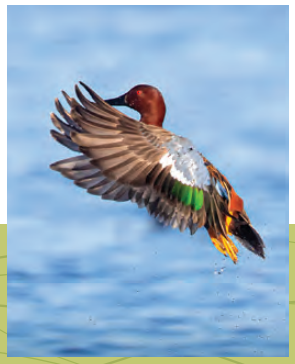
Wildlife known to use California Ricelands



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Introduction

California ricelands have become important "surrogate" wetland habitats for many wildlife species. In fact, there are 225 species that are known to commonly use California ricelands with an additional 53 species that have been documented in ricelands but are rare or infrequent users of these working lands.

With the extensive loss of about 95 percent of the native wetland habitats in the Central Valley, riceland habitats have become essential to the management of certain wildlife, such as waterfowl and shorebirds. Moreover, many special-status species have also successfully adapted to cultivated ricelands. For some wetland-dependent species, ricelands provide essential wetland-like habitat that has contributed to the stability of populations. In some cases, habitat provided by ricelands has helped to support population increases.

This report discusses the general values that California ricelands provide for wildlife. It also examines, in greater detail, the use of ricelands by special-status wildlife species and several other species that depend on the specially-designated shorebird habitat provided by ricelands.

The History of the Sacramento Valley and its Wildlife

Early in the nineteenth century, the Central Valley was characterized by large numbers of small creeks, sloughs, oxbows and major rivers that were subject to periodic flooding. The scouring associated with seasonal flooding created a mosaic of channels, depressions, lowland swamps, marshes, and hummocks across wide expanses of the Central Valley (Scott and Marquiss 1984). An estimated four million acres of wetlands, together with extensive grasslands, riparian forests, and valley oak woodlands, formed a complex mosaic of habitats that supported enormous flocks of ducks, geese, swans, cranes, shorebirds, various wading birds and other species.

> “The rice fields become temporary wetlands with enormous significance to bird populations wintering and breeding in the Central Valley.

In the mid-nineteenth century, the landscape of the Central Valley began to undergo a gradual conversion to one dominated by intensively managed agricultural lands, finally becoming one of the most productive agricultural regions in the world. This land conversion and significant loss of habitat resulted in substantial declines in the estimated 40 million waterfowl, and other waterbird populations that historically used the Central Valley (Elphick and Oring 2003). Despite this enormous habitat loss, over 10 million waterfowl continue to winter in California (California Department of Fish and Wildlife, unpublished data). During their annual cycles, large numbers of shorebirds, pelicans, egrets, herons, ibises, songbirds, and raptors use the Central Valley wetlands. The total annual waterbird count (including migrants) in the region has been estimated as high as 10 to 12 million (Gilmer et al. 1982).

With the gradual loss of wetlands in the Central Valley, wildlife has become increasingly dependent on suitable agricultural lands for food and cover. Certain types of agriculture — chiefly rice cultivation — help to sustain remaining populations by creating valuable habitat that provides functions similar to native valley habitats. Rice cultivation has provided surrogate wetland habitats that serve as essential breeding and wintering habitat for waterfowl, shorebirds, wading birds, and other wildlife (Elphick and Oring 1998). These habitats also provide food and cover for some reptiles, amphibians, and mammals.

These flooded ricelands are dynamic in their attraction to wildlife and in the habitat values they provide. Habitat quality varies with rainfall, site-specific flooding cycles, management practices, and the particular habitat requirements of each species.

While specific management practices can influence the value of ricelands (Elphick and Oring 1998), the mere presence of summer and winter-flooded habitat has provided more than 500,000 acres of wetland-like habitat in the Central Valley. This habitat, in conjunction with the abundant food source remaining in ricelands after harvest, has contributed to population increases of many wetland-dependent species. During the winter months, large flocks of water birds forage in flooded ricelands. These shorebird and waterfowl concentrations attract raptors, especially Peregrine Falcon and Bald Eagle. Unflooded ricelands also support large rodent populations, which in turn support hundreds of raptors, such as White-tailed Kites, Northern Harriers, Red-tailed Hawks, Swainson’s Hawks, American Kestrels and Short-eared Owls.

Overall, ricelands are known to be used by 215 species of birds (53 of these are rare), 37 species of mammals, 22 species of reptiles and 4 species of amphibians (Appendix A). Of these 278 species, 28 are currently considered special-status species. In addition, 17 of the bird species are part of a specially-designated habitat area that includes ricelands and adjacent wetlands of the Sacramento Valley. In addition to this list of species, this document will explore the significant role ricelands play in the life cycle of two main groups of birds: waterfowl and shorebirds.

The Role of Rice for Waterfowl

The Central Valley is an essential habitat area for waterfowl (ducks, geese, and swans). It serves as part of an annual bird migration corridor known as the Pacific Flyway. During the 1880s, an estimated four million acres of wetland habitat was available to waterfowl during the winter. Today, just over 219,000 acres of wetlands remain, supplemented by approximately 341,000 acres of winter flooded rice fields (Central Valley Joint Venture, 2020). This additional surrogate wetland acreage plays an enormous role in sustaining the waterfowl populations in the winter. In fact, just over 10 million waterfowl (ducks, geese, and swans) are estimated to use the Central Valley in the fall and winter each year (California Department of Fish and Wildlife unpublished data). Together, both rice and wetland habitats help establish the Central Valley as the most important waterfowl wintering area in the Pacific Flyway, supporting up to 60 percent of the total flyway population in some years (Central Valley Joint Venture 2020).

Migratory waterfowl rely on Sacramento Valley ricelands for both roosting and foraging habitat. Each year, up to 540,000 acres of land, mainly in the Sacramento Valley, are planted in rice (National Agricultural Statistics Service, 2020). Ricelands are flooded during the summer growing season, and as a result of straw burning legislation to improve air quality (Rice Straw Burning Act, 1991), many ricelands are also flooded following harvest in an effort to decompose rice straw (Brouder and Hill 1995). In total, many of these fields are flooded for up to eight months of the year, during which time the ricelands become temporary wetlands with enormous significance to bird populations wintering and breeding in the Central Valley. In addition to the surrogate wetland values they offer, ricelands also provide a high-value food source from the 346 lbs/ac of waste grain estimated to remain on the ground following the annual rice harvest in the Central Valley. In the Sacramento Valley, waste rice is estimated to make up 74 percent and 95 percent of the nutrient needs for wintering ducks and geese respectively (Central Valley Joint Venture 2020).

Rice farmers also enjoy a healthy symbiotic relationship with the 75,000 acres of managed wetlands in the Sacramento Valley. Ricelands and the adjacent wetlands share many of the same wildlife species as they move back and forth between the two habitats throughout the year. In addition, tailwater from rice fields provide an important source of surface water to flood Sacramento Valley's managed wetlands in the fall (CVJV 2020).

For a variety of reasons—including loss of wetlands, extended periods of drought on the breeding grounds, and loss of nesting habitat—populations of wintering waterfowl in California have declined dramatically since the late 1970s. Through the efforts of waterfowl conservation groups and the proactive management of both breeding and wintering waterfowl habitats by state and federal agencies, the decline in California's waterfowl population slowed, and then started to reverse in the late 1980s. The winter flooding of ricelands in the Central Valley has been an important factor in this recovery. This winter flooding has resulted in an apparent dependence of some waterfowl species on flooded ricelands. For example, over two million Northern Pintails were counted in recent years during January waterfowl surveys in the Central Valley (California Dept. of Fish & Wildlife). Heitmeyer and Raveling (1988) demonstrated this species' dependence on flooded ricelands during their study of foraging behavior and habitat preferences in the Central Valley.

