

WILDLIFE RESOURCES INVENTORY

— INTRODUCTION —

The Big Chico Creek watershed contains an excellent diversity of wildlife and wildlife habitats. Wildlife populations and distributions are a reflection of habitat quality and quantity. As would be expected, areas within the watershed that have received a relatively high amount of impact contain lower quality wildlife habitat than relatively undisturbed areas.

The watershed has been divided into four broad sections: Mountain, Canyon, Foothill, and Valley. Habitat conditions and wildlife populations associated with each section are discussed. Information gathered from the literature, consultations with agency personnel, USFWS data queries, and information from Version 7.0 of the California Wildlife Habitat Relationships System (CWHHR) were used to describe the existing conditions of wildlife habitat and wildlife distributions in the watershed. A complete inventory of known and expected wildlife, their habitat associations, status, and seasonal occurrence within the watershed are presented in Appendix A. Scientific names for all wildlife mentioned in the text are also presented in Appendix B. Extremely rare or occasional migrants were not included in the Appendix A.

— WILDLIFE HABITATS —

The watershed contains a wide diversity of wildlife, which is maintained by unique and critically important habitats. General habitats within each section follow habitat classification from Mayer and Laudenslayer (1988). General habitat characteristics as they apply to wildlife are described. For more detailed descriptions of vegetation communities refer to the Stream/Vegetation Inventory chapter.

MOUNTAIN HABITATS

Mountain habitats are those found above 4,000 feet and usually contain well established conifer communities. Primary land uses are recreation and timber production. Sierran mixed conifer, montane hardwood-conifer, montane riparian, and ponderosa pine are habitats typical of the mountain section. Within the watershed ponderosa pine, montane riparian, and montane hardwood-conifer provide migratory habitat for deer and can be extremely important in migration holding areas and in the development of migratory routes. Ownership of this section is divided between public and private interests. See the Land Use Chapter of this report for additional information.

CANYON HABITATS

Canyon habitats are those found below 4,000 feet and above 2,000 feet elevation. Primary land uses are cattle ranching, recreation and residential development. Ponderosa pine, montane hardwood-conifer, montane hardwood, mixed chaparral, and montane chaparral are habitats typical of the canyon section. Rock and Mud Creek both originate within this zone. Big Chico Creek begins to narrow within this section and narrow strips of riparian habitats are characteristic of this section. Ownership of the canyon section is primarily private and little

development has occurred in this section. Cattle grazing and limited timber harvesting occur in this area.

FOOTHILL HABITATS

Foothill habitats are those found below 2,000 feet elevation and end at the valley floor. Primary land uses are cattle ranching, recreation and residential development.

Blue oak-grey pine, blue oak, valley foothill riparian, and annual grassland habitats are typical of the foothill section. Blue oak, scrub oak, live oak, and canyon oak assemblages provide critical habitat for wintering deer herds. Animals with strong habitat associations for acorns are also found in these habitats. Ownership of this section is primarily private and urbanization has occurred in the transitional region between foothill and valley. Urban area growth has allowed development to encroach upon riparian habitats in the foothill section. This encroachment has impacted wildlife communities that rely on riparian components to meet their life history needs. Amphibians are most affected by this development (Jennings 1996). A hunting operation, the Musty Buck Preserve, operates on a large portion of the foothill section. The Musty Buck Gun Club is primarily managed for spring/summer cattle grazing and for black-tailed deer hunting. The club, which is comprised of many property owners, has been enlisted in the CDFG private lands wildlife management program for 12 years

VALLEY HABITATS

Valley habitats are those found on the valley floor. Primary land uses are cattle grazing, farming and residential development. Fresh emergent wetland, annual grassland, valley oak woodland, valley foothill riparian, riverine, cropland, and urban areas are typical of the valley section. The valley section of the watershed has received the most agricultural and urban encroachment relative to the other sections. The conversion of annual grasslands, riparian areas, and wetlands by urban development and agriculture has greatly impacted wildlife assemblages on the valley floor. It is estimated that only 10% of historical riparian forest and less than 10% of wetlands remain in the Sacramento Valley (Katibah 1984). There are limited opportunities to enhance wildlife habitats in urban landscapes. However, agricultural crops such as rice, wheat, milo, and safflower provide habitat for wildlife and many opportunities exist for incorporating wildlife habitat into farming operations. Flooded agricultural fields provide critically important habitat to migrating waterfowl and shorebirds.

