

# Tulare County Mitigation and Conservation Bank Feasibility Study

## INTRODUCTION & BACKGROUND

### Purpose of Study

The purpose of this study is to assist the Tulare County Association of Governments in determining the feasibility of establishing conservation and/or mitigation banks to address biological and wetland impacts from both public and private development within Tulare County, California.

### Study Description

This study provides brief background information on the biological and wetland resources that may be impacted by development within Tulare County, and the resource agencies that are responsible for these resources and conservation and mitigation banks. Brief descriptions of the laws and policies regulating these resources are also provided. This information will be used to determine the potential need and benefits of conservation and mitigation banks for Tulare County.

### Study Area

This study evaluates the feasibility of conservation and mitigation banks for the County of Tulare. The original study area encompassed all of Tulare County. Wildlands, Inc. decided to reduce the study area to the San Joaquin Valley floor within Tulare County and the adjacent foothills located to the east of the valley floor (Figure 1).

Wildlands, Inc. made this decision because review of property ownership in Tulare County indicated that the National Park Service or the United States Forest Service owns the vast majority of land east of the San Joaquin Valley floor. These agencies typically have their own programs for either avoiding biological impacts or providing mitigation.

### Tulare County Association of Governments

Tulare County is expected to experience strong growth over the next 20 years, and has a projected population of 569,000 by 2020, an increase of 53%. As Tulare County's population grows, Tulare County's communities are projected to grow as well (Figure 2). New developments will need to comply with the Federal Endangered Species Act, the California Endangered Species Act, the California Environmental Quality Act, and the Clean Water Act. To evaluate options to comply with these regulations, the Tulare County Association of Governments (TCAG) hired Wildlands, Inc. to conduct a mitigation and conservation bank implementation study to determine if banking is a viable solution.

## Wildlands, Inc.

Wildlands, Inc. is a habitat development corporation dedicated to the restoration and preservation of native plants and wildlife. A pioneer in the field of mitigation and conservation banks, Wildlands was the first private enterprise west of the Mississippi to be fully authorized to develop a private commercial mitigation bank and sell credits that compensate for lost wetland habitat.

Wildlands currently operates seven approved mitigation and conservation banks, and has implemented several other large-scale mitigation projects. Other services Wildlands provides are restoration design services, land management, and mitigation feasibility studies.

### **Mitigation and Conservation Banking**

#### Description

Mitigation is the restoration and preservation of wetlands and/or other habitat features to compensate for wetlands and habitats damaged or destroyed by a given project such as development or infrastructure. Mitigation is required to meet the state and federal standard of "no net loss" of wetlands, and is regulated by several government agencies. Mitigation is also used to compensate for impacts to special status species and their habitats.

Mitigation banks are large agency-approved properties where wetlands are restored and preserved to provide mitigation for wetland impacts in surrounding areas. For example, a developer whose project requires one acre of wetland mitigation can purchase a one-acre "credit" from the mitigation banker.

The mitigation bank model has also been expanded to address endangered species compliance. Endangered species or "conservation" banks are wildlife areas that are preserved and managed to protect specific special status species.

Mitigation and conservation banking have several ecological and economic benefits over traditional methods of mitigation.

Economic benefits to the credit buyer include severance of liability, expedited permitting time, and economy of scale. The mitigation banker assumes all liability for the ecological success of the restored and preserved habitats; therefore, the client is released from that responsibility. Mitigation and conservation banks are established before the credit buyer's impacts occur, so permitting time and expense is often reduced; and in some cases, the amount of mitigation required may also be reduced. Mitigation banking streamlines the permit process by obtaining approvals for a single large mitigation site. When a client buys credits, the mitigation is already approved by agencies. Mitigation banks are larger in size than individual self-mitigation projects, producing economies of scale that save money for the client.

Ecological benefits include large preserve size, mitigation before impact, and habitat performance standards. A bank's large preserve size allows more ecological diversity and development than a collection of small, scattered self-mitigation projects would provide. Restoring or protecting habitat in advance of impact reduces loss of habitat function over time. Mitigation banks are required to meet objective standards of habitat success.