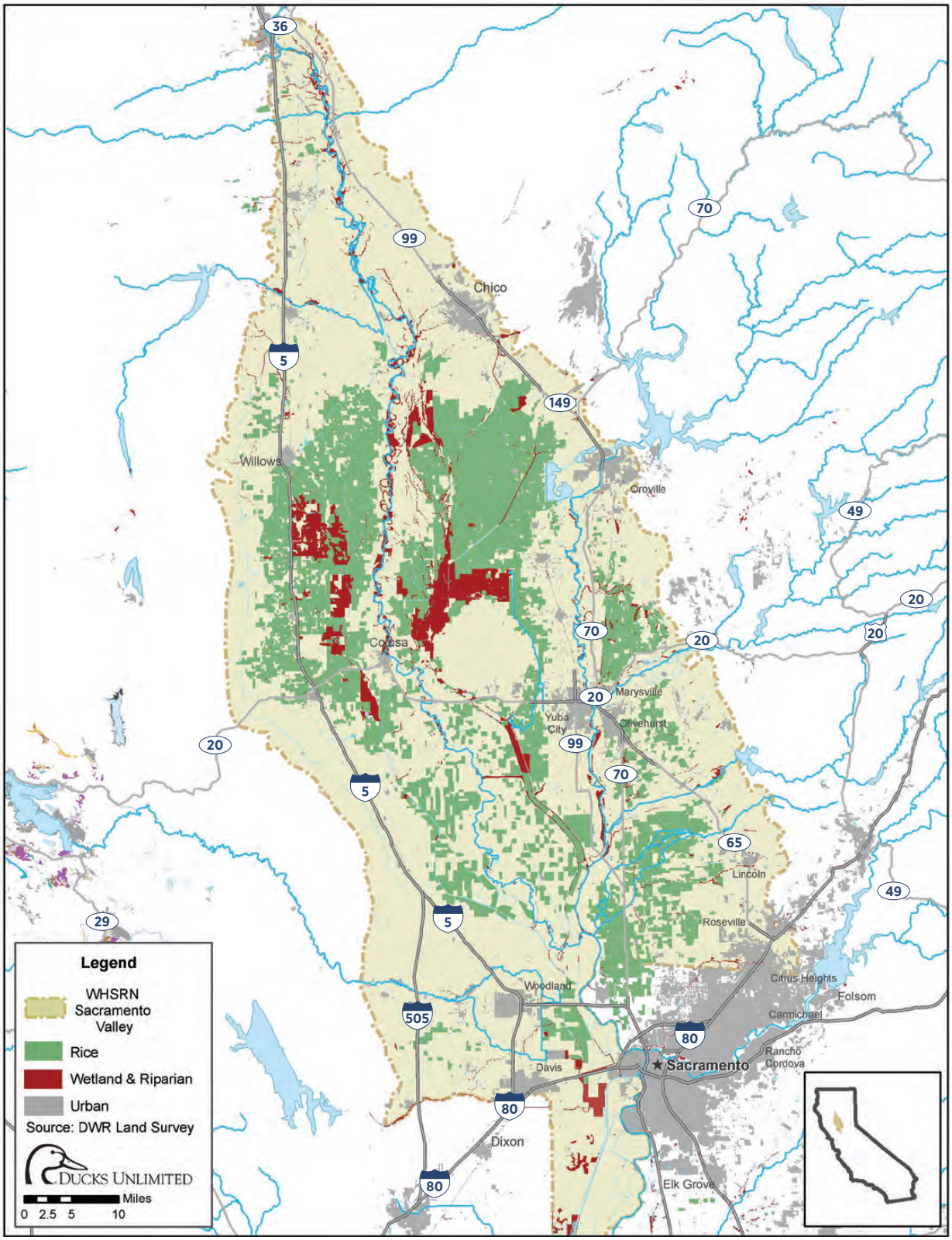
The Role of Rice for Shorebirds

Like waterfowl, shorebirds have benefited from ricelands in the Central Valley. The northern Central Valley is a site of international stature within the Western Hemisphere Shorebird Reserve Network (WHSRN) because of its importance to large numbers of wintering and migrating shorebirds (WHSRN 2003). Based upon endorsements from scientific reviewers, the Manomet Center for Conservation Sciences recommended that the ricelands and wetlands of the Sacramento Valley be designated as a "Shorebird Site of International Significance." With this action, the Sacramento Valley's ricelands (which comprise nearly 90 percent of the designated 620,000-acre area) are included within the Western Hemisphere Shorebird Reserve Network. The Sacramento Valley is one of the largest North American sites within this network to be formally recognized for providing this beneficial ecological environment. Figure 1, on page 8, provides a detailed map of this special shorebird habitat area.

When flooded, disked ricelands in this shorebird habitat area provide foraging habitat for a wide variety of shorebirds during fall, winter and spring seasons. In fact, the vast majority of California shorebird species are attracted to flooded fields (Elphick and Oring 1998, Day and Colwell 1998, Shuford et al. 1998, Elphick 2000). Highlighting the importance of flooded ricelands, extensive surveys conducted from 1992 to 1995 found that those fields held 23 to 30 percent of all shorebirds in the Central Valley (Shuford et al. 1998). Particularly high concentrations were noted in the rice-dominated Colusa, Butte, Sutter, Yolo, and American basins in the Sacramento Valley (Shuford et al. 1998).

Due to the importance of this area and the habitat that ricelands can provide, the BirdReturns program was started in 2014. This program, spearheaded by the Nature Conservancy in partnership with the California Rice Commission, utilizes a unique reverse auction system that allows farmers to submit bids and create shorebird habitat on their farms. BirdReturns has focuses on creating shallow (<10 cm) flooded habitat for shorebirds during key times in the spring and fall migrations: late winter to mid April and late July to early October. Since 2014 BirdReturns has provided over 50,000 acres of critical shorebird habitat using this innovative concept. Shorebird surveys documented large numbers using these flooded ricelands during a time when they are normally dry, thereby demonstrating the importance of providing shorebird habitat in ricelands during migration. Due to the success of BirdReturns, the California Ricelands Waterbird Foundation (Foundation) started a companion program based on the BirdReturns model. The Foundation's Bid4Birds

FIGURE 1: SPECIAL SHOREBIRD HABITAT AREA



Program was started in 2018 and has created nearly 8,000 acres of critical shorebird habitat during both the spring and fall time periods. The Foundation is currently scaling up this program and has the objective of working with rice farmers to create over 4,000 acres per year.

During winter and spring migration in the Sacramento Valley, ricelands, wildlife refuges, and managed wetlands in hunting clubs provide extensive habitat for shorebirds (Page and Shuford 2000). Of the key habitats surveyed from 1992 to 1995, flooded ricelands constituted more than 143,000 acres (21 percent) of the total available shorebird habitat (Shuford et al. 1998). Peak shallow riceland flooding acreage providing shorebird habitat in 2014–15 was 193,617 for early spring migration on 10 March 2014, 19,985 for late fall migration on 15 October 2015, 129,322 from wintering population on 31 December 2014 (Golet et al. 2018). In addition to providing key wetland habitats for shorebirds, ricelands also play a key role in connecting available habitat between the coast, the Sacramento Valley, and the San Joaquin Valley. Maintaining a large-scale mosaic of wetland habitats in a region as large as the Central Valley is vital to the conservation of waterbirds (Haig et al. 1998). This connectivity is especially important during migration when shorebirds require habitat for refueling and resting.

The importance of flooded, disked (or fallow) ricelands is most pronounced during fall migration (July–October) when there is a scarcity of available shorebird habitat in the Sacramento Valley. August is the low point for shorebird numbers during fall migration because managed wetlands are not usually flooded until September or October. Much of the rice crop is mature at this time, making use by shorebirds limited due to the dense canopy of rice plants (Shuford et al. 1998). However, most fields are flooded immediately following harvest (September through early November) and provide quality habitat at this time.

Due to concern for shorebird populations across the continent, a nationwide conservation plan was developed in an effort to maintain and restore habitats that support adequate shorebird populations in the Western Hemisphere (Brown et al. 2001). This plan is divided into eleven regional conservation plans and the Southern Pacific Coast Regional Shorebird Conservation Plan covers coastal California and the Central Valley (Page and Shuford 2000, Hickey et al. 2003). Components of this regional plan have also been incorporated into the Central Valley Joint Venture Implementation Plan (2020), which sets habitat conservation objectives based upon prescribed acreages of flooded rice, semi-permanent and permanent wetlands. Both of these plans encourage harvesting of ricelands by conventional methods (not stripping), maintaining suitable water depths at appropriate levels for a variety of shorebirds and waterbirds, increasing acreage of seasonally-flooded ricelands and other wetlands, and conservation and agricultural easements. The regional plan also ranks species by their national conservation importance (Page and Shuford 2000). In addition to the six special-status shorebirds described in Section 2 of this document (Snowy Plover, Mountain Plover, Marbled Godwit, Whimbrel, Long-billed Curlew and Short- billed Dowitcher), flooded ricelands are of particular importance to the eleven species that are described in the regional plan as well.

Special-Status Wildlife Species Use Of Ricelands

This discussion of special-status species use of ricelands addresses both wetland-dependent species and other species that use ricelands incidentally.

Special-status species are those assigned an official designation by a state or federal resource agency that indicates population declines or other reason for particular concern. For purposes of this report, special-status species are defined as:

- Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (ESA) (50 CFR 17.11, and various notices in the Federal Register [FR] [proposed species])
- Species that are included on the federal bird species of conservation concern list for Bird Conservation Region 32 that includes the Central Valley (CDFW 2020)
- Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (CESA) (14 California code of Regulations [CCR] 670.5)
- Animal species of special concern to the California Department of Fish and Wildlife (CDFW) (CDFW 2020)
- Animals fully protected in California (California Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians])
- Bald and Golden Eagles specifically listed by the Bald and Golden Eagle Protection Act (16 U.S.C. 668).

