's Hawk

The two greatest threats facing Swainson's hawks in the Central Valley are urbanization and potential large scale changes to agriculture. Urbanization results in the permanent loss of farmland and loss of nesting trees. Large scale changes to agricultural lands can come from conversion of agricultural to other habitat types, water availability for crops, and in response to climate change.

Urbanization

According to the U.S. Census Bureau California's population is projected to increase by 12 million people by 2030 a 37 percent increase. Many of those people will find homes in the Central Valley. Finding a balance between new urban development and maintaining habitat value is going to continue to be a quality of life issue for humans and wildlife. This issue is also one that people can get involved in. For a summary of the projects in the Sacramento region that could affect survival of Swainson's hawks see **Appendix A**.

The loss of foraging habitat is occurring for several reasons. The first is from the push by cities to enlarge their boundaries and plan new urban uses on farmland. This results in local governments incorporating more land for development. Once development occurs habitat that Swainson's hawks rely on is made unavailable for foraging. There is a legal planning process that local governments and developers go through to entitle land for development, but many people are unaware of how the process works, how to get involved, and how/when to ask for changes.

The second reason is local governments are not always receptive to input from citizens when their input interferes with the local jurisdiction's ability to expand its boundaries. Some local jurisdictions are relying more and more on new development fees and property taxes from new residential development as a revenue stream. When local governments depend on development as a revenue stream and a constantly expanding territory instead of focusing economic development within their existing territory, they become locked into a non-sustainable growth model.

Thirdly, local planning departments do not usually have staff that understands the needs of the impacted species since they are planners and neither biologists nor species experts. Local planning staff may not have the time, or support to work with species experts to ensure that important habitats are preserved.

Several positive steps have been taken by local entities responsible for conserving Swainson's hawks; largely because citizens have spoken out. One is by the City of Elk Grove which purchased approximately 750 acres of vineyard and removed the vines to provide restored foraging habitat. The acres will be used to offset impacts to Swainson's Hawks from development projects within the City.

Citizens who get involved can influence projects and planning processes and counter some of the proposals to develop open space. The informed citizen can make accountable the elected officials who vote for projects that do not improve the quality of life for residents, or preserve open space and agricultural land for future generations.

FOSH CONSERVATION OBJECTIVE: *Help citizens get involved, to understand the legal processes and protections, and how and when to get Swainson's Hawk protection measures in place*

Lastly, local governments when writing CEQA documents or approving new developments do not always require consultation with CDFG. There are times when known impacts occur that CDFG is consulted for permits and mitigation measures, but not on a regular basis.

Development can also result in loss of nesting trees, or use of historical nesting trees by Swainson's hawks. Many times trees within developments are removed to make way for new roads, shopping centers and houses. Many developers would prefer to pay a mitigation fee for removing trees and start with an empty site than design projects around existing trees. Planting new trees as part of a development has benefits including habitat value, climate change, air quality etc. However, there is a lag time of many years between the value of lost mature trees and when newly planted trees will be large enough to take their place. As the urban edge changes nest trees that were once surrounded by agricultural fields may also end up adjacent to urban areas. Pairs may still use those trees especially if foraging habitat is close and the pair is familiar with the territory but over time the territory may not continue to be occupied. Nesting trees can legally be removed outside of the nesting season, so when birds return their options for nesting continue to dwindle. Removing nest trees does require mitigation. In a small number of cases nest trees are knowingly removed illegally, either during the nesting season or without providing mitigation.

Habitat Conservation Planning

One of the conservation strategies the State and local governments are using to respond to urbanization is to develop an HCP/NCCP. As **Table 1** shows the plans cover large areas and long time-frames. That makes them an important process for citizens, species experts, and groups to be involved in and stay committed to. The development and mitigation areas, and mitigation ratios are identified and agreed upon by the resources agencies and permittees and are not changed throughout implementation. HCP/NCCP allow for a streamlined permitting process so although the projects still need to abide by CEQA, the mitigation ratios and types are predetermined by the HCP/NCCP requirements. If the conservation measures developed do not go far enough to protect the covered species they are difficult to change. Although annual monitoring is normally required, it takes a long time before the success or failure of an HCP/NCCP strategy is determined. By then there may not be a lot of options left to help species that have not recovered or maintained their population.