— WILDLIFE —

Three hundred and fifty wildlife species are known or expected to occur in the watershed (please see Appendix B). Nine percent (33) of the wildlife that are known or expected to occur within the watershed are special status species. Special Status Species are those defined by the following categories:

- Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (50 CFR 17.11, and various notices in the Federal Register [proposed species]).

- Species that are candidates for possible future listing as threatened or endangered under the federal Endangered Species Act (61 FR 40: 7596-7613, February 28, 1996).
- Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (14 CCR 670.5).
- Animal species of special concern to the California Department of Fish and Game.
- Animals fully protected in California (Cal. Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).

ECOLOGICALLY IMPORTANT WILDLIFE

Ecologically important wildlife are specific species or groups of species that serve as indicators of the health of wildlife populations and wildlife habitat within the watershed.

Black-Tailed Deer

Black-tailed deer, visually, represent the most important wildlife within the watershed. Consequently, their value as representatives of the watershed's wildlife resources and habitat are high. In addition, deer are an integral component of the food web as grazers and as a prey item for mountain lion, black bear, and coyote.

Black-tailed deer are dependent on early successional habitats and seasonally available items such as acorns for food resources (Loft et al. 1998, Leach and Hiehle 1957). The quality of deer habitat is influenced by the availability of cover and its proximity to food. Chaparral and riparian areas provide hiding, escape, and thermal cover, which is of critical importance to deer especially in dry hot periods. Blue oak woodlands provide primary feeding sites. Riparian habitats also serve as fawning areas and dense vegetation provides hiding cover for vulnerable fawns.

The majority of black-tailed deer that utilize watershed are from the Eastern Tehama deer herd and the remaining deer are resident. The herd is the largest migratory herd in California and occupies the most extensive range (Longhurst et al. 1952, Ramsey 1981).

They migrate the longest distance of any herd in the state, over 100 miles. The herd uses BCCW as a critically important migration and wintering area (October-March). The importance of documented migration corridors within the watershed cannot be overstated. These corridors are the key to successful migrations, and hence are the backbone to the survival of the Tehama deer herd.

The black-tail deer population in the watershed has declined steadily since the mid-1960's and dramatic declines have been recorded since 1991 (Loft et al. 1998). Longhurst et al. (1952) estimated the Tehama deer herd population to be 69,000, currently CDFG estimates the population to be 35,000-45,000. The decline in deer population reflects conditions of their habitat. Factors that have contributed to the reduction of quality deer habitat include urban encroachment, fire suppression policies, intense cattle grazing, feral dogs, and logging practices such as biomass thinning and herbicide spraying. Former CDFG biologist Jim Snowden and Musty Buck manager Noel Owens believe that feral dogs may contribute to lower deer numbers locally more than any other cause.



Black Bear, a representative of the watershed's wildlife.

Amphibians

No other group of organisms within the Sierra/Cascade foothills are more at risk than amphibians (Jennings 1996). In a 1996 report to congress regarding the Sierra Nevada Ecosystem Project, the watershed was categorized as a watershed with especially high values for foothill yellow-legged frog conservation (Jennings 1996). The foothill yellow-legged frog is listed by the CDFG as a Species of Special Concern. They are found mainly in permanent streams and occasionally in backwater habitats, isolated pools, and slow moving rivers. Historically, this frog occurred in most Pacific drainage's west of the Sierra/Cascade Crest in Oregon but over the years it has disappeared from more than 50% of it's historic range (Jennings 1996). Foothill yellow-legged frogs have been observed within the Big Chico Creek and Mud Creek (personal observation). Historically, California red-legged frogs occurred within the watershed. The frogs require deep (>70cm) cool pools and were found in ponds and intermittent and permanent streams with slow or still water. California red-legged frogs have disappeared from 90 percent of their historic range (Jennings et al. 1993) and may have been eradicated from the watershed. Habitat for the California red-legged frog occurs in the watershed but no thorough surveys have been conducted. Amphibian surveys conducted in 1997, in adjacent watersheds, found no evidence of mountain yellow-legged frogs or California red-legged frogs (Fellers 1997). The western spadefoot toad and Cascades frog both inhabit the watershed and are both Species of Special Concern (Maslin personal communication, and McFarland personal communication). These species have also experienced dramatic declines in their respective ranges.