Special-Status Wildlife Known to Use California Ricelands During their Annual Cycle

SPECIES	SCIENTIFIC NAME	STATUS*
REPTILES		
Western Pond Turtle	*Actinemys marmorata*	CSC
Giant Garter Snake	*Thamnophis gigas*	CT, FT
BIRDS		
Tule Greater White-fronted Goose	*(Anser albifrons elgasi)*	CSC
Redhead	*(Aythya americana)*	CSC
Black Rail	*(Laterallus jamaicensis)*	CSC
Lesser Sandhill Crane and Greater Sandhill Crane	*(Grus canadensis canadensis) (Grus canadensis tabida)*	CSC
Mountain Plover	*(Charadrius montanus)*	CSC
Snowy Plover	*(Charadrius alexandrinus)*	CFP
Long-billed Curlew	*(Numenius americanus)*	BGE, CE, CFP
Short-billed Dowitcher	*(Limnodromus griseus)*	CSC
Black Tern	*(Chlidonias niger)*	CT, FSCC
American White Pelican	*(Pelecanus erythrorhynchos)*	CFP, BGE
Least Bittern	*(Ixobrychus exilis)*	FSCC
White-tailed Kite	*(Elanus leucurus)*	FSCC
Golden Eagle	*(Aquila chrysaetos)*	CSC
Northern Harrier	*(Circus cyaneus)*	CT
Bald Eagle	*(Haliaeetus leucocephalus)*	CSC
Swainson's Hawk	*(Buteo swainsoni)*	CSC, FSCC
Ferruginous Hawk	*(Buteo regalis)*	FSCC
Burrowing Owl	*(Athene cunicularia)*	FSCC
Long-eared Owl	*(Asio otus)*	FSCC
Short-eared Owl	*(Asio flammeus)*	FSCC
Peregrine Falcon	*(Falco peregrinus)*	CSC
Loggerhead Shrike	*(Lanius ludovicianus)*	CSC, FSCC
Lawrence's Goldfinch	*(Spinus lawrencei)*	CSC
Yellow-headed Blackbird	*(Xanthocephalus xanthocephalus)*	CSC
Tricolored Blackbird	*(Agelaius tricolor)*	CSC, FSCC

***Status Key:**
CSC (California Species of Special Concern)
FSCC (Federal Bird Species of Conservation Concern)
CFP (California Fully Protected)
CT (California Threatened);
CE (California Endangered)
FT (Federally Threatened)
BGE (Bald and Golden Eagle Protection Act)

Reptiles

Western Pond Turtle *(Actinemys marmorata)*

The Western Pond Turtle is usually found along the quiet waters of marshes, streams, ponds, and other permanent and ephemeral aquatic habitats from sea level to approximately 4,500 feet. Pond turtles use aquatic habitat for activities such as foraging and temperature regulation. They use upland terrestrial habitats for overwintering, nesting, and dispersal. Within the aquatic habitat, pond turtles require emergent basking sites, such as rocks, logs, emergent vegetation, or undercut areas along a bank to maintain proper temperature regulation. The size of the aquatic habitat can vary considerably. Western Pond Turtles have been found in ephemeral pools of only a few square meters and in water bodies that cover several dozen square kilometers. They are also found in ponds that vary up to 50 percent or more in size during the course of a year and in areas where water is present for only a small portion of the year (Holland 1994). Western Pond Turtles are typically found in aquatic habitat during their active period, from approximately March through September. By October, they usually disappear to overwintering sites, often grasslands adjacent to the aquatic habitat.

Western Pond Turtles consume a variety of foods. The majority of their diet consists of crustaceans, midges, dragonflies, beetles, stoneflies, and caddisflies. They also feed on mammal, bird, reptile, amphibian, and fish carrion. They rarely eat plant matter but have been observed foraging on willow and alder catkins and on ditch grass inflorescences (Holland 1991). Nekton (free-swimming pelagic animals) are important food for hatchlings and juveniles (Holland 1985, Holland 1991).

Western Pond Turtles inhabit streams and canals adjacent to ricelands throughout the northern Sacramento Valley. They may benefit from the abundant invertebrate prey found in flooded ricelands.

The Western Pond Turtle is a California species of special concern.

Giant Garter Snake *(Thamnophis gigas)*

The Giant Garter Snake is a large, aquatic garter snake historically found throughout the Central Valley from Butte County south to Kern County (U.S. Fish and Wildlife Service 1999). Since the 1940s, the species has been eliminated from the southern portion of its range. The current range extends from near Durham in Butte County to the Mendota Wildlife Area in Fresno County (U.S. Fish and Wildlife Service 1999).

Populations of Giant Garter Snake are limited to ponds, sloughs, marshes, and ricelands of Sacramento, Sutter, Butte, Colusa, and Glenn Counties. Remnant populations also exist along the western border of the Yolo Bypass in Yolo County and along the eastern fringes of the San Joaquin–Sacramento River Delta from the Laguna Creek–Elk Grove region of Sacramento County south to Stockton in San Joaquin County (Hansen 1986, 58 FR 54053, October 20, 1993).

The Giant Garter Snake is endemic to emergent wetlands in the Central Valley. The species occurs in marshes, sloughs, ponds, small lakes, and low-gradient waterways such as small streams, irrigation and drainage canals, and ricelands. Giant Garter Snakes require permanent water during the active season (early spring through mid fall) to maintain dense populations of food organisms. These snakes also require herbaceous emergent vegetation for protective cover and foraging habitat, as well as open areas and grassy banks for basking. Small mammal

> The development of ricelands has created an important alternative habitat for Giant Garter Snakes.

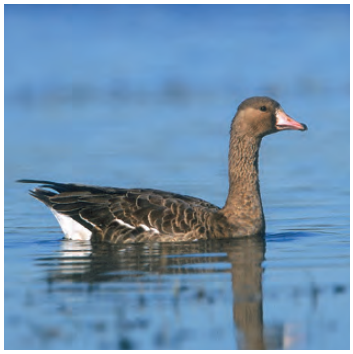
burrows and other small crevices in upland habitat are required for winter hibernation sites and refuge from floodwaters (58 FR 54053, October 20, 1993). All four habitat components (protective cover, foraging habitat, basking areas, and protected hibernation sites) are needed for the species to persist in an area.

The diet of Giant Garter Snakes consists mainly of aquatic prey such as fish and amphibians. Giant Garter Snakes may concentrate feeding efforts at pooled areas that trap and concentrate prey. Native prey species include Sacramento blackfish (Orthodox microlepidotus) and Pacific treefrog (Pseudacris [Hyla] regilla). Nonnative species preyed upon include carp (Cyprinus carpio), mosquitofish (Gambusia affinis), other small fish, and bullfrog (Rana catesbeiana) (U.S. Fish and Wildlife Service 1999).

Loss of wetlands in the Central Valley has resulted in significant population declines of Giant Garter Snake resulting in its current listing as threatened under both the federal and state Endangered Species Acts. The development of ricelands has created an important alternative habitat for Giant Garter Snakes. Some of the most important remaining populations of this species in the American and Butte Basins have been found to depend on flooded ricelands as a primary habitat component.

Birds

Tule Greater White-fronted Goose
(Anser albifrons elgasi)

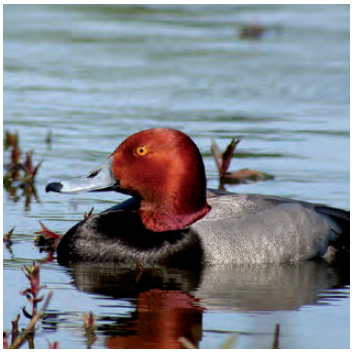


The Tule Greater White-fronted Goose is the larger and darker of two North American subspecies of Greater White-fronted Goose. It breeds exclusively in the upper Cook Inlet region of Alaska (Deuel and Takekawa 2008) and winters in the Colusa Basin and Butte Sink region of the Sacramento Valley with small numbers in the Suisun and Napa marshes (Wege 1984, Deuel and Takekawa 2008). The population is most recently estimated at 11,852 – 17,555 (Yparraguirre et al. 2020), which is greater than previous estimate of 7,000-10,000 from 2008, but there is no solid evidence of prior population trends given the lack of accurate historical estimates (Deuel and Takekawa 2008). In contrast to the more common subspecies, Pacific Greater White-fronted Goose (A. a. frontalis), cohesive flocks larger than 25 individuals are rare (Bauer 1979 in Deuel and Takekawa 2008). During the winter, they forage primarily in harvested ricelands and other grain fields along with other geese (Deuel and Takekawa 2008). As is true of most migrating and wintering waterfowl in the Central Valley, ricelands provide a viable surrogate wetland habitat for this species.