Agricultural Habitat Changes

Not all crops or habitats provide high prey density or good hunting conditions at the right time of the year for Swainson's hawks to use. Crops that are primarily used by Swainson's hawks are

Swainson's Hawks are usually a covered species if a HCP/NCCP is being developed within their range. Because the plans try to cover many species in several different habitats another species may take priority or species get lumped together. When this happens Swainson's Hawks are usually grouped with upland species, and upland habitats (including upland edge habitats) are counted towards fulfilling their mitigation needs. For Swainson's Hawks to continue to thrive in all of their locations particular attention should be made to preserve agricultural land, and of that land a large portion should be in alfalfa.

FOSH CONSERVATION OBJECTIVE: *Work with the resources agencies, partner organizations, and the public to preserve agriculture and promote quality mitigation for loss of farmland within the Swainson's hawk's range*

irrigated hay crops (alfalfa), low stature row crops, pasture, and fallow fields. Although some crops such as vineyards or corn at maturity are used less, they provide foraging opportunities at certain times of the year as do grasslands and dry farmed areas. Maintaining large tracts of crops most used by Swainson's hawks is the way to maintain and potentially increase the density of nesting pairs.

Cropping choices depend on factors such as soil type, water availability, crop rotation requirements, and the price of seed, fuel, fertilizers, and crop market price. Some issues that can change the agricultural landscape enough to impact Swainson's hawks are water availability, conversion of Swainson's hawk dependent crops to other habitat types, and crop changes in response to climate change.

Water Availability in a Changing Environment

Without water, crops that provide important foraging habitat for Swainson's hawks and food for people cannot be grown. With climate change, increasing population and the economics of using water in the field or selling it for urban use, the politics of water supply and use will continue to get more complicated. In California surface water is regulated, but ground water is not. In the Sacramento area there are several efforts working to balance ground water extraction, and surface water uses to keep water for residents, energy generation, agriculture and ranching practices, and wildlife (such as the Cosumnes River corridor) in balance.

Unlike fish species terrestrial wildlife does not always have a direct relationship to water, or priority when it comes to environmental water. Keeping water rights with the land is important to ensure that water is there for use by future generations and not sold to other entities unless it is justified by water conservation or other ecologically-based mandates. If water is unavailable for agriculture Swainson's hawks lose important foraging habitat. It is especially important to ensure that water is available on mitigation areas to grow the right crops that Swainson's hawks will use.

Agriculture can respond to water conservation needs and has with the installation of sprinklers and drip systems, but those systems are expensive and have higher maintenance costs. They are also not compatible with all crop types. Water availability and options to reduce water consumption should be considered when deciding how best to maintain Swainson's hawk foraging habitat. In the future water availability will continue to be an issue if water continues to shift to the urban user. FOSH is a big supporter of water conservation by all users and reusing and recycling so more water is available for environmental needs.

An example of a win/win strategy that FOSH supports is the Sacramento County draft 2010 General Plan proposal to recharge ground water with recycled waste water using 2000 acres of alfalfa or pasture south of Elk Grove. This proposal combines water conservation with wildlife protection and agricultural productivity and sustainability.

Conversion of Agriculture to Wetlands and Native Grassland

The State and Federal resource agencies involved with permitting the take of species and their habitat often have to address multiple species with multiple habitat needs. When mitigation is developed to offset the impacts from multiple species, non-native annual grasslands or agricultural land is often converted to wetlands, vernal pools, or native grasslands. These three habitats have historically been the most affected by losses and therefore become the focus of many mitigation packages. Emphasis should be placed on preserving the remaining networks of these habitats, and not just creating them elsewhere. FOSH supports preserving and creating these habitats, as they do provide very important habitat and ecological value.

Unfortunately when agricultural land is used to create other habitats it means habitat lost for the Swainson's hawk as well as other species that agricultural lands support. That loss usually goes unmitigated.

Although Swainson's hawks used grasslands prior to adapting to agricultural areas the landscape was very different. Prior to the settlement of California by Europeans, there was more open space, both in wetland and upland so hawks could maintain survival, even if they had lower population densities. The species' range was larger in California and the habitats they occupied were very different in make-up then they are today. The types of native grasslands historically most used by Swainson's hawks have been largely destroyed for farming and by the invasion of non-native species (Glen Holstein pers. comm. 2008). Since that time, Swainson's hawks have adapted to agricultural practices, and are found using their preferred habitat in greater densities than in other habitats. Because Swainson's hawks have adapted so specifically to agriculture converting back to grasslands does not mean that Swainson's hawks would adapt back. See the natural history section for information on the genetic bottleneck the species went through in response to the last large scale change to their environment.