Raptors

Many raptors utilize the watershed for wintering, migration, and breeding. Due to the remoteness and relatively little urban development in the mountain and canyon section of the watershed raptors have excellent opportunities to develop sustainable and healthy populations. American peregrine falcons, bald eagles, golden eagles, and California spotted owls have all been observed using the watershed primarily as winter grounds (Snowden personal observation). Breeding habitat for all four raptors exists within the watershed. The American peregrine falcon is currently listed as Endangered by CDFG and federally as Endangered (it is also proposed federally for delisting). The golden eagle is currently listed as a Species of Special Concern by CDFG. Bald eagles winter along Mud and Rock creeks foraging for stranded prey following flood events or natural draw-downs. Sharp-shinned hawks and Coopers hawks use the watershed as both breeding and wintering grounds (personal observation). Sharp-shinned and Coopers hawks are currently listed by CDFG as Species of Special Concern. Burrowing owls have been observed in the valley section near the Sacramento River (personal observation). Burrowing owls are Species of Special Concern with special status primarily associated with burrowing sites.

— **SPECIAL STATUS WILDLIFE SPECIES** —

STATE AND/OR FEDERAL ENDANGERED WILDLIFE SPECIES

Conservancy Fairy Shrimp (*Branchinecta conservatio*). The conservancy fairy shrimp is listed as a federally endangered species. Vernal pool habitat was once much more extensive throughout California's Central Valley, probably allowing a much broader distribution of the species. Vernal pools, temporary ponds formed by seasonal rainfall upon small watersheds, provide the sole habitat for the fairy shrimp. A water impermeable layer just below the surface of the ground assures the collection of water during the winter, while the drying effects of spring cause a complete drawdown of the pool by evapotranspiration. The fairy shrimp survives the hot, dry summer by depositing drought resistant "resting eggs" or cysts in the pond soil. The crustaceans represent a food resource for water birds, and birds may possibly disperse the shrimp's cysts on their bodies over their migratory route; the cysts may also be transported within the avian digestive tract. Population densities within individual ephemeral pools may be quite high. Habitat loss is the primary factor for the decline of this species.

Vernal Pool Tadpole Shrimp (*Lepidurus packardii*). The vernal pool tadpole shrimp is a federally endangered species. This shrimp exclusively inhabits vernal ponds in Northern California, and is present 4 out of 5 months that the ponds are flooded. They are often found in shallow depressions in open, treeless rangeland that is frequented by livestock and migrating waterfowl. The margins of ponds may vary from cobbly hardpan to soft clay mud, with some areas receiving strong wave actions from prevailing winds. Tadpole shrimp are often present in the greatest abundance along wave-disturbed shores.

American Peregrine Falcon (*Falco peregrinus anatum*). The American Peregrine Falcon is a Federal and State endangered species. Peregrine falcons are infrequently found from annual grassland up through high elevation coniferous forest of the Coast Range. They typically require cliffs for nesting and perching, and prefer nearby lakes or rivers. During the 1960s and early 1970s populations of Peregrine falcons drastically declined but indications from studies in Baja to Canada suggest that the local populations are recovering (Castellanos, et al., 1997). The high

natural productivity and large releases of captive-raised young should continue the recovery of the Peregrine falcon.

Western Yellow-Billed Cuckoo (*Coccyzus americanus occidentalis*) The western yellow-billed cuckoo is a USFS Sensitive species and a state endangered species. Riparian forests host this endangered species. They are restricted to broad expanses of cottonwood-willow forest. The wide removal of this essential habitat has caused the decline of this sinuous bird (Gaines and Layman, 1984). Western yellow-billed cuckoos have been recorded nesting within riparian habitats at the confluence of Big Chico Creek and the Sacramento River (NDDDB).

STATE AND/OR FEDERAL THREATENED WILDLIFE SPECIES

Valley Elderberry Longhorn Beetle (VELB) (*Desmoecerus californicus dimorpus*). The Valley elderberry longhorn beetle is a federally threatened species. VELB are habitat specific and will inhabit only mature elderberry shrubs. Elderberry shrubs are sporadically located in riparian habitats in the Valley and Butte Basin. The beetle has been observed ranging in elevation from the valley floor to 2,940 feet (Barr 1991). VELB has been recorded in elderberry shrubs along Big Chico Creek, and within Bidwell Park (Barr 1991). Habitat loss is the primary factor for the population decline of this species.