The Tule Greater White-fronted Goose is on the California Bird Species of Special Concern Priority 3 list due to the small population size that winters entirely in a small geographic area of California (Deuel and Takekawa 2008).

Redhead *(Aythya americana)*

The Redhead is a diving duck identified by its darker coloration and rounder head profile from the similar Canvasback. Only a small population breeds and winters in the remnant marshlands in the Central Valley. Population trends from several periods and different techniques documented steady declines throughout the state (Beedy and Deuel 2008). This species is a nest parasite, in that many females do not build nests and incubate eggs. They simply lay their eggs in other waterbirds' nests. The few that do build nests make them in the vegetation of marshes, usually with water depths exceeding two feet. Redheads frequent flooded ricelands where they feed on excess grain, vegetation, and insects, snails and other aquatic invertebrates.



The Redhead is on the California Bird Species of Special Concern Priority 3 list primarily due to extensive loss and degradation of breeding habitat and vulnerability to hunting, contaminants, and disease (Beedy and Deuel 2008).

Black Rail *(Laterallus jamaicensis)*

In the Sacramento Valley and adjacent foothills of the Sierra Nevada, the Black Rail is a diminutive, shy year-round resident that lives in marshes with bulrush (Scirpus spp.), cattail (Typha spp.) or sedge (Carex spp.) (Tecklin 1999, Evens et al. 1991, J. Sterling pers. obs.), and forages on invertebrates including snails, beetles, earwigs, grasshoppers, ants, and seeds (Eddleman et al. 1994). Shallow water depth is important for successful nest sites as rising water levels can drown nests and deep water can reduce access to foraging habitat (Eddleman et al. 1994). There is no information on minimum patch size for the California Black Rail in the Central Valley and Delta Region, but in the foothills of the central Sierra Nevada rails are in marshes as small as 0.5 acre and 32 percent of occupied wetlands were

less than 0.75 acre (Tecklin 1999). Black Rails occupy marshes with Virginia Rails and Soras (J. Sterling pers. obs.), but there is no information on interspecific interactions (Eddleman et al. 1994).

In the past twenty-five years, an inland population was discovered in the foothills of the Sierra Nevada from Butte to El Dorado counties (Aigner et al. 1995, Tecklin 1999, Sterling 2019). Breeding season records from the adjacent valley floor (Sterling pers. obs.) as well as unconfirmed post-breeding season sight records from ricelands in the Butte Sink and Sutter County suggest that there may be down slope movement from the foothill breeding population. Black Rails from the Delta Region may occasionally disperse into freshwater marshes and flooded ricelands. The primary threats are the loss and degradation of marsh habitats.

Lesser Sandhill Crane *(Grus canadensis canadensis)* and Greater Sandhill Crane *(Grus canadensis tabida)*

The Sandhill Crane is an elegant, long-necked, long-legged bird of open grasslands and freshwater marshes. Only the Greater Sandhill Crane breeds in California, nesting in high mountain meadows of the northern Sierra Nevada and Cascade Ranges and large high-desert meadows of northeastern California. Waste grain in corn, sorghum, rice, and wheat fields provide the bulk of the diet on the wintering grounds in the Central Valley. Large wintering flocks gather at traditional sites in Merced County, the Delta region, and the Sacramento Valley. Many of California's winter population of 6,000 Greater Sandhill Cranes winter in the Butte Sink, where they forage primarily on rice (Littlefield 2002, California Department of Fish and Game 2000b). The coastal segment of the Pacific Flyway population of Lesser Sandhill Crane (approximately 3,800 birds) leaves southeastern Alaska in the fall to winter in the ricelands and refuge systems in the northern Sacramento Valley from Red Bluff to southern Butte County. The eastern segment of this population (approximately 25,000 birds) winters in grain stubble fields near Lodi and a variety of other habitats south to the Carrizo Plains in San Luis Obispo County (Littlefield 2008). Both subspecies wintering in the Sacramento Valley are entirely dependent on state and federal refuge lands and private agricultural lands for winter roosting and foraging habitat. Ricelands provide essential habitat for both subspecies of Sandhill Cranes as waste grain provides an important food resource, and flooded ricelands are used as roosting sites (Pogson 1990).

The Greater Sandhill Crane is listed as threatened under California Endangered Species Act, primarily because of the loss of suitable breeding habitat, human disturbance, predation on the local breeding population in northeastern California, and the continued loss of winter foraging habitat (California Department of Fish and Game 2000b).

The Lesser Sandhill Crane is on the California Bird Species of Special Concern Priority 3 list, primarily because its foraging and loafing habitat in the Central Valley is rapidly being converted from grain crops to orchards, vineyards, and housing developments.

Mountain Plover *(Charadrius montanus)*

The Mountain Plover is a medium-sized, long-legged, drab-colored shorebird that breeds in the western prairie region from New Mexico to the Canadian border and winters primarily in California's Central Valley and northern Mexico. Mountain Plovers nest in shortgrass prairie but are also found in semi-desert and agricultural landscapes (Knopf 1996). Wintering sites are scattered among the grasslands and increasingly in disked or burned agricultural fields in the Central Valley from Colusa County south to Kern County (Knopf 1996, Edson and Hunting 1999, Hunting and Edson 2008, Sterling 2020a).

The Mountain Plover is a California species of special concern and a federal species of conservation concern (USFWS 2008). It is on the California Bird Species of Special Concern Priority 2 list, primarily because of wintering habitat loss and degradation in California (Hunting and Edson 2008).

Snowy Plover *(Charadrius alexandrinus)*

The Snowy Plover is a small, pale shorebird. Breeding locations in California include the Pacific Coast beaches, alkaline flats in eastern California, and the Salton Sea shoreline (Page et al. 1995). The Central Valley population occurs year-round in agricultural evaporation ponds in the southern San Joaquin Valley (Shuford et al. 1995, Shuford et al. 2008). Nesting on the open ground exposes eggs and young to predation and a variety of human disturbances. Snowy Plovers feed primarily on terrestrial and aquatic invertebrates. Snowy Plovers are observed nearly annually in flooded ricelands and nearby wastewater treatment ponds during spring and fall migration with increasing records in past ten years (Sterling 2020b).

The species' inland population is on the California Bird Species of Special Concern Priority 3 list, primarily because of changes in water levels, especially those caused by humans, in addition to nest predation and disturbance.

Long-billed Curlew *(Numenius americanus)*

The Long-billed Curlew is a large, light brown shorebird with long legs and a very long decurved bill. This is an inland-breeding bird of prairies and meadows, with only a small number of individuals nesting in extreme northeastern California. However, it is found throughout much of the state, including the Central Valley nearly year-round as non-breeding birds linger and breeding birds start returning to wintering sites as early as mid June. Typical winter habitat includes pastures and agricultural fields where curlews probe for invertebrates. While ricelands are not heavily used by wintering populations, groups of curlews are regularly observed foraging in flooded and disked ricelands (Shuford et al. 1998).

The Long-billed Curlew is a federal species of conservation concern (USFWS 2008). It is considered highly imperiled in the U.S. Shorebird Conservation Plan (Brown et al. 2001) due to population declines outside of California. However, there is no evidence of a decline in the wintering population in California.

Short-billed Dowitcher *(Limnodromus griseus)*

The Short-billed Dowitcher is a medium-sized, plump shorebird similar to its cousin, the Long-billed Dowitcher. Both species have relatively long bills that they use to probe into deep mud for invertebrate prey. The Short-billed Dowitcher is identified by its different call (a mellow "tu tu tu"), its tail pattern and by its juvenile plumage. It nests further south than its cousin, in boreal wetlands of southern Alaska and central Canada, and winters further south as well to central Peru and Brazil (Jehl, Jr. et al. 2001). As many as 150,000 migrate along the California coast, where some remain to winter (Hickey et al. 2003). However, some migrate through the Central Valley where they feed in ricelands and evaporation ponds. Large-scale shorebird surveys have not distinguished the two species of dowitchers (Shuford et al. 1998). Therefore, the relative abundance of Short-billed Dowitchers in the Sacramento Valley rice country is not well documented. Most of the sightings are of easily-identified juveniles in late August and September, but some vocalizing adults are found during spring and summer as well.

Due to population declines, the Short-billed Dowitcher is a federal species of conservation concern on the national and California Bird Conservation Region scales (USFWS 2002).