FOSH supports the restoration of grasslands, vernal pools and wetlands; but those habitats should not be counted towards or substitute for Swainson's hawk mitigation when croplands are being removed. When agriculture is being removed the mitigation should be agricultural preservation.

Climate Change

The effects of climate change on California are still being studied, but sea level rise, a rise in temperature and water supply shortages are already happening. Climate change is already affecting the ranges and migration patterns of some of the wildlife species that have been studied. An area of research that has come to the forefront is adaptation strategies by species and what we can do to ensure long-term species survival in a changing climate.

One of the areas most likely affected by climate change is the Sacramento-San Joaquin Delta, since many of the islands are below sea level. The legal Sacramento-San Joaquin Delta covers approximately 725,600 acres, of which approximately 104,600 acres are natural vegetation, 555,100 acres agriculture and urban development, and 65,900 acres are open water or inundated lands. Parts of Yolo, San Joaquin and Contra Costa Counties are in the Delta. Although not all of the delta islands provide high quality foraging and nesting habitat for Swainson's hawks, effects of climate change could result in salt water intrusion that would make agricultural operations in the Delta and

One of the results of climate change research is that the State is researching adaptation strategies, for the people and species inhabiting the state. One of the promising ideas is carbon sequestration – storing carbon which is one of the gases that contributes to climate change. Habitats and trees may be sold for credits as a way to store carbon and slow the amount of carbon being put in the atmosphere. As this idea emerges there are different ways to promote open space and agricultural landscapes. One is through the cap and trade process which would require entities to purchase offsets of carbon over a certain amount. Trees and croplands could be used to store the carbon. Also feasible is reducing shipping emissions by selling locally and reducing air pollution from diesel pumps, using clean technologies on agricultural equipment.

Loss of foraging habitat also means the loss of valuable agricultural land. Buying local produce supports farming within the region, lowers climate change impacts by reducing shipping emissions and provides greater quality of life for Californians.

FOSH CONSERVATION OBJECTIVE: *Keep Swainson's Hawks and agricultural practices upon which Swainson's Hawks depend at the forefront of climate change science*

water deliveries to agricultural operations south of the delta difficult.

The California Department of Water Resources is trying to resolve issues surrounding water transfers and ecosystem health in the Delta by developing a Bay Delta Conservation Plan. The process has just begun, but providing more habitat for sensitive fish species may be the impetus to restore some of the Delta islands to shallow water habitat. Loss of uplands due to creation of shallow water habitat (either intentional or unintentional) could have a large effect on the population of Swainson's hawks by reducing prey density and suitable foraging lands and putting more upland wildlife into less space in areas bordering the Delta.

Impacts from increasing temperatures and changes in rainfall patterns will not only occur in the Delta but throughout California. If agricultural patterns change in response to climate change it could also affect the Swainson's hawks range. The suitability of certain regions to continue to grow certain crops may change in response to water availability and temperature increases. Corn, sugar cane, and grasses are being planted for use in ethanol production. Ethanol crops are expected to expand to meet the demand of instate production of ethanol fuel products. The market price for energy crops could result in farmers shifting to those crops.

Other potential indirect impacts may come from practices aimed at mitigating climate change. The future agricultural landscape could change from existing crops to grasses that can be used as a carbon sequestration crop. Changing crop types to ones less frequently irrigated and harvested and that would store carbon for a longer time period could still provide habitat. However, research is needed to understand the potential scale of the changes and how that could affect the range and reproductive success of the Swainson's hawk.

Another impact could come from green energy such as solar fields or wind farms placed in Swainson's hawk habitat. Wind turbine projects are being proposed in new areas around the state, not just the five major wind areas. Steps are being taken to study ways to reduce their impacts on birds, but in areas that have high raptor use the impacts remain high. The desert is the focus of solar fields in the state, but other sunny locations near urban areas could become prime solar sites. Solar fields cover the land and make the area undesirable habitat. Urban solar results in less habitat destruction and can be installed in the same area that the energy is needed. Addressing the habitat changes that are likely to come from climate change and our response to climate change in conjunction with the species response to climate change will be an important task to ensure species survival.