Vernal Pool Fairy Shrimp (*Branchinecta lynchi*). The vernal pool fairy shrimp is a federally threatened species. In California, these crustaceans inhabit ephemeral wetlands, such as vernal pools, mountain meadows, and desert playas with wet/dry cycles. The shrimp hatch and mature during the aquatic phase and deposit dormant cysts that remain in the soil through the dry phase. In some habitats, due to the variable nature of local rainfall patterns, pools at times fill only partially and dry quickly before the shrimp are able to mature and reproduce. Species in such unpredictable environments produce cysts that do not all hatch when first hydrated; a portion remains dormant and hatch in later pool fillings.

California Red-Legged Frog (*Rana aurora draytonii*). The California red-legged frog is the largest native frog in California and inhabits still or slow moving water in intermittent and permanent streams, ponds, and marshes (Hayes and Jennings 1988). It is listed as a federal threatened species and as a Species of Special Concern by CDFG. It has also been proposed for listing as endangered. Historically, range extended from Shasta County south to northern Baja California, occurring mainly in the foothill regions. It was extirpated from the floor of the Central Valley by 1960. The California red-legged frog has disappeared from more than 90 percent of its historical range. It is extremely rare in the Cascade/Sierra foothills and the only large populations (>350 adults) exist within the Coast Ranges near San Francisco (Jennings et al. 1993). The primary threats to California red-legged frogs include habitat loss, water diversion projects, introduced non-native predator fishes and bullfrogs, and livestock grazing. Jennings et al. (1993) reports that the introduction of non-native predators is probably responsible for the decline of California red-legged frogs from most of their historical range.

Giant Garter Snake (*Thamnophis couchi gigas*). The giant garter snake is a federal and state threatened species. They are found on the valley floor and inhabit densely vegetated streambanks, marshes, and riparian sloughs. The giant garter snake is now considered rare.

Aleutian Canada Goose (*Branta canadensis leucopareia*). The Aleutian Canada goose is a federal threatened species. The entire population winters in the Sacramento Valley with a substantial number of those wintering in the Butte Basin. Aleutian Canada geese may use flooded rice fields within the valley section of the watershed.

Greater Sandhill Crane (*Grus canaensis tabida*). The greater sandhill crane is a state-threatened species. This crane migrates to California wintering areas in October and November. Large winter roosting colonies are present on federal and state wildlife areas in the valley. The cranes use flooded rice fields as foraging, courting, and loafing areas.

Bald Eagle (*Haliaeetus leucocephalus*) The bald eagle is a state and federally threatened species. Historically, bald eagles nested along the Sacramento River. Currently, bald eagles winter on the river and within the watershed valley section.

Swainson's Hawk (*Buteo swainsoni*). The Swainson's Hawk is a state-threatened species. Historically, Swainson's hawks were common throughout the valley section. The Swainson's hawk utilized riparian forests for nesting sites, preferring to nest in the crown of tall oaks and foraging in nearby grassland and agricultural lands. Swainson's Hawk nest sites have been observed sporadically along the Sacramento River. Although the principle causes for the decline of Swainson's hawks occur on their wintering habitat, ongoing enhancement of riparian habitats in the watershed could benefit the Swainson's hawk.

— CURRENT THREATS TO WILDLIFE AND THEIR HABITAT —

NEST PARASITISM

Brown-headed cowbirds arrived in the valley after 1900, and the spread of agriculture has allowed cowbirds to penetrate into new regions where they have access to host populations that have had little or no ancestral experience through which to evolve effective defenses against them (Gaines and Layman, 1984). Cowbirds employ obligate parasitism (i.e. they only lay their eggs in the nests of other birds) as a reproductive strategy. Since cowbirds reproduce ferociously, not having to feed their young, a single female can lay as many as 50 eggs in a breeding season. Cowbird parasitism may be a factor in the decline of willow flycatcher, Bell's vireo, warbling vireo, spotted towhee, yellow warbler, blue grosbeak, Lazuli bunting, lesser goldfinch, and common yellowthroat in the watershed. Management efforts such as riparian restoration, cover cropping in agricultural habitats, and revegetation projects may reduce parasitism.