Black Tern *(Chlidonias niger)*

The Black Tern nests semi-colonially and forages for aerial insects and aquatic invertebrates in freshwater marshes (Dunn and Agro 1995, Shuford et al. 2001, Shuford 2008b). Biologists conducting surveys during the 1998 El Niño year found 2,213 breeding pairs in the Central Valley, of which 90 percent were in ricelands in the Sacramento Valley (Shuford et al. 2001, Shuford 2008b). During the early nineteenth century, natural marshes in the San Joaquin Valley sustained large populations of Black Terns. With the loss of these breeding areas, the ricelands of the Sacramento Valley have become this species' stronghold in the Central Valley. The state's only other breeding population center is in the natural marshes of northeastern California (Shuford et al. 2001, Shuford 2008b).

The Black Tern is on the California Bird Species of Special Concern Priority 2 list, primarily due to loss and degradation of breeding habitats.

> Ricelands provide essential habitat for both subspecies of Sandhill Cranes. Waste grain provides an important food resource, and flooded ricelands are used as roosting sites.

American White Pelican *(Pelecanus erythrorhynchos)*

The American White Pelican is a large white bird with black flight feathers and long, massive bill with a fleshy pouch. Pelicans eat fish and crawfish that they scoop up in their bills in deep marshes, lakes and ponds. They frequent flooded ricelands for resting and are often found in large flocks. This colonially-nesting species no longer breeds in the Central Valley, but non-breeding or possible breeding visitors from nesting colonies in northeastern California are common sights during the spring and summer. In winter a larger influx of pelicans visits the Central Valley.

The American White Pelican is on the California Bird Species of Special Concern Priority 3 list primarily due to loss, degradation, and human disturbance of breeding habitat and colonies as well as vulnerability to contaminants and disease (Shuford 2008a). It is also a federal species of conservation concern (USFWS 2008).

Least Bittern *(Ixobrychus exilis)*

The Least Bittern is a small heron that is rarely seen due to its cryptic (light brown) coloration and its tendency to hide in dense cattail marshes. Consistent with other members of the heron family, Least Bitterns prey upon fish, frogs, and large invertebrates such as crawfish. Small populations breed in the Central Valley primarily in the Sacramento Valley wildlife refuges and some have been documented to remain throughout the winter. They are sometimes found in cattail-lined rice irrigation ditches, but occurrences within ricelands are not well documented. Their

population numbers and trends are unknown due to the lack of appropriate, species specific surveys in the region (Sterling 2008).

The Least Bittern is on the California Bird Species of Special Concern Priority 2 list primarily due to loss or degradation of breeding habitat (Sterling 2008).

White-tailed Kite *(Elanus leucurus)*

The White-tailed Kite is a medium-sized hawk identified by its long white tail and distinctive black shoulder patches. It is also identified by its habit of hovering (or kiting) while hunting. Breeding in riparian corridors and in valley oak savanna in the Central Valley (Moore 2000), they forage in grasslands, ricelands, alfalfa and other agricultural fields that support concentrations of voles (Dunk 1995).

The White-tailed Kite is a California fully protected species. Its population in California has fluctuated dramatically during the past 100 years. In the 1930s, the population declined precipitously, but from the 1950s to the 1970s it rebounded in both numbers and distribution (Eisenmann 1971). However, with the recent drought, populations have been reduced likely due to vole and other prey population declines (Pandolfino 2018). Lincoln Christmas Bird Count (CBC) data have documented a decline from 133 in 2002 to 33 in 2019.

Golden Eagle *(Aquila chrysaetos)*

The Golden Eagle is a large bird of prey characterized by its dark brown body and golden nape. Golden Eagles nest throughout much of the state, including the Great Basin, Coast Ranges, and southern California deserts. They also nest around the perimeter of the Central Valley, and a few pairs nest in the valley, including at the Sutter Buttes. Nests are constructed on cliff ledges and in trees. Golden Eagles forage over large open upland habitats, primarily grassland, oak savanna, and shrub-steppe habitats, for ground squirrels, rabbits, and other mammalian prey. They are occasionally observed on the valley floor in agricultural areas and are sometimes seen hunting in fallow or disked ricelands.

The Golden Eagle is a California fully protected species and is also federally protected under the Bald and Golden Eagle Protection Act.

Northern Harrier *(Circus cyaneus)*

The Northern Harrier is a slender, medium-sized raptor recognized by its distinctive white rump and its low, coursing flight behavior. Closely associated with grasslands and fresh and saltwater marshes, Northern Harriers are common during the winter and spring/fall migration periods. Although they are relatively uncommon in the Central Valley during the breeding season compared to other nesting raptors, the Central Valley supports the core breeding population in California (Davis and Niemela 2008). They nest on the ground and require adequate cover to conceal their nests from predators (MacWhirter and Bildstein 1996). Ricelands in the Central Valley provide an important wetland substitute for this species. Harriers often hunt for small shorebirds, songbirds, and rodents concentrated in flooded and disked ricelands, as well as in fallow fields that support high densities of voles and other prey (Wilkison and Debban 1980). One hundred seventy-five Northern Harriers were observed in ricelands and grasslands during the 2002 Lincoln CBC. This count was tied for the seventh highest of more than 1,900 counts conducted throughout the

continent and, as such, highlights the importance of ricelands as winter foraging habitat. However, only 53 were detected during the 2019 count, likely due to drought conditions reducing vole and other prey populations.

The Northern Harrier is on the California Bird Species of Special Concern Priority 3 list, primarily due to loss or degradation of breeding habitat (Davis and Niemela 2008).

Bald Eagle *(Haliaeetus leucocephalus)*

The Bald Eagle is a large bird of prey belonging to the group of "fish eagles." Adult Bald Eagles are characterized by their distinctive white head and tail and heavy yellow bill. Bald Eagles in the Sacramento Valley generally nest in Fremont cottonwood (Populus fremontii) and valley oak (Quercus lobata) in riparian woodland along the Sacramento and Feather rivers, and have been increasing the breeding range from Redding southward to Cosumnes River Preserve since 2000 (Sterling pers. obs., eBird data accessed Nov. 2020). Nest sites are usually associated with lakes and rivers that support abundant fish, waterfowl, or other waterbird prey. During winter, Bald Eagles migrate locally or long distances to sites that are also associated with lakes and rivers. Because of the large wintering waterfowl populations, Bald Eagles are often observed hunting or roosting in the Central Valley during the winter.

Bald Eagle winter and breeding populations have increased dramatically in the Sacramento Valley in recent decades. Their populations declined drastically due to the eggshell thinning effects of DDT, but since the ban on the use of that pesticide in the 1970s, populations have rebounded across the continent. In the Central Valley, these eagles are most often found during winter, hunting waterfowl concentrated in flooded ricelands.

The Bald Eagle is a California fully protected species, is listed as endangered under California Endangered Species Act and is also federally protected under the Bald and Golden Eagle Protection Act. It is currently considered to be increasing in California (California Department of Fish and Game 2000a).

Swainson's Hawk *(Buteo swainsoni)*

The Swainson's Hawk is a medium-sized bird of prey that inhabits open country grasslands, shrub-steppes, deserts, and agricultural areas of western North America during the breeding season and winters in grassland and agricultural regions extending from Central Mexico to southern South America (England et al. 1997, Bradbury et al. unpublished). Early accounts described the Swainson's Hawk as one of the most common raptors in California, occurring throughout much of the lowland areas of the state (Sharpe 1902).

With the conversion of native grassland foraging habitat and the loss of riparian forest and oak woodland nesting habitat, the statewide population was reduced substantially. At their lowest population levels only an estimated 700 to 1,000 breeding pairs remained in the state (Swainson's Hawk Technical Advisory Committee unpublished data), representing less than 10 percent of the historic population (Bloom 1979). The population has increased in recent decades, both in geographic range and in population size. The Central Valley population, recently estimated at 2,271 – 4,165 breeding pairs, extends from Tehama County southward to Kern County and comprises 95 percent of the state's breeding population (Battiston 2019). Despite the loss of native habitats in the Central Valley, the Swainson's Hawk appears to have adapted relatively well to certain types of agricultural patterns in areas where suitable nesting habitat remains. The optimal foraging and nesting habitat conditions in Yolo and portions of Sacramento and San Joaquin counties support the bulk of the Central Valley Swainson's Hawk population (Battiston 2019, Estep 1989).

In the Central Valley, Swainson's Hawks typically forage in agricultural fields that provide accessibility to prey, especially alfalfa. Flooded ricelands are not suitable for foraging by Swainson's Hawks. However, where ricelands occur within a mosaic of other crop types, disked or fallow ricelands may be used by foraging hawks, and rice field berms are occasionally used for resting and foraging.

The Swainson's Hawk is listed as threatened under California Endangered Species Act and is a federal species of conservation concern (USFWS 2008).