Conservation Opportunities

Importance of Developing Quality Mitigation and Higher Mitigation Ratios

All agricultural land that is lost to development and provides habitat for Swainson's hawk should be mitigated for several reasons. If all agricultural types are mitigated then there will be less of an incentive to plant crops that are less favorable as Swainson's hawks forage prior to development occurring. There is also more equity amongst developers and better mitigation planning if mitigation is established for every acre lost. Good mitigation planning is needed for all species in all habitats and not just agricultural land.

Protecting agricultural lands in California through conservation easements is the first step in maintaining Swainson's hawks populations, minimizing the impact of climate change, providing jobs, and making the quality of life for the people who live here better.

Different habitat scenarios have been tried to mitigate for project impacts to Swainson's hawks. In some instances very little agricultural lands are being set aside (East Contra Costa HCP) or ratios are very low (Natomas Basin HCP). Many mitigation projects have resulted in the reduction of agricultural lands and instead of agriculture as mitigation, grassland or vernal pools are set aside as Swainson's hawk foraging habitat. For example, in the East Contra Costa HCP Swainson's hawks are lumped with the grassland species. Another example is Swainson's hawk mitigation is allowed at Laguna Terrace East Mitigation Bank which is also approved for vernal pool mitigation. While it is important for these habitats to be set aside they do not provide the foraging opportunity that irrigated hay crops do.

One of the rationales behind low mitigation ratios is the expectation that by enhancing existing agricultural crops it will make up for the larger habitat losses. Even at a 1:1 ratio 50 percent of the foraging habitat is reduced. For example if a project removes 1000 acres of foraging habitat and they provide 1:1 mitigation 1,000 acres will be preserved. The end result is of 2,000 acres that were in agriculture; 1,000 are gone and 1,000 are preserved (50 percent loss). No studies have shown that you can enhance agricultural areas and gain 50 percent (or greater if ratios are lower) more use by Swainson's hawks. To conserve the species both preservation of agricultural landscapes, and restoration from poorly used crop species to irrigated hay crops is needed.

Not only are mitigation ratios important, but mitigation "double-dipping" should be prohibited. Double-dipping can occur when mitigation is layered on the same parcel, or when mitigation is allowed in areas which are already off-limits to development. In the first example, the same acres are sold as mitigation for different species. This lowers the value of the mitigation and in effect reduces the ratios even more. Once an acre of habitat is provided as mitigation it should not be available to be sold for something else. If there is a 500 acre bank then it should be a total of 500 acres available, not 500 for Swainson's hawks and 30 for species B and 100 for species C. This continually erodes the amount of open space that is set aside. Although the parcel may provide habitat for and can be sold for multiple species the acres available should be based on the physical number of acres in the mitigation area.

The second example of double-dipping occurs when mitigation is provided in areas which are already off-limits to development. If the area is off-limits to develop it is, in effect being set aside even if there are not easements on the land. In some cases there are easements on the land or

it is already being conserved and managed for wildlife. One example is in the Natomas Basin, Sacramento. The CDFG permit for existing development sets aside a one-mile buffer along the Sacramento River. The City and the County are going through the process of identifying additional areas to develop in the basin and one of the scenarios includes providing most of the mitigation within the one-mile buffer. The one-mile buffer should be considered as already set aside for wildlife since no development is permitted there under existing permits.

Developing quality mitigation with high mitigation ratios is important because:

- When development is completed it may be the only habitat available for a species in a given area
- The higher the mitigation ratio the lower the overall loss of habitat for the species
- Providing mitigation in the same type of habitat that is being lost is the only way to mitigate for specific habitat losses
- Once mitigation ratios and types are developed in an HCP they can set precedence and are do not change over many years

Importance of Agricultural Land Preservation

Urbanization affects many species, not just the Swainson's hawk. Knowing the species that are affected by urbanization, their habitat needs, their status on sensitive species lists, and which agencies (State or Federal) are responsible for protecting them can help strengthen citizens' arguments for protecting open space and habitat. Taking an ecosystem approach has the most benefit by protecting multiple species, multiple habitats, and overall ecosystem health which in turn benefits people by securing cleaner air and water, healthier open spaces, and a better quality of life.