HABITAT LOSS

As mentioned, less than 10% of historical riparian forest remains and less than 5% of historical freshwater habitat remains. The loss of habitat and habitat fragmentation are the primary factors for the decline in resident and breeding birds, amphibians, reptiles, and mammals. Water diversion and flood control projects have contributed to the decline of amphibians throughout the watershed (Jennings 1996). Continued habitat loss would result in many species being extirpated from the Sacramento Valley. Mallards and wood ducks have adapted to the loss of riparian habitat by switching to waste grains for food reserves. However, many birds do not have this option. For birds that are obligate riparian nesters, further reduction in habitat could be devastating for these species.

INTRODUCED NON-NATIVE PREDATORS

Introduced predators such as the fish, bullfrog, feral cat, and feral dog pose threats to wildlife populations. Brown trout, brook trout, and hatchery rainbow trout have been introduced into the upper watershed. Jennings (1996) reports that the introduction of non-native predators is probably responsible for the decline of California red-legged frogs, western spadefoot frogs, and foothill yellow-legged frogs from most of their historical range.

Feral dogs have been a major problem for wildlife for many years and have gone largely unnoticed by the public. Noel Owens observed over 30 feral dogs within or near the Simmons Ranch between 1997-1998, and retired CDFG biologist Jim Snowden attributes dogs as the main cause for deer disturbances. Feral dogs prey on deer, small mammals, and nesting birds. Jim Snowden, retired CDFG biologist, attributes dogs as the main cause for deer disturbances in the winter range of the Tehama deer herd.

EARLY FIRE SUPPRESSION

Fire is essential to the health of foothill vegetation communities. The canyon and foothill sections of the watershed have not experienced a substantial fire for more than 30 years (portions of the upper Rock Creek drainage have experienced several large fires within the last 12 years). The lack of fire is most obvious within the chaparral habitats. Thick extensive stands of poison oak, buck brush, California buckeye, California bay, and manzanita with large basal areas are found throughout the canyon and foothill section. Buck brush is an important food item for deer but deer only use newly developed shoots, which are most abundant on younger plants. As buck brush matures, available browse grows beyond the reach of deer, which reduces the value of buckbrush to feeding (Biswell and Gilman 1961). In addition, many chaparral plants within the mixed chaparral communities have evolved adaptations, which allow them to survive, reproduce, and thrive in a system that frequently burns. Historically, blue oak/pine woodlands burned at 2 to 18 year intervals with an average fire frequency of 7.8 years (Stephens 1997).

CATTLE GRAZING

Cattle grazing is often blamed for reducing habitat quality for most wildlife, especially those dependent on riparian areas. However, it is the intensity of grazing which has the most impact. Intense grazing, which occurred for approximately 30 years within portions of the canyon section, is the most destructive of all grazing. In a study conducted by Kie and Boroski 1995, they found the effect of cattle grazing to be minimal on black-tailed deer home range and time spent feeding. This may be a result of different food preferences between cattle and deer (Barrett 1982). Cattle grazing can be beneficial as a habitat management tool. Substantial literature has been written regarding the effects of cattle grazing on riparian areas and bird communities. Generally, the results of grazing are species and site specific.

— Data Gaps —

Information regarding the status of nocturnal animals, mainly owls and bats, is lacking. The occurrence of the majority of these animals within the watershed currently can only be estimated based on habitat parameters. Current information regarding the status of Swainson's hawks and yellow-billed cuckoo breeding within riparian areas at or near the confluence of Big Chico Creek and the Sacramento River is also lacking. In addition, anecdotal information exists that there may be American peregrine falcons nesting within the Rock Creek tributary. Due to the special status of this bird, a thorough survey should be conducted throughout the watershed to verify any nesting activity.

Habitat for several special status amphibians and the northwestern pond turtle occur within the watershed, but their existence, distribution and reproductive status in the watershed is unknown, especially within the canyon and mountain sections. Amphibian surveys in Rock, Mud, and Big Chico Creek should be conducted to verify special status amphibians. It would be highly desirable to identify populations of special status species so they can be managed and protected appropriately.

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