Ferruginous Hawk *(Buteo regalis)*

The Ferruginous Hawk is a large, broad-winged bird of prey that inhabits open-country grasslands, shrub-steppes, and deserts of North America (Bechard and Schmutz 1995). While there are breeding records from the Great Basin deserts of extreme northeastern California, Ferruginous Hawks do not nest in the remainder of the state. In the Central Valley, Ferruginous Hawks are found only during the winter, where they prey primarily upon rabbits, ground squirrels, and pocket gophers in grasslands and, to a lesser extent, in fallow or disked rice and other agricultural fields (Bechard and Schmutz 1995). Twelve and eleven Ferruginous Hawks were observed in ricelands and grasslands during the 2002 and 2019 Lincoln Christmas Bird Count, respectively. These counts were among the highest of more than 1,900 counts conducted throughout the continent and, as such, highlights the importance of ricelands as winter foraging habitat (Pandolfino pers. comm.). There is no evidence of a decline in the wintering population in California (Hunting 2000, Garrison 1990).

The Ferruginous Hawk is a federal species of conservation concern (USFWS 2008).

Burrowing Owl *(Athene cunicularia)*

The Burrowing Owl is a small, ground-dwelling owl centered in California primarily in the Central and Imperial valleys. Active both day and night, it uses ground burrows or other cavities for nesting, cover and forage in grasslands and agricultural fields. In California, most nesting burrows are abandoned California ground squirrel (Spermophilus beecheyi) burrows.

The species was widespread in California prior to 1945 (Grinnell and Miller 1944), but urbanization and agricultural conversion of nesting areas have reduced the population significantly since then. Existing populations have been reduced to small fragmented groups frequently surrounded by urban development. It's been estimated that a decrease of nearly 60 percent in California populations has occurred from the 1980s to 1995 (DeSante and Ruhlen 1995). Historically, burrow destruction, the effects of grazing, shooting, secondary poisoning from ground squirrel eradication programs, and collisions with automobiles have been the most frequently cited factors for this decline (Remsen 1978). However, in the past 20 to 30 years, the increase in commercial and residential development has produced the largest single impact on some populations.

In the Sacramento Valley, Burrowing Owls are found in remnant patches of grassland habitat, along levees and roadsides, and in agricultural fields. Their territories tend to be very localized, with most owls hunting within 600 meters of their burrows during the breeding season (Gervais and Rosenberg 2008). They forage primarily upon large insects, rodents, small birds, reptiles, and frogs at night and sometimes during the day (Haug et al. 1993). Burrowing Owls have been known to nest along rice field berms in the Sacramento Valley and to use fallow and disked ricelands for foraging.

The Burrowing Owl is on the California Bird Species of Special Concern Priority 2 list and is a federal species of conservation concern (USFWS 2008. They have declined drastically from riceland areas with only three counted on the four riceland Christmas Bird Counts in 2019.

Long-eared Owl *(Asio otus)*

The Long-eared Owls is a medium-sized owl that nests in dense riparian vegetation and forage primarily in grasslands and agricultural fields, and prey upon small rodents (Marks et al. 1994). Historically, it was considered a common breeder in large bottomland forests of cottonwood and willows in the Central Valley (Grinnell and Miller 1944). Due largely to loss of habitat, there are no reports of breeding and only a few reports of wintering Long-eared Owls in recent years. Because of their cryptic diurnal and active nocturnal behaviors, these owls are easily overlooked and may be more common than recent records indicate. Long-eared Owls are not currently known to breed in the rice-growing regions of the Central Valley (Hunting 2008). However, they still occasionally occur during winter in the Sacramento Valley, and hunt over grasslands and ricelands at night and roost during the day in thickets of trees adjacent to their foraging habitat.

The Long-eared Owl is on the California Bird Species of Special Concern Priority 3 list, primarily because of loss and degradation of breeding and foraging habitat.

Short-eared Owl *(Asio flammeus)*

The Short-eared Owl is a medium-sized ground-nesting owl that inhabits marshlands and grasslands throughout North America. In California, Short-eared Owls nest in grasslands and marsh or seasonal wetland habitats throughout the state, including the Central Valley. They forage in agricultural fields, freshwater marshes, fallow fields, and tall grasslands, where they prey almost exclusively on small rodents (Holt and Leasure 1993, Roberson 2008). Populations in California have declined due to loss of wetland habitats. The rice-growing regions of California are not part of the species' core breeding area, although a few may occasionally breed there, especially during years with high populations of voles (Roberson 2008). During winter, Short-eared Owls may be found flying over disked, fallow, or flooded ricelands at dawn and dusk. They roost in patches of tall grass, sometimes mixed with shrubs that provide concealment from predators. Their winter population fluctuates with vole populations, and are therefore susceptible to drought.

The Short-eared Owl is on the California Bird Species of Special Concern Priority 3 list, primarily because of habitat loss and degradation.

Peregrine Falcon *(Falco peregrinus)*

The Peregrine Falcon is a large falcon that nests on cliff ledges, typically near fresh- or saltwater marshes or other habitats that support waterfowl, shorebirds, or other waterbird prey. Prior to World War II, Peregrine Falcons nested throughout much of California from sea level to over 7,000 feet, with the densest populations along the coast, in the Cascades, and in the Sierra Nevada (Jurek 1989). Beginning in the 1940s, the widespread use of chlorinated hydrocarbon pesticides, such as DDT, triggered a precipitous decline in Peregrine populations throughout North America and in much of the world. These pesticides concentrated in the tissues of prey populations and were subsequently passed to the Peregrines themselves, resulting in the inability of the females to form normal eggs. By the

late 1960s, the species was seriously threatened over much of its range. Recovery efforts over the past 35 years have brought the estimated breeding population in California from fewer than 10 active sites in 1975 to more than 400 nests in recent years (California Dept. of Fish and Wildlife, 2020). Nationwide recovery efforts were also extremely successful. Peregrine Falcons winter in the Central Valley, where they make long foraging flights over the surrounding wetlands and flooded ricelands, hunting for ducks and shorebirds. Seventeen were detected on four CBCs in 2019 in the riceland region of the Sacramento Valley.

Although no longer listed under the federal Endangered Species Act, the Peregrine Falcon remains listed as endangered under California Endangered Species Act and a federal species of conservation concern (USFWS 2008).

Loggerhead Shrike *(Lanius ludovicianus)*

The Loggerhead Shrike is uncommon in California's rice-growing regions, where resident populations are augmented by wintering birds from migratory populations farther north and east (Humple 2008). They nest in small isolated trees, hedgerows, and shrubs (Yosef 1996), but are most often seen perched on electrical wires and fences in open country. Shrikes eat large insects, small birds, lizards, and rodents they capture in grasslands, ricelands and other agricultural fields (Yosef 1996).

Loggerhead Shrike is on the California Bird Species of Special Concern Priority 2 list, and is a federal species of conservation concern (USFWS 2008), declining likely due to pesticide use and habitat loss of breeding and wintering grounds. West Nile Virus has been linked to recent declines in the Central Valley (Pandolfino 2020). During four riceland CBCs in 2019, only 14 were counted.

Lawrence's Goldfinch *(Spinus lawrencei)*

The beautiful Lawrence's Goldfinch is an uncommon migrant and rare wintering bird on the Sacramento Valley floor, but regularly breeds in blue oak savanna, chaparral, riparian woodland, and mixed coniferous-oak forest (Unitt 1984, Roberson and Tenney 1993). A few have been recently detected wintering in Sierra Nevada foothills (Yancey 2017). Components of nesting habitat typically include arid, open woodlands with adjacent chaparral or brushy areas; tall, weedy fields; and a nearby water source. They are often found nesting within 0.25 – 0.5 mile (0.4–0.8 kilometer) of foraging areas and within 0.35 mile (0.6 kilometer) of open water (Davis 1999). Migrants and wintering birds are associated with riparian woodlands and hedgerows, with adjacent fallow ruderal and ricelands where they forage on seeds. They sometimes form large flocks, particularly in winter, and sometimes join foraging flocks consisting other species of goldfinches, House Finch (Carpodocus mexicanus), Dark-eyed Junco (Junco hyemalis) and Lark Sparrow (Condestes grammacus) (Davis 1999).

The Lawrence's Goldfinch is a federal species of conservation concern (USFWS 2008).

> "Ricelands provide an important summer and winter foraging habitat for the Yellow-headed Blackbird, particularly in the Sacramento Valley.