Species diversity should be as great as possible and citizens should encourage mitigation of all habitats. Many wildlife species and peoples' livelihoods in the Central Valley depend on agricultural land. Some of the species that use agricultural land/pasture and their current legal status can be found in **Table 2**. Many of the bird species are migratory and are of concern to national and international wildlife protection efforts. The table focuses on species that use agricultural land since that is what Swainson's hawks depend on the most. The table is not suggesting that these species are more valuable than others that are Rare, Threatened or Endangered or ones that used other habitat types.

FOSH is pleased that its partners in Habitat 2020 in Sacramento County recognize the important linkage between agriculture and habitat and have included agricultural preservation in the Heartland Project goals. (See http://www.caheartlandproject.org/.)

Agricultural preservation benefits the many species dependent on this habitat type as well as the people living in the region and the state of California by:

- Conserving open space around urban areas
- Increasing quality of life, reducing sprawl (by establishing an urban boundary)
- Providing outdoor education opportunities for young people
- Providing habitat for agricultural dependent species
- Providing jobs and tax revenue that are not dependent on housing starts
- Providing places to recycle waste water and recharge groundwater basins
- Growing crops locally that are available to California consumers

Table 2: Species that use agricultural lands

Common Name	Scientific Name	Status Federal/State
Snowy Egret	Egretta thula	None
Great Egret	Ardea alba	None
Great Blue Heron	Ardea herodias	None
White-faced Ibis	Plegadis chihi	None
White-tailed Kite	Elanus leucurus	NA/Fully Protected
Northern Harrier	Circus cyaneus	NA/Species of Special Concern (breeding)
Red-tailed Hawk	Buteo jamaicensis	None
Swainson's Hawk	Buteo Swainsoni	NA/Threatened
American Kestrel	Falco sparverius	None
Greater Sandhill Crane	Grus canadensis tabida	NA/Threatened and Fully Protected
Lesser Sandhill Crane	Grus canadensis canadensis	NA/Species of Special Concern (wintering)
Mountain Plover	Charadrius montanus	NA/Species of Special Concern (wintering)
Long-billed curlew	Numenius americanus	None
Dunlin	Calidris alpina	None
Black tern	Chlidonias niger	NA/Species of Special Concern
Short-eared Owl	Asio flammeus	NA/Species of Special Concern (breeding)
Burrowing Owl	Athene cunicularia	NA/Species of Special Concern (breeding)
Loggerhead Shrike	Lanius ludovicianus	NA/Species of Special Concern (nesting)
Yellow-billed Magpie	Pica nuttalli	None
American Pipit	Anthus rubescens	None
Grasshopper Sparrow	Ammodramus savannarum	NA/Species of Special Concern (nesting)
Modesto Song Sparrow	Melospiza melodia	NA/Species of Special Concern
Yellow-headed Blackbird	Xanthocephalus xanthocephalus	NA/Species of Special Concern (breeding)
Red-winged Blackbird	Agelaius phoeniceus	None
Tricolored Blackbird	Agelaius tricolor	NA/Species of Special Concern (breeding)
Giant garter snake	Thamnophis gigas	Threatened/Threatened

Importance of Purchasing Locally Grown Crops

Agricultural lands do not necessarily need conservation easements to be preserved if consumers support local farms. Purchasing locally grown food and products at the farmer's market, the grocery store, or directly from growers supports local farms and helps the local

economy. Not only can purchasing locally grown crops have the same effect as preserving the land through conservation easements, it helps make farming a viable economic alternative to selling land to developers.

Alfalfa is an important crop economically to California. Alfalfa is also the source of feed for livestock which provides a variety of products to Californians. Whether it is meat, cheese, milk or alfalfa sprouts alfalfa is part of the food chain. Consumers can promote good farming practices and support local farms by understanding where the products come from that they purchase.

In addition to the reasons listed above purchasing locally grown products can have the following additional benefits:

- Reduces climate change impacts from transporting food long distances from fields to table
- Supports the local economy including jobs, taxes, farmers markets, and revenue streams that are not dependent on housing starts
- Provides opportunities for rural areas to prosper as rural areas
- The Role of Native Plants

FOSH supports incentives to farmers to use native plant hedgerows, pond and canal borders to support biodiversity in the rural landscape. In some cases, restored native grasslands may provide a suitable prey base for Swainson's hawk foraging but current data suggests only irrigated crop and pasture lands can supply the prey base on the scale needed to support the existing population density. Because hay crops are used by the dairy industry there are economic reasons to grow them. Determining whether native grasslands could be planted in large enough tracts to support Swainson's hawks and whether the management of the grasslands provide foraging opportunities (mowing, harvesting) are some additional questions to be addressed.