Existence of a mitigation or conservation bank does not require mitigation by every project, nor does the mitigation or conservation bank determine the mitigation ratio or number of credits required to compensate for a project's impacts. Each project is reviewed individually as part of its permitting process with the appropriate government agencies. Depending on the impacts of the individual project, a determination will be made on the mitigation ratio and number and types of credits required to compensate for those impacts. A project with no impacts will have no mitigation requirement, while a project impacting a sensitive habitat area may have a high mitigation ratio.

#### Authority to Sell Credits

The Federal Endangered Species Act (ESA) requires that plants and animals listed as Threatened or Endangered be protected from extinction. Under the ESA, Federal agencies, in consultation with the U. S. Fish and Wildlife Service (USFWS), must ensure that any action authorized, funded, or carried out by a federal agency is not likely to jeopardize the continued existence of any listed species or result in the destruction of critical habitat. A conservation or mitigation bank may serve as one component of endangered species mitigation as long as it is endorsed by the Federal agencies.

It should be noted that one tool that can be used to assist in the goals of the ESA is habitat conservation planning. A habitat conservation plan can direct mitigation to pre-established habitat preserves, including conservation banks; at this time there are no habitat conservation plans approved or being developed for Tulare County.

Under the California Endangered Species Act (CESA), plants listed as rare and plants and animals listed as Threatened or Endangered are protected; a conservation or mitigation bank endorsed by the California Department of Fish and Game may be authorized to provide mitigation of impacts to listed species. The State Natural Communities Conservation Planning Act (NCCPA) give the California Department of Fish and Game (CDFG) the authority to enter into agreements with any person or entity to protect areas ensuring the continued existence of multiple species and their habitats, while allowing for reasonable and appropriate urban development. Conservation banks may play a role in these agreements.

The California Policy on Conservation Banks endorses the use of conservation banks as a means to accomplish important resource management goals and sets forth procedures by which conservation banks are to be established, credited, and maintained.

The Federal Guidance for the Establishment, Use and Operation of Mitigation Banks sets forth rules relating to wetland mitigation banks; these are important if a project is to seek credits for wetland habitat creation, restoration, or enhancement (as opposed to preservation of habitat alone).

## TULARE COUNTY NATURAL RESOURCES

To proceed with development, Tulare County will have to comply with State and Federal regulations to ensure that these activities do not jeopardize the continued existence of special status species and their habitats within the County. Tulare County will also have to comply with the federal guidance that there will be “no net loss” of wetlands.

To determine which endangered, threatened, and other special status species are likely to occur in Tulare County, Wildlands reviewed records from CDFG’s Natural Diversity Database (CNDDDB). The CNDDDB maintains positive sighting records on state and federally endangered, threatened, rare and sensitive species. The CNDDDB provides information on what species have been documented in Tulare County, but does not constitute an official response from any state agency and will not in itself meet the requirements of the California Environmental Quality Act. These records include historic sightings where habitat for a particular species may no longer exist. Conversely, absence of CNDDDB documentation does not mean that a species or suitable habitat for a particular species is absent at that location. Each project should be reviewed with the appropriate local, state, and federal officials to determine if there are impacts to special-status species.

Other sources of information on special status species and their requirements in Tulare County include federal recovery plans for endangered and threatened species, and the Sacramento Office of the U. S. Fish and Wildlife Service (USFWS – Sacramento Office) web page. Federal recovery plans list recovery goals required for down listing or delisting of endangered species and delisting of threatened species. The USFWS – Sacramento Office web page maintains lists by counties of what species must be considered when consulting with the U. S. Fish and Wildlife Service (USFWS) on projects.

In this section, Wildlands provides a brief description of the threatened and endangered species of Tulare County based upon CNDDDB records (Table 1), the USFWS – Sacramento Office web page query results (Table 2), and the Upland Species of the San Joaquin Valley Recovery Plan (Figure 3). This description also includes species ranges and threats within Tulare County.

The western burrowing owl (*Athene cunicularia*) and California tiger salamander (*Ambystoma californiense*), although not listed as threatened or endangered, are included because both species have historically required mitigation under the California Environmental Quality Act. The California tiger salamander is also being proposed as a threatened species under the ESA.