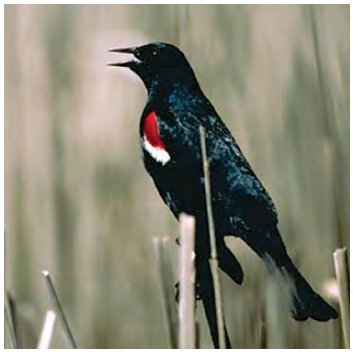
Yellow-headed Blackbird
(Xanthocephalus xanthocephalus)

The Yellow-headed Blackbird nest and roost locally in deep-water tule or cattail marshes in the Central Valley, joining flocks of other blackbirds in agricultural fields where they forage on rice and weed seeds during fall and winter and on a variety of insects during summer (Twedt and Crawford 1995). While ricelands do not provide nesting habitat for this species, they do provide important summer and winter foraging habitat, particularly in the Sacramento Valley.

Yellow-headed Blackbird is on the California Bird Species of Special Concern Priority 3 list (Jaramillo 2008), primarily because of habitat loss through draining of wetlands.

Tricolored Blackbird *(Agelaius tricolor)*

The Tricolored Blackbird is a blackbird distinguished from the more common red-winged blackbird by white rather than yellow median wing coverts, which form a red and white shoulder patch. The species is largely restricted to California, with the majority of the breeding populations occurring in the Central Valley (Beedy and Hamilton 1999). Tricolored Blackbirds nest in large colonies, primarily in cattail marshes, grainfields, star thistle, mustard fields and Himalayan blackberry brambles (Beedy and Hamilton 1999, J. Sterling pers. obs.). During the breeding season, they tend to forage within three miles of their breeding colonies (Beedy and Hamilton 1999). Their preferred foraging habitats include ricelands, alfalfa fields, irrigated pastures, grain fields, annual grasslands, and cattle feedlots and dairies (Beedy 2008). Large flocks of hundreds or thousands are not uncommon during winter in ricelands, where they forage on waste grain, insects (especially grasshoppers), clams, snails, and weed seeds such as water grass (Beedy and Hamilton 1999). During four riceland CBCs in 2019, only 489 were counted.



The Tricolored Blackbird is on the California Threatened list, and is a federal species of conservation concern (USFWS 2008), declining drastically in recent years primarily due to the loss and degradation of breeding habitat and disruption of breeding colonies from human activities.

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Appendix:
Wildlife Known To Use California Ricelands

COMMON NAME	SCIENTIFIC NAME
COMMON BIRDS	
Snow Goose	*Anser caerulescens*
Ross' Goose	*Anser rossii*
Greater White-fronted Goose	*Anser albifrons*
Cackling Goose	*Branta hutchinsii*
Canada Goose	*Branta canadensis*
Mute Swan	*Cygnus olor*
Tundra Swan	*Cygnus columbianus*
Wood Duck	*Aix sponsa*
Blue-winged Teal	*Spatula discors*
Cinnamon Teal	*Spatula cyanoptera*
Northern Shoveler	*Spatula clypeata*
Gadwall	*Mareca strepera*
Eurasian Wigeon	*Mareca penelope*
American Wigeon	*Mareca americana*
Mallard	*Anas platyrhynchos*
Northern Pintail	*Anas acuta*
Green-winged Teal	*Anas (c.) carolinensis*
Canvasback	*Aythya valisineria*
Redhead	*Aythya americana*
Ring-necked Duck	*Aythya collaris*
Lesser Scaup	*Aythya affinis*
Bufflehead	*Bucephala albeola*
Common Goldeneye	*Bucephala clangula*
Hooded Merganser	*Lophodytes cucullatus*
Common Merganser	*Mergus merganser*
Ruddy Duck	*Oxyura jamaicensis*
Ring-necked Pheasant	*Phasianus colchicus*
California Quail	*Callipepla californica*
Pied-billed Grebe	*Podilymbus podiceps*
Eared Grebe	*Podiceps nigricollis*
Western Grebe	*Aechmophorus occidentalis*
Clark's Grebe	*Aechmophorus clarkii*
Rock Pigeon	*Columba livia*
Eurasian Collared Dove	*Streptopelia decaocto*
Mourning Dove	*Zenaida macroura*
Lesser Nighthawk	*Chordeiles acutipennis*
Vaux's Swift	*Chaetura vauxi*
White-throated Swift	*Aeronautes saxatalis*
Anna's Hummingbird	*Calypte anna*
Rufous Hummingbird	*Selasphorus rufus*
Virginia Rail	*Rallus limicola*

COMMON NAME	SCIENTIFIC NAME
COMMON BIRDS CONTINUED	
Sora	*Porzana carolina*
Common Gallinule	*Gallinula galeata*
American Coot	*Fulica americana*
Sandhill Crane	*Antigone canadensis*
Black-necked Stilt	*Himantopus mexicanus*
American Avocet	*Recurvirostra americana*
Black-bellied Plover	*Pluvialis squatarola*
Killdeer	*Charadrius vociferus*
Semipalmated Plover	*Charadrius semipalmatus*
Whimbrel	*Numenius phaeopus*
Long-billed Curlew	*Numenius americanus*
Marbled Godwit	*Limosa fedoa*
Dunlin	*Calidris alpina*
Baird's Sandpiper	*Calidris bairdii*
Least Sandpiper	*Calidris minutilla*
Pectoral Sandpiper	*Calidris melanotos*
Western Sandpiper	*Calidris mauri*
Short-billed Dowitcher	*Limnodromus griseus*
Long-billed Dowitcher	*Limnodromus scolopaceus*
Wilson's Snipe	*Gallinago delicata*
Spotted Sandpiper	*Actitis macularia*
Solitary Sandpiper	*Tringa solitaria*
Lesser Yellowlegs	*Tringa flavipes*
Willet	*Tringa semipalmata*
Greater Yellowlegs	*Tringa melanoleuca*
Wilson's Phalarope	*Phalaropus tricolor*
Red-necked Phalarope	*Phalaropus lobatus*
Ring-billed Gull	*Larus delawarensis*
Herring Gull	*Larus argentatus*
Caspian Tern	*Hydroprogne caspia*
Black Tern	*Chlidonias niger*
Forster's Tern	*Sterna forsteri*
Double-crested Cormorant	*Phalacrocorax auritus*
American White Pelican	*Pelecanus erythrorhynchos*
American Bittern	*Botaurus lentiginosus*
Least Bittern	*Ixybrychus exilis*
Great Blue Heron	*Ardea herodias*
Great Egret	*Ardea alba*
Snowy Egret	*Egretta thula*
Cattle Egret	*Bubulcus ibis*
Green Heron	*Butorides virescens*

COMMON NAME	SCIENTIFIC NAME
COMMON BIRDS CONTINUED	
Black-crowned Night-Heron	*Nycticorax nycticorax*
White-faced Ibis	*Plegadis chihi*
Turkey Vulture	*Cathartes aura*
White-tailed Kite	*Elanus leucurus*
Golden Eagle	*Aquila chrysaetos*
Northern Harrier	*Circus hudsonius*
Sharp-shinned Hawk	*Accipiter striatus*
Cooper's Hawk	*Accipiter cooperii*
Bald Eagle	*Haliaeetus leucocephalus*
Red-shouldered Hawk	*Buteo lineatus*
Swainson's Hawk	*Buteo swainsoni*
Red-tailed Hawk	*Buteo jamaicensis*
Rough-legged Hawk	*Buteo lagopus*
Ferruginous Hawk	*Buteo regalis*
Barn Owl	*Tyto alba*
Great Horned Owl	*Bubo virginianus*
Burrowing Owl	*Athene cunicularia*
Long-eared Owl	*Asio otus*
Short-eared Owl	*Asio flammeus*
Belted Kingfisher	*Megaceryle alcyon*
Northern Flicker	*Colaptes auratus*
American Kestrel	*Falco sparverius*
Merlin	*Falco columbarius*
Peregrine Falcon	*Falco peregrinus*
Prairie Falcon	*Falco mexicanus*
Western Kingbird	*Tyrannus verticalis*
Willow Flycatcher	*Empidonax traillii*
Black Phoebe	*Sayornis nigricans*
Say's Phoebe	*Sayornis saya*
Loggerhead Shrike	*Lanius ludovicianus*
Western Scrub-Jay	*Aphelocoma californica*
Yellow-billed Magpie	*Pica nuttalli*
American Crow	*Corvus brachyrhynchos*
Common Raven	*Corvus corax*
Horned Lark	*Eremophila alpestris*
Bank Swallow	*Riparia riparia*
Tree Swallow	*Tachycineta bicolor*
Violet-green Swallow	*Tachycineta thalassina*
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*
Barn Swallow	*Hirundo rustica*
Cliff Swallow	*Petrochelidon pyrrhonota*
House Wren	*Troglodytes aedon*
Marsh Wren	*Cistothorus palustris*
Bewick's Wren	*Thryomanes bewickii*
Ruby-crowned Kinglet	*Regulus calendula*