Safe Harbor Agreement

There is California Fish and Game Code that allows for developing voluntary agreements that enhance habitat to benefit wildlife and protect landowners from take of sensitive species under normal agricultural practices. The federal government has a similar program which is called Safe Harbor. The state law is set to expire in 2011 unless an extension is adopted by the legislature. The state law is specific to agricultural practices and does not include the conversion of agricultural land to other uses. In FOSH's experience this law is not implemented, but does support the idea of enhancing habitat values while protecting landowners for specific activities.

Working With the CDFG to Respond to the Threats

The challenges facing the hawk reflect large scale economic and environmental trends that are also challenging our society. Creating sustainable economic progress and environmental protection will happen through broad scale changes in California's economy and urban design, through outreach and education, and a shift in society's priorities. As this occurs the benefits will be not just to Swainson's hawks but to the people who live in California.

FOSH CONSERVATION OBJECTIVE: *Continue existing and develop new partnerships with farming groups, conservation organizations, and educators to promote the value of agricultural lands in California.*

As examples, FOSH is a member of the California Rangeland Conservation Coalition and Habitat 2020.

CDFG is the responsible agency for implementing mitigation measures, developing recovery plans and protecting species on CESA. They are also the state trustee agency for all of the state's natural resources. CDFG developed a staff report with mitigation guidelines (1994) for Swainson's hawks. The guidelines are neither mandatory nor regulatory, but were developed to give guidance and consistency for Swainson's hawk mitigation. The guidelines serve as a baseline for developing mitigation measures.

FOSH has been, and should continue to be a stakeholder in the NCCP development process. The plans are one of the ways to ensure quality mitigation is implemented on a large scale. Pushing for high mitigation ratios and in-kind habitats for all of the species covered in the plans ensures more open space is preserved.

CDFG has also developed a Wildlife Action Plan that outlines policies that the department can use in response to what they see as the biggest threats to biodiversity in the state. CDFG will be reviewing and updating the Wildlife Action Plan in the near future.

CDFG is in the process of developing a climate change action plan to address species conservation, biodiversity, and adaptation and mitigation strategies in response to the effects of climate change. There is a habitat and biodiversity working group which has the task of developing adaptation strategies to maximize species and habitat resiliency. They will be developing strategies with stakeholder input.

There are opportunities for FOSH to work with CDFG and encourage them to take into account the Swainson's hawks needs while supporting biodiversity in the state. Some of them include:

- Encourage CDFG to develop a recovery plan for Swainson's hawks
- Encourage CDFG to implement policies from the wildlife action plan
- Encourage the conservation of agricultural land in the state
- Work to get higher mitigation ratios of at least 1:1 for lost agricultural land
- Review and give input to documents when they become available for public review
- Support CDFG's role as responsible agency

Other Important Issues

Other important issues that FOSH is tracking include harassment, injury/death from collisions, pesticide use and disease in the Swainson's hawk's summer and winter ranges.

Harassment

Harassment of State listed species is an illegal activity. To handle a Swainson's hawk the state requires that you hold a permit. Do not approach or attempt to capture a Swainson's hawk. During the nesting season Swainson's hawks can be particularly vulnerable to harassment (physical or audible). Harassment can be one time occurrences by individuals not familiar with the fact that birds are nesting or can be ongoing due to construction noise or other large scale activity. Birds that nest in one location are familiar with the usual noises that occupy the same space. Some may be used to freeway noise, others familiar with the sound of farm equipment, others may be more used to quiet and therefore a noise or activity threshold cannot be prescribed for the species. Harassment can occur from noise, or any activity that birds would not have usually encountered at their nest site. CDFG has guidance on setbacks and when a biological monitor should be on the site.

If birds are calling, off the nest in hot weather, not protecting eggs or chicks, or diving and circling it means they are agitated. If citizens see that harassment of birds is the cause of their agitation they should contact the CDFG wardens by calling 1-800-DFG CALTIP. Please also report any concerns you have about citizen nest monitoring to FOSH at 916-447-4956. Citizens who are monitoring nest progress should remain at a distance and respect the signals given by the Swainson's hawks.