## Threatened and Endangered Species

### Invertebrates

Invertebrates are animals that do not have a backbone or spinal column. Invertebrates include insects, crustaceans, worms, and other small organisms. The following are the threatened and endangered invertebrates of Tulare County:

#### Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)

Status: Federal Threatened

The Valley elderberry longhorn beetle (VELB) is a moderate-sized, brightly colored and sexually dichromatic beetle that is dependant on its host plant, the elderberry (*Sambucus* spp.). Both the male and female VELB have, long segmented antennae (slightly longer and more robust in the males) and dark metallic green elytra with a bright red-orange border. The males are slightly smaller than the females and have red spots on the dark background of the elytra.

Elderberry is a common component of riparian forests and adjacent grasslands of the Central Valley. Elderberry grows in association with various species of woody plants found in riparian corridors (USFWS 1984). Adult VELB emerge about the same time as the elderberry flowers, from mid-March to early June (USFWS 1991). During this time, the VELB mate, and females lay eggs on living elderberry plants. Adult VELB have been observed resting on foliage, or actively flying between the trees where their large size and coloration make them conspicuous (USFWS 1984). Because adult VELB are short-lived, often the exit holes they leave in elderberry bushes are the only physical evidence of VELB existence. Exit holes are usually circular to oval and are usually 7-10 mm in diameter.

Based on exit hole records, VELB range extends from Redding (Shasta Co.) to the Bakersfield area (Kern Co.) More recently in Tulare County, evidence of VELB has been found along the Kings River and its tributaries upstream of Tulare County, the Kaweah River and its tributaries, the Tule River, the area near Lake Success, and Deer Creek (USFWS 1991). Figure 4 illustrates CNDDDB occurrences in proximity to proposed future development.

The primary threat to the VELB is the loss and fragmentation of habitat.

#### Vernal Pool Fairy Shrimp (*Branchinecta lynchii*)

Status: Federal Threatened

Vernal pool fairy shrimp are small crustaceans, ranging in size from ½ inch to one inch in length and are endemic to the vernal pools. They are translucent and are usually white to gray in color although colors have ranged from red to green. Fairy shrimp feed on algae, bacteria, protozoa, rotifers and bits of detritus (USFWS Sacramento field Office website). They swim on their backs using paddle-like feet that also function as gills.

Once pools dry, fairy shrimp eggs or cysts can withstand the summer heat and hatch upon the arrival of winter rains.

Vernal pool fairy shrimp have been documented in the Stone Corral area and other scattered occurrences throughout Tulare County (Figure 4). This species of fairy shrimp is endemic to vernal pools. It is found in association with other more common invertebrates in pools located in unplowed grasslands. Although this species is widely distributed through out much of California, it is not common anywhere (Eriksen and Belk, 1999).

Habitat degradation and loss due to urbanization and agricultural development pose the greatest threats to the vernal pool fairy shrimp.

Vernal Pool Tadpole Shrimp (*Lepidurus packardi*)  
Status: Federal Endangered

The vernal pool tadpole shrimp are small crustaceans with compound eyes, a relatively large carapace (shell) that covers most of the body, and a pair of long appendages at the end of the last abdominal segment (USFWS Sacramento field office website). They reach about two inches in length. Vernal pool tadpole shrimp occupy much the same habitat as the vernal pool fairy shrimp.

Like the vernal pool fairy shrimp, habitat degradation and loss due to urbanization and agricultural development pose the greatest threats to the vernal pool tadpole shrimp.

### Amphibians

Amphibians are cold-blooded animals that live on land, but breed in water. Amphibians' skin has no feathers, scales, or hair. The living amphibians include toads, frogs, salamanders, and newts. Amphibians start their life as aquatic larvae, and in subsequent stages metamorphose into their final adult stage. These are the threatened and endangered amphibians of Tulare County:

California Tiger Salamander (*Ambystoma californiense*)  
Status: California Species of Special Concern, Proposed Federal Threatened

The California tiger salamander (CTS) is a large stocky salamander that ranges in size from 3 to 6 ½ inches. It has small eyes, a broad rounded snout, and the back of the CTS has several white to yellow spots on a dark background.

Tulare County is a part of the CTS Central Valley range (Figure 5). This species occurs in annual grassland habitats with temporary water sources such as vernal pools or stock ponds to serve as breeding ponds.