COMMON NAME	SCIENTIFIC NAME
COMMON BIRDS CONTINUED	
Western Bluebird	*Sialia mexicana*
Mountain Bluebird	*Sialia currucoides*
Hermit Thrush	*Catharus guttatus*
American Robin	*Turdus migratorius*
Northern Mockingbird	*Mimus polyglottos*
European Starling	*Sturnus vulgaris*
House Sparrow	*Passer domesticus*
American Pipit	*Anthus rubescens*
House Finch	*Carpodacus mexicanus*
Pine Siskin	*Spinus pinus*
Lesser Goldfinch	*Spinus psaltria*
Lawrence's Goldfinch	*Spinus lawrencei*
American Goldfinch	*Spinus tristis*
Lark Sparrow	*Chondestes grammacus*
Fox Sparrow	*Passerella iliaca*
Dark-eyed Junco	*Junco hyemalis*
White-crowned Sparrow	*Zonotrichia leucophrys*
Golden-crowned Sparrow	*Zonotrichia atricapilla*
Vesper Sparrow	*Pooecetes gramineus*
Savannah Sparrow	*Passerculus sandwichensis*
Song Sparrow	*Melospiza melodia*
Lincoln's Sparrow	*Melospiza lincolnii*
California Towhee	*Melozone crissalis*
Spotted Towhee	*Pipilo maculatus*
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*
Western Meadowlark	*Sturnella neglecta*
Red-winged Blackbird	*Agelaius phoeniceus*
Tricolored Blackbird	*Agelaius tricolor*
Brown-headed Cowbird	*Molothrus ater*
Brewer's Blackbird	*Euphagus cyanocephalus*
Great-tailed Grackle	*Quiscalus mexicanus*
Common Yellowthroat	*Geothlypis trichas*
Yellow-rumped Warbler	*Setophaga coronata*
Blue Grosbeak	*Passerina caerulea*
Lazuli Bunting	*Passerina amoena*

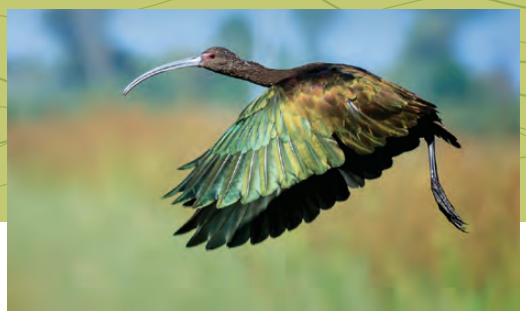
COMMON NAME	SCIENTIFIC NAME
RARE BIRDS	
Fulvous Whistling-Duck	*Dendrocygna bicolor*
Emperor Goose	*Chen canagicus*
Tundra Bean Goose	*Anser serrirostris*
Brant	*Branta bernicla*
Trumpeter Swan	*Cygnus buccinator*
Whooper Swan	*Cygnus cygnus*
Garganey	*Spatula querquedula*
Tufted Duck	*Aythya fuligula*
Greater Scaup	*Aythya marila*
Surf Scoter	*Melanitta perspicillata*
Black Scoter	*Melanitta americana*
Black Rail	*Laterallus jamaicensis*
American Golden-Plover	*Pluvialis dominica*
Pacific Golden-Plover	*Pluvialis fulva*
Snowy Plover	*Charadrius nivosus*
Ruddy Turnstone	*Arenaria interpres*
Black Turnstone	*Arenaria melanocephala*
Red Knot	*Calidris canutus*
Ruff	*Calidris pugnax*
Sharp-tailed Sandpiper	*Calidris acuminata*
Stilt Sandpiper	*Calidris himantopus*
Curlew Sandpiper	*Calidris ferruginea*
Red-necked Stint	*Calidris ruficollis*
Sanderling	*Calidris alba*
Little Stint	*Calidris minuta*
Buff-breasted Sandpiper	*Calidris subruficollis*
Semipalmated Sandpiper	*Calidris pusilla*

COMMON NAME	SCIENTIFIC NAME
RARE BIRDS CONTINUED	
Jack Snipe	*Lymnocryptes minimus*
Spotted Redshank	*Tringa erythropus*
Marsh Sandpiper	*Tringa stagnatillis*
Long-tailed Jaeger	*Stercorarius longicaudus*
Franklin's Gull	*Leucophaeus pipixcan*
Mew Gull	*Larus canus*
California Gull	*Larus californicus*
Iceland Gull	*Larus glaucoides*
Lesser Black-backed Gull	*Larus fuscus*
Glaucous-winged Gull	*Larus glaucescens*
Glaucous Gull	*Larus hyperboreus*
Little Blue Heron	*Egretta caerulea*
Glossy Ibis	*Plegadis falcinellus*
Gyrfalcon	*Falco rusticolus*
Vermilion Flycatcher	*Pyrocephalus rubinus*
Northern Shrike	*Lanius borealis*
Lawrence's Goldfinch	*Spinus lawrencei*
Lapland Longspur	*Calcarius lapponicus*
Chestnut-collared Longspur	*Calcarius ornatus*
Thick-billed Longspur	*Rhynchophanes mccownii*
Lark Bunting	*Calamospiza melanocorys*
Harris' Sparrow	*Zonotrichia querula*
White-throated Sparrow	*Zonotrichia albicollis*
Swamp Sparrow	*Melospiza georgiana*
Bobolink	*Dolichonyx oryzivorus*
Rusty Blackbird	*Euphagus carolinus*

COMMON NAME	SCIENTIFIC NAME
MAMMALS	
Virginia opossum	*Didelphis virginiana*
Raccoon	*Procyon lotor*
Ringtail	*Bassariscus astutus*
Ornate shrew	*Sorex ornatus*
Canyon bat	*Parastrellus hesperus*
California myotis	*Myotis californicus*
Little brown myotis	*Myotis lucifugus*
Yuma myotis	*Myotis yumanensis*
Big Brown bat	*Eptesicus fuscus*
Red bat	*Lasiurus blossevillii*
Hoary bat	*Lasiurus cinereus*
Pallid bat	*Antrozous pallidus*
Brazilian free-tailed bat	*Tadarida brasiliensis*
Desert cottontail	*Sylvilagus audubonii*
Black-tailed jackrabbit	*Lepus californicus*
California ground squirrel	*Spermophilus beecheyi*
Botta's pocket gopher	*Thomomys bottae*
Western harvest mouse	*Reithrodontomys megalotis*
Deer mouse	*Peromyscus maniculatus*
California vole	*Microtus californicus*
Muskrat	*Ondatra zibethicus*
Black rat	*Rattus rattus*
Norway rat	*Rattus norvegicus*
House mouse	*Mus musculus*
Coyote	*Canis latrans*
Red fox	*Vulpes fulva*
Gray fox	*Urocyon cinereoargenteus*
Bobcat	*Lynx rufus*
Long-tailed Weasel	*Mustela frenata*
American Mink	*Neovison vison*
Western spotted skunk	*Spilogale putorius*
Striped skunk	*Mephitis mephitis*
River otter	*Lutra canadensis*
Pronghorn	*Antilocapra americana*
Black-tailed deer	*Odocoileus hemionus*
Wild pig	*Sus scrofa*
Beaver	*Castor canadensis*

COMMON NAME	SCIENTIFIC NAME
AMPHIBIANS	
Western toad	*Bufo [Anaxyrus] boreas*
Sierran treefrog	*Pseudacris sierra*
Western spadefoot	*Spea hammondii*
American bullfrog	*Rana [Lithobates] catesbeiana*

COMMON NAME	SCIENTIFIC NAME
REPTILES	
Western pond turtle	*Actinemys [Emys] marmorata*
Red-eared slider	*Trachemys scripta*
Western fence lizard	*Sceloporus occidentalis*
Southern alligator lizard	*Elgaria multicarinata*
Blainville's horned lizard	*Phrynosoma blainvillii*
Western skink	*Plestiodon skiltonianus*
Tiger whiptail	*Aspidoscelis tigris*
Common sharp-tailed snake	*Contia tenuis*
Ring-necked snake	*Diadophis punctatus*
Coachwhip	*Masticophis [Coluber] flagellum*
Western yellow-bellied racer	*Coluber constrictor mormon*
Long-nosed snake	*Rheinocheilus lecontei*
Pacific gophersnake	*Pituophis catenifer*
California kingsnake	*Lampropeltis californiae*
Common gartersnake	*Thamnophis sirtalis*
Terrestrial gartersnake	*Thamnophis elegans*
Giant gartersnake	*Thamnophis gigas*
Western rattlesnake	*Crotalus oreganus*



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Wildlife Known To Use California Ricelands

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