Hunting Swainson's hawks is also an illegal activity. Both State and Federal law prohibit hunting raptors and migratory birds, besides as provided by hunting regulations. FOSH encourages nest monitoring for its education value, but is concerned about maintaining distance and decorum in the vicinity of nesting Swainson's hawks.

Injury/Death from Collisions

Collisions include those with cars, power lines and wind turbines. Collisions with cars are not likely to be reduced as they usually occur when cars are traveling at high speeds and the bird is hunting along the side of the road. Preserve areas that provide habitat to Swainson's hawks should be as isolated as possible so car traffic is minimal. However, where roads bisect wildlife preserves, there is a need to reduce traffic and speed to protect biodiversity of the preserve.

Swainson's hawks don't appear to be as affected by power lines in the Central Valley as other species such as Red-Tailed hawks since they don't normally nest, perch or hunt from power lines. The populations that use power line poles to perch on are in Klamath Basin and Owens Valley. Power lines should be built or retrofitted to a bird safe design according to industry standards in areas where raptors and eagles occur. Information on bird safe design is available through the Avian Power Line Interaction Committee (APLIC) www.aplic.org/ which issues manuals on bird safe design for electrocution and collision. FOSH has worked with Sacramento Municipal Utility District (SMUD) to promote avian safety. SMUD and Pacific Gas and Electric (PG&E) have adopted raptor safe policies on their power lines. So far wind farms in California have not been built in prime Swainson's hawk areas but as additional wind farms are

considered the species should be in the forefront of any planning efforts. In some cases roads though preserves should be considered for closure and rural road widening should be avoided.

Pesticide Use

Using pesticides to kill the prey base that Swainson's hawks (and other species) depend on can be harmful if the predator comes in contact with contaminated prey. As mentioned above in the Natural History section, Swainson's hawks were being killed in the wintering grounds due to pesticide use, but it is no longer legal to use that pesticide in Argentina. Pesticide manufacturing companies and the United States government should ensure that the correct application should be used in the United States as well as in other countries. Legal pesticides used illegally can lead to secondary poisoning from eating contaminated prey.

Even when pesticides have been banned in the United States, American companies may still manufacture them here and export for use in other countries. This can have repercussions to wildlife, to the people applying the pesticide, and even to the people in the United States that consume the produce that is imported. If pesticides are banned for use here because of harmful effects they should also be banned from export.

Disease

Disease can always strike a population or a species and can have devastating effects. West Nile Virus was one such disease that affected bird species in the Central Valley, but to date does not seem to have impacted Swainson's hawks in large numbers. Because disease can spread easily when birds are roosting, or foraging together and can be passed from parents to young it is important to keep the population as strong as possible. By keeping genetic diversity strong and the range of Swainson's hawks large it is possible to limit the impacts of diseases on the species.

Promoting Conservation on the Wintering Grounds

The priority issues for Swainson's hawks are found not only in California but also in the wintering grounds. Several of the FOSH board members have visited the wintering grounds twice (1998, 2007) but lack the presence there to build the necessary social infrastructure to share information about FOSH and Swainson's hawks. In 1998 a dense area of winter use was the State of Nayarit, Mexico. In the 2007 visit to the same areas crop conversions not favorable to Swainson's hawks were observed. The President of FOSH also became aware of the Nayarit Winter Bird Festival sponsored by the State of Nayarit. This offers an opportunity to participate in building partnerships in the wintering grounds by promoting ecotourism as well as educating local people about the hawk.

A strategy needs to be developed that takes into account language and cultural differences that can inform people of the importance of Swainson's hawks and their survival. Agricultural lands in the wintering grounds are as important as in their breeding areas; FOSH can develop information on the overall importance of biodiversity and Swainson's hawks.