Loss of these breeding ponds and associated upland habitat to development contributes to the decline of this species.

Kern Canyon Slender Salamander (*Batrachoseps simatus*)  
Status: California Threatened

The Kern Canyon slender salamander ranges in size from 1 5/8 inches to 2 1/8 inches. This salamander has a narrow head, and relatively long body, tail and limbs. The body and head are somewhat flattened. The sides and belly are very dark and the back has somewhat bronzy irregular patches. A vague stripe may also be present on the back.

Most localities of this species are in the Sequoia National Forest. They are found primarily on north-facing slopes on or under rocks, logs and other material (CDFG 2003).

The potential threats to this species include road and dam construction, small hydropower development, mining, and logging (CDFG 2003).

California Red-legged Frog (*Rana aurora draytonii*)  
Status: California Species of Special Concern, Federal Threatened

The California red-legged frog (CRLF) is a relatively large brownish frog with diffuse dark spots (sometimes with white centers) and prominent dorsal-lateral folds (CDFG 2003). Red coloration is typically found on the undersides of the belly, hind legs, and feet but color distribution is highly variable among individual members of this species.

Tulare County is within the historic range of the CRLF. Tulare County lacks a known extant population of CRLF, and is not considered within the current distribution of the species (USFWS 2002). This species prefers still to slow moving water with dense riparian vegetation. Adjacent uplands are used as dispersal habitat and shelter. Rodent burrows, rocks, logs, or other types of debris may provide protection from the summer heat if a water source is unavailable.

Primary threats to CRLF include habitat destruction and fragmentation, and the introduction of exotic species.

### Reptiles

Reptiles are cold-blooded vertebrates of the class Reptilia. Members of this class include tortoises, turtles, snakes, lizards, alligators, and crocodiles. There are two special status reptiles in Tulare County. These species are:

Blunt-nosed Leopard Lizard (*Gambelia silus*)

Status: California Endangered, Federal Endangered

The Blunt-nosed Leopard Lizard (BNLL) is a relatively large lizard with a long tail, long hind limbs, a large head and a short snout. Males average from 3 to 4.5 inches from snout to vent and weigh approximately 1.3 to 1.5 ounces and females average slightly smaller (USFWS 1998). BNLL are grayish to yellowish above with dark spots in lateral rows on each side of the dorsal midline. Cream or yellow crossbands are usually apparent on all except light phase lizards and older individuals (Stebbins 1985). Sexually mature females have bright red or orange markings on the sides of the head and body and on the insides of the thighs and the underside of the tail. Some sexually mature males may develop a bright salmon color on the belly and underside of the tail (Stebbins 1985).

The BNLL is only found in the San Joaquin Valley of California, usually in saline and alkaline conditions in open, sparsely vegetated areas, non-native grasslands and sandy washes. It has been listed for 30 years and the only currently known occupied range is the undeveloped land on the Valley floor and in the foothills of the Coast Range (USFWS 1998). Several occurrences have been documented in Tulare County (Figure 5), in the vicinity of Pixley National Wildlife Refuge and the Allensworth Ecological Reserve (USFWS 1998).

The primary threats to the BNLL include habitat disturbance, destruction and fragmentation. Oil and natural gas production also pose a threat to the survival of the BNLL through habitat disturbances and oil spills (USFWS 1998).

Giant Garter Snake (*Thamnophis gigas*)

Status: California Threatened, Federal Threatened

The giant garter snake (GGS) is a brownish to olive colored snake with light-colored stripes on its back and sides. These stripes may vary in color and are usually cream, yellow, or orange. The GGS reaches a maximum length of 64 inches, and lacks the red markings of the common garter snake. The head of the GGS is elongated with a pointed muzzle (USFWS 1999).

Tulare County is within the historic range of GGS, but there are no documented extant populations within Tulare County. Typical giant garter snake habitat includes at least seasonal water with emergent marsh vegetation for cover and foraging opportunities, and adjacent upland habitat that is high enough to escape winter flood water and supports small mammal burrows or other refugia for escape and estivation sites.

Habitat loss and fragmentation have extirpated the GGS from the majority of its historic range, and are the primary threats to this species.



