

## **DRAFT**

### **Swainson's Hawk Habitat Model**

**Nesting Habitat:** Nesting habitat includes all cottonwood-willow riparian forest, valley oak riparian forest, and willow scrub located in open terrain. Open terrain is defined as areas where these land cover types are located west of the slope break between the eastern foothills and the valley floor. East of this slope break, these land cover types are primarily confined by steeply sloped terrain that would not be expected to be used for nesting by Swainson's hawks. Because this slope break does not correspond to a consistent elevation from north to south within the planning area, it was visually delineated from topographic maps.

**Assumptions:** In the Central Valley, Swainson's hawks typically nest in large native trees such as cottonwood, willow, and valley oak. These trees (and thus most nest sites) are most often found along stringers of remnant valley and foothill riparian forest and the edges of oak woodland habitats (Estep 1984; Schlorff and Bloom 1984; England et al. 1997). However, Swainson's hawks also nest in a variety of other native and nonnative trees and habitats such as roadside trees, windbreaks, oak groves, isolated trees, and trees around rural residences. These potential nesting sites are not captured in the habitat model if their spatial extent is smaller than the minimum HCP/NCCP land cover type mapping unit. Consequently, this model may not encompass every possible nesting site. The extent of nesting habitat that is not captured by the model is considered to be relatively small compared to the extent of nesting habitat that is captured by the model.

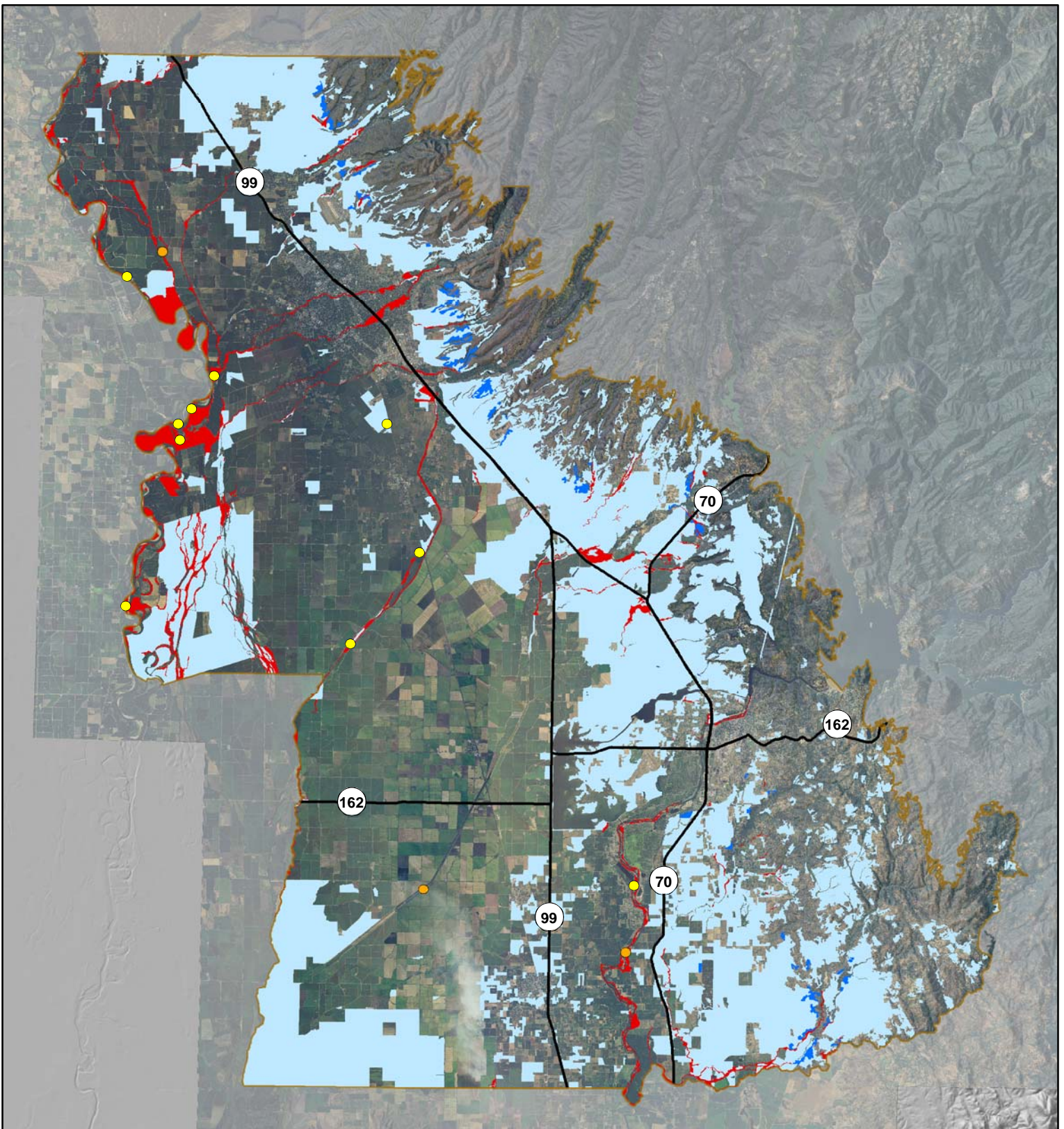
**Nesting and Foraging Habitat:** Nesting and foraging habitat includes all blue oak savanna and blue oak savanna with vernal swale complex located in open terrain. Open terrain is defined as areas where these land cover types are located west of the slope break between the eastern foothills and the valley floor (see full description above).

**Foraging Habitat:** Swainson's hawk foraging habitat includes all irrigated cropland, irrigated pasture, grassland, grassland with vernal swale complex, vernal pool, altered vernal pool, and managed wetland land cover types within 10 miles of known nest sites and modeled nesting habitat.

**Assumptions:** In the Central Valley, foraging habitat consists primarily of crop lands and pasturelands. Swainson's hawks feed primarily on small rodents, usually in large fields that support low vegetative cover (to provide access to the ground) and high densities of prey (Bechard 1982; Estep 1989). These habitats include hay fields, grain crops, certain row crops, and lightly grazed pasturelands. Fields lacking adequate prey populations (e.g., flooded rice fields) or those that are inaccessible to foraging birds (e.g., vineyards and orchards) are rarely used (Estep 1989, Babcock 1995, Swolsgard 2003). Although nesting Swainson's hawks may forage to distances greater than 10 miles from nest sites, the California Department of Fish and Game uses a flight distance of 10 miles between active nest sites and foraging habitat as a standard for conducting analysis of impacts on foraging habitat.

## References

- Babcock, K.W. 1995. Home Range and Habitat Use of Breeding Swainson's hawks in the Sacramento Valley of California. *Journal of Raptor Research* 29:193–197.
- Bechard, M.J. 1982. Effect of Vegetative Cover on Foraging Site Selection by Swainson's hawk. *Condor* 84:153–159.
- England, A.S., M.J. Bechard, and C.S. Houston. 1997. Swainson's hawk (*Buteo swainsoni*). In A. Poole and F. Gill (eds.), *The Birds of North America*, No. 265. Philadelphia, PA: The Academy of Natural Sciences and Washington, DC: The American Ornithologists' Union.
- Estep, J.A. 1984. Diurnal Raptor Eyrie Monitoring Program. California Department of Fish and Game, Nongame Wildlife Investigations. Project Report W-65-R-1, Job No. II-2.0. Sacramento, CA.
- \_\_\_\_\_. 1989. Biology, Movements, and Habitat Relationships of the Swainson's hawk in the Central Valley of California, 1986–1987. California Department of Fish and Game, Nongame Bird and Mammal Section, Sacramento, CA.
- Schlorff, R., and P.H. Bloom. 1984. Importance of Riparian Systems to Nesting Swainson's hawks in the Central Valley of California. Pages 612–618 in R.E. Warner, and K.M. Hendrix (eds.), *California Riparian Systems: Ecology, Conservation, and Productive Management*. Berkeley, CA: University of California Press.
- Swolsgard, C.A. 2003. Nesting density and habitat use of Swainson's hawk in a vineyard landscape in northern San Joaquin County, California. Masters Thesis, California State University, Sacramento, 196 pp.



Legend

- Nest Site: CNDDDB
- Nest Site: Other Sources
- Planning Area Boundary
- Nesting Habitat
- Nesting and Foraging Habitat
- Foraging Habitat

Sources: CNDDDB: California Department of Fish and Game, 2007.  
 Other Sources: Altacal Audobon, personal communication, 2007.  
 Dave Bogener DWR, personal communication, 2007.  
 Jim Estep, personal communication, 2007.

**DRAFT**  
**Figure A.2: Swainson's Hawk**  
**Habitat Model**

This map presents outcomes of a draft habitat model that is described in the Covered Species Accounts of the HCP/NCCP. The purpose of the model is to identify areas within the planning area where the species occurs or could occur based on known habitat requirements. Please note occurrence data recorded here is based on available data and not representative of all occurrences.