Objectives: How FOSH Can Impact Swainson's Hawk Conservation

FOSH CONSERVATION OBJECTIVE: *Continue to increase outreach and education to share FOSH's story and information on Swainson's hawks*

- This should be accomplished in conjunction with the goals in the FOSH Strategic Plan (tabling at fairs, website, newsletter)
- Design bi-lingual outreach programs targeting both US residents and residents of countries that provide wintering grounds and that stress the importance of biodiversity, agricultural, and non-agricultural habitats.
- Expand outreach as feasible to new areas in California and the wintering grounds
- Work with the broader raptor support community to pursue a common public education agenda

FOSH CONSERVATION OBJECTIVE: *Use legal means as necessary to protect Swainson's hawks and their habitat in California*

- Ensure that protection laws are enforced
- Promote state wildlife protection law changes that will be more protective
- Work closely with CDFG to understand and support conservation programs
- Provide additional oversight of how mitigation funds for lost Swainson's hawk habitat are used.
- Require accountability for counties, cities and other mitigation managers by evaluating mitigation programs
- Use litigation as needed

FOSH CONSERVATION OBJECTIVE: *Continue existing and develop new partnerships with farming groups, conservation organizations, and educators to promote the value of agricultural lands in California*

- Promote a healthy local agricultural economy
- Demonstrate the connection between the Swainson's hawk forage crops and consumer food products
- Encourage people to support agriculture by buying local produce
- Promote open space for people and wildlife species
- Support efforts for a Green economy
- Promote water recycling and lowering water use on agricultural land
- Can lower climate change impacts
- Work with groups such as the Farm Bureau that support mitigation for farmland
- Address the loss of agricultural lands as they are converted to other important habitat types
- Support groups such as Habitat 2020 and the Heartland Project

FOSH CONSERVATION OBJECTIVE: *Work with the resources agencies, partner organizations, and the public to preserve agriculture and promote quality mitigation for loss of farmland within the Swainson's hawk's range*

- Promote quality mitigation in high ratios, in locations that are going to benefit the species and as close to the impacts at possible.
- Ensure annual reporting by local government of lands developed and lands preserved/enhanced as mitigation to gauge trends in the region
- Maximize mitigation for all cropland habitat within the Swainson's hawk range and promote conservation easements
- Maximize tree plantings that Swainson's hawks can use in future years
- Work to preserve nest trees – even in the non-nesting season through incentives and cooperation with landowners and working with CDFG
- Work to increase mitigation ratios to greater than 1:1
- Work to preserve roost sites
- Promote urban development within existing cities and oppose land use changes detrimental to Swainson's hawk outside these boundaries
- Support incentives to landowners and safe harbor agreements to maintain and improve habitat values on farms and ranches

FOSH CONSERVATION OBJECTIVE: *Help citizens get involved, to understand the legal processes and protections, and how and when to get Swainson's hawk protection measures in place*

- Understand all of the species that may be affected by a decision and promote an ecosystem approach
- Get citizens involved in local processes such as workshops/meetings that cover overall planning and growth
- Train the public to understand local laws and the process that specific projects need to go through prior to being approved and how and when to intervene
- Train volunteers to provide comments on CEQA and planning documents to strengthen hawk conservation measures and enforcement actions
- Hold elected officials accountable for decision affecting open space and hawk habitat
- Educate elected officials on the benefits of open space and quality of life
- Educate the public on decisions elected officials are making

FOSH CONSERVATION OBJECTIVE: *Keep Swainson's hawks and agricultural practices upon which Swainson's Hawks depend at the forefront of climate change science*

- As adaptation strategies are developed work with agencies and researchers to ensure that Swainson's hawks are included
- As adaptation strategies are developed for California residents keep agricultural practices in the forefront and support the sustainability of agriculture in the state
- Promote the preservation of agricultural lands that will be available in the future (with climate change scenarios in mind)

FOSH CONSERVATION OBJECTIVE: *Support Swainson's hawk research*

- Work with the Swainson's Hawk TAC, wildlife agencies, and university researchers to develop research needs and publication of research results
- Convey research results to the public in understandable terms
- Seek foundation support for quality research on California's Swainson's hawk populations and species that use the same habitats
- Work with a broader raptor coalition on a research agenda for raptor protection

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Acronyms

APLIC	Avian Power Line Interaction Committee
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
ESA	Federal Endangered Species Act
FOSH	Friends of the Swainson's Hawk
HCP	Habitat Conservation Plan
NCCP	Natural Community Conservation Plan
NOAA	National Oceanic and Atmospheric Administration
SACOG	Sacramento Area Council of Governments
TAC	Technical Advisory Committee
USFWS	U.S. Fish and Wildlife Service