## Birds

Birds are warm-blooded egg-laying vertebrates characterized by feather and forelimbs modified as wings. The following are the special status bird species in Tulare County:

### Swainson's Hawk (*Buteo Swainsoni*)

Status: California Threatened, Federally protected under the Migratory Bird Treaty Act (MBTA).

The Swainson's hawk is a slender hawk with long, pointed wings and a long tail. It ranges in length from 17 to 22 inches, and has a wingspan of 47 to 54 inches. Typical adult Swainson's hawks (SWHA) have a dark "bib" and a light colored belly. The tail is barred and becomes lighter at the base. They have dark flight feathers and buffy wing linings (Peterson 1990).

Swainson's hawks are found only in portions of the Central Valley and Great Basin where suitable nesting and foraging habitat is located. Several occurrences of SWHA have been documented in Tulare County (Figure 6). Preferred nesting habitat consists of mature riparian forests or occasionally large lone trees adjacent to riparian forests. Foraging habitat consists of open grasslands, grazed pastures or agricultural fields supporting hay crops such as alfalfa.

Foraging habitat loss due to conversion of suitable agricultural lands to urban development or viticulture is a prime threat to SWHA. Other threats include nest disturbance and loss of nesting habitat (CDFG 2003).

### Bald Eagle (*Haliaeetus leucocephalus*)

Status: Fully Protected in California (formally listed as California Endangered),  
Formally listed as Federal Endangered, now proposed for delisting (1999)

The bald eagle is a large bird of prey with a wingspan of approximately eight feet and a heavy yellow bill. Adults have a white head and a white tail. The winter range of this species encompasses most of California, including all but the extreme southeast Tulare County.

Threats include disturbance from logging, recreational development and other human activities near nests. Bald eagles are also extremely susceptible to DDE-induced egg shell thinning.

California Condor (*Gymnogyps californianus*)

Status: California Endangered, Federal Endangered

The California condor is the largest bird in North America with a nine foot wingspan. Adults have a reddish featherless head and the underside of the wings have a distinctive white lining.

Although historically abundant, by the 1980's California condors (CACO) were only found in the mountains and foothills in a few counties including Tulare, Los Angeles and San Luis Obispo. Nesting has occurred on cliffs in the southern end of the range, with foraging areas primarily in the foothills where condors feed on carrion (CDFG 2003). This species requires vast expanses of open savannah, grasslands and foothill chaparral, with cliffs, large trees and snags for roosting and nesting (CDFG 1990).

Although there are very few wild condors remaining, the population has increased as a result of a captive breeding program. Threats to wild CACO include competition from Turkey vultures, predation from Golden eagles and the presence of DDE resulting in eggshell thinning and nest failure (CDFG 1990).

Burrowing owl (*Athene cunicularia*)

Status: Federal Species of Concern, California Species of Concern

The western burrowing owl (BUOW) is commonly found in open, arid annual grassland/desert habitats. BUOW are small owls with long legs, long, narrow wings and a small head with relatively large, yellow eyes. It nests in abandoned small mammal burrows, lining the chamber with feathers, grass and other material (CDFG 1990). The BUOW can be observed during the day or night. The BUOW is often seen perching on the ground outside the burrow entrance, on fence posts, or power lines.

Tulare County supports both summer and winter habitat for the species, and BUOW probably occur throughout western Tulare County. Most of the documented occurrences are in the southwest portion of Tulare County (Figure 6). The BUOW is most commonly found in open, annual grasslands, prairies, farmland and sometimes airfields where an abundance of California ground squirrels (CGS) are found. Because the BUOW uses abandoned small mammal burrows for nesting and shelter, the presence of CGS or other small mammals is essential. Burrowing owls have also been observed utilizing abandoned small mammal burrows in banks of road cuts or above the high water mark in ditches. Occasionally burrowing owls are observed using burrows under concrete slabs or other abandoned burrows in urbanized areas.

The primary threat to the BUOW is habitat conversion to agriculture and development. The poisoning of ground squirrels has also contributed to the reduction of BUOW population numbers. Collisions with vehicles and wind turbines also add to the mortality rate, especially during fall dispersal (CDFG 1990).

Great Gray Owl (*Strix nebulosa*)

Status: California Endangered, Federally protected under the MBTA

The great gray owl is the largest owl species measuring approximately 30 inches in length. Overall, it is a dusky gray color with vertical stripes on the underparts. It has a large round head without ear tufts and a strongly lined facial disk and yellow eyes (Peterson 1990).

This species breeds in old-growth red fir, mixed conifer or lodgepole pines and always near wet meadows (CDFG 1990). It is believed that nesting pairs probably return to the same nest site previously used.

Major threats include the loss of nesting trees and meadow degradation due to livestock grazing (CDFG 2003).

Willow Flycatcher (*Epidonax traillii*)

Status: California Endangered, Federally Protected under the MBTA.

The willow flycatcher (WIFL) is a drably colored species has two pale wing bands, a white eyering, a buffy colored belly and a light gray chest. It measures approximately 5 and ¾ inches in length.

The WIFL requires dense willow thickets adjacent to streams, standing water, wet meadows or seeps for nesting and roosting (CDFG 1990). Historically, this species was common during the summer months in suitable breeding habitat throughout the state. Currently, it is only present in a few sections along selected rivers within its historic range.

Habitat loss and degradation through heavy browsing by livestock are threats to this species.

Mammals

Mammals are warm-blooded vertebrates whose defining characteristics are hair or fur and milk glands. The following are the endangered and threatened mammal species that occur within Tulare County:

Tipton Kangaroo Rat (*Dipodomys nitratoide nitratoide*)

Status: Federal Endangered, California Endangered

The Tipton Kangaroo Rat (TKR) is one of three subspecies of San Joaquin kangaroo rats. The other two subspecies are the Fresno kangaroo rat and the short-nosed kangaroo rat. The TKR is approximately 4 inches from head to base of tail with a tail

length of approximately 5 inches, and weighs approximately 1.3 ounces. The fur is dark yellowish-buff on the back and tops of the head and white on the belly. A white stripe extends across the hips, continuing for the length of the prominently tufted tail. The base of the tail is circumscribed by white and the top and bottom of the tail are blackish. The TKR has dark whisker patches on each side of the nose that are connected by a black band of fur (USFWS 1998). Tipton kangaroo rats balance on their hind legs, have elongated hind limbs, a shortened neck, a large head and a long, tufted tail. The eyes are large and near the top of the head and it has small, rounded ears and short forelimbs with stout claws that facilitate digging (USFWS 1998). It has four toes on the hind feet. TKR dig their own burrows or modify existing burrows. Most burrows are less than 10 inches deep. They may be branched with interconnecting tunnels or un-branched (USFWS 1998).

Scattered occurrences of TKR occur in southwest Tulare County, near Pixley National Wildlife Refuge, and the towns of Tipton, Earlimart, Allensworth and Delano (Figure 7). The current distributional records for this species include the linear area between Pixley National Wildlife Refuge and Highway 166 (approximately 80 miles in length). Because the current range of this species is limited to natural-land areas (without agricultural practices and development), conservation of additional suitable acreage in these areas is critical to the survival of the species (USFWS 1998).

The most prominent threat to TKR is the loss of habitat due to agricultural conversion and the poisoning of ground squirrels in the vicinity of agricultural land. Flooding and illness due to moist conditions is also considered a threat as well as habitat disturbance from industrial development and oil exploration. Predation by natural predators is probably a threat only to those small, isolated populations in fragmented habitat (USFWS 1998).

#### San Joaquin Kit Fox (*Vulpes macrotis mutica*)

Status: Federal Endangered, California Threatened

The San Joaquin Kit Fox (SJKF) is one of the smallest members of the canid (dog) family. They are approximately 12 inches at the shoulder and weigh about five pounds, roughly the size of a common house cat. It is a light buff or gray color, depending on the season, and usually has a distinctive dark-tipped tail.

Typical SJKF habitat includes valley sink scrub, valley saltbrush scrub and annual grassland (USFWS 1998). Existing small mammal burrows are modified or new dens are constructed and used for shelter, and temperature regulation. Man-made structures such as un-capped pipes and culverts are also used as dens. Irrigation sumps and road cuts are commonly used for den sites.

The SJKF has historically occurred throughout Tulare County (USFWS 1998). Much of the remaining SJKF habitat has been modified by agriculture, livestock production, and oil production. The current distribution of the SJKF within Tulare

County includes larger scattered islands of natural land, which are most common on the western side of Tulare County. Ruderal grasslands, fallow farm fields, and some types of agriculture also serve as potential habitat.

Habitat loss and fragmentation is the chief threat to the survival of the SJKF. Predation by red foxes, coyotes, bobcats, domestic dogs and large raptors also threatens the species (USFWS 1998).

#### Sierra Nevada Red Fox (*Vulpes vulpes necator*)

Status: California Threatened

The Sierra Nevada red fox is slightly smaller and darker than the non-native red fox that inhabits the Valley. It is dark reddish and has a long bushy tail with a white tip. It is approximately 22-25 inches long and has a 14-16 inch tail.

The range of this native subspecies of the red fox extends from Lassen County south to Tulare County. Habitat includes forests with meadows or alpine fell-fields (CDFG 1990). Foraging occurs in open areas and cover is taken in the forested portions. Foxes move down slope during the winter.

Populations have apparently declined due to grazing practices in meadows, trapping, logging and recreational disturbance (CDFG 1990).

#### California Wolverine (*Gulo gulo*)

Status: California Threatened

The wolverine stands about 14-18 inches at the shoulder and has a heavy dark brown coat with two broad light bands along the sides of the body. It has a bushy tail measuring approximately 6-10 inches and typically weighs 35-60 pounds and is approximately 35-45 inches long (CDFG 2003).

Monache Meadow in Tulare County constitutes the southern end of the current and historic range for the California wolverine. Habitat consists of red fir, mixed conifer, lodgepole, subalpine conifer, alpine dwarf-shrub, barren, and probably wet meadows, montane chaparral, and Jeffrey pine (CDFG 1990). Wolverines forage in open to sparsely forested areas. Foraging takes place on the ground, in trees, among rocks, under rocks and sometimes in shallow water (CDFG 1990). Dens occur in areas with low human disturbance in caves, cliffs, hollow logs, under rocks or abandoned beaver lodges.

Trapping, human disturbance and grazing meadows have contributed to population declines (CDFG 1990).

## California Big-horned Sheep (*Ovis canadensis californiana*)

Status: California Threatened, Federally Endangered

California big-horned sheep are approximately 2 1/2 to 3 1/2 feet tall, are brown to grayish brown with a large, white rump (Burt and Grossenheider 1980). It has massive coiled, spiraling horns. Males weigh from 125-275 pounds and females weigh 75-150 pounds (Burt and Grossenheider 1980). Habitat for this species ranges from Great Basin sagebrush scrub to alpine (USFWS 2003). This species prefers open areas of low-growing vegetation for foraging near rugged, steep terrain for escape, lambing and bedding (CDFG 1990).

Threats to this species include disease, predation (mainly to small, isolated herds and recently transplanted animals), and loss of critical habitat (CDFG 1990).

### Plants and Fish

Although Tulare County does have documented occurrences of special status plant and fish species, Wildlands does not believe there will be large amounts of mitigation required for these species based on documentation and interviews described in the "Mitigation Demand" section of this document.

For this reason, no description of endangered or threatened plants or fish are included in this report. It should be noted that each project will need to coordinate with the appropriate regulatory agency before implementation to determine if there are impacts or concerns for listed plant or fish species.

### **Wetlands**

Wetlands function as a buffer between the terrestrial and aquatic environments. By retaining water, marshes, seasonal wetlands, and other wetlands help recharge ground water and moderate the effects of flooding. Through cycling, filtering, and biological activity, wetlands cleanse water for use by people and by fish and wildlife. There are several types of wetlands.

Wetland ecosystems support high biotic diversity. They contain a wide array of plants that provide excellent cover, food sources, and nesting sites for wildlife. Many species are fully dependent on these ecosystems and many more require them for at least some part of their life cycle. Vegetated shallow waters are also important fish habitat. The importance of wetlands to biotic diversity is further evidenced by the fact that an estimated one-half of the animals and one-third of the plants currently listed by the U.S. Fish & Wildlife Service as endangered or threatened depend on wetlands for survival.

The need to protect our nation's wetlands was recognized with the passage of the Federal government's Clean Water Act, Section 404, in 1977. This legislation requires a permit to deposit dredged or fill material in 'waters of the United States,' which include

wetlands. Subsequent Federal policy establishes a goal of 'no net loss' of wetlands in the United States.

The need to protect California's wetlands is also reflected in reports that over 95% of the Central Valley's historic wetlands have been lost to agriculture and development. The State of California has responded to this need with its 'Wetland Resources Policy,' which seeks to provide for the protection, preservation, restoration, enhancement, and expansion of wetlands habitats; this policy also calls for 'no net loss' of wetlands. These policies have led to permitting processes that affect the development community.

### Vernal Pools

Vernal pools are a type of seasonal wetland. These pools are found in landscapes with soils that have an underlying water-restricting layer of clay. Vernal pools are depressions in the surrounding landscape that fill with rainwater and typically remain inundated until early summer. A variety of highly specialized plant and animal species have adapted to the seasonal water regime of vernal pools. During the rainy season, fairy shrimp eggs (cysts) begin to hatch. Fairy shrimp are important sources of protein for migratory and resident waterfowl and shorebirds. Specialized endemic plant species are also found in vernal pools. Concentric rings of different colored flowers are visible as the pools begin to dry. Some species of plants and fairy shrimp have been listed as threatened or endangered, mainly due to the destruction and fragmentation of habitat. Historically, vernal pools were found throughout the San Joaquin Valley, including Tulare County. Today, most of this landscape has been converted agriculture.

## MITIGATION “DEMAND”

To assess the potential mitigation requirements for Tulare County, Wildlands, Inc. evaluated land use planning documents, existing biological resource data, and interviewed resource agency staff, private sector representatives, and Tulare County staff.

### Regulatory Agency Staff

Wildlands contacted key staff members of the wildlife and regulatory agencies. In general, the response of agencies was positive and in some cases enthusiastic.

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| Steve Juarez<br>Conservation Planning Supervisor<br>CDFG, San Joaquin & Southern Sierra<br>Region | Supportive of long-term planning efforts to address special status species and growth in Tulare County, mitigation and conservation banks are viable options and can make valuable contributions towards those efforts. |
| Amy Welsh, USFWS  | Supportive of conservation banks. The largest concerns for the USFWS in Tulare County are the San Joaquin kit fox, valley elderberry longhorn beetle, and to a lesser extent vernal pools.                              |
| Susan Jones, Branch Chief<br>USFWS, San Joaquin Valley Branch                                     | Supportive of conservation banks and mitigation banks in Tulare County. She does want to note that Tulare County still needs to consult with the USFWS for take authorization.  |
| Nancy Haley<br>U. S. Army Corps of Engineers  | Supportive of mitigation banks to compensate for wetland impacts. She stated as Tulare County continues to grow, it will have to  |

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|  | address 404 issues with greater frequency. She did note that the Corps jurisdiction in the Kaweah Watershed, Tule River Watershed, and Tulare Lake Basin is currently under review by the courts. She cautioned that any wetland banks for Tulare County should wait until this issue is resolved. |
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### Local Environmental Consultants and the Building Industry Association

Wildlands contacted private environmental consultants and the Building Industry Association regarding the perceptions, politics, and mechanics of mitigation banking in the region.

In general, private consultants expressed positive views about the concept of mitigation and conservation banks in Tulare County. At the same time, however, one consultant did caution us that the cost savings normally associated with conservation banks might not be applicable in Tulare County. Land prices are relatively low in Tulare County, so the “economy of scale” may not be as significant when dealing with land purchases. Additionally, private developments implement projects on land that is either currently or was in the recent past used for agricultural production, which reduces impacts to natural resources or avoids them completely.

The Building Industry Association (BIA) of Tulare/Kings Counties was also contacted. Robert Keenan, Vice President of the BIA, was supportive of the concept of mitigation and conservation banks. Mr. Keenan is supportive of the concept because only those project proponents impacting natural resources are required to purchase mitigation. Mr. Keenan also stated that project proponents often avoid large impacts by selecting sites with little or no natural resources on site.

### Local Agency and Public Works Contacts

The planning department of Tulare County and public works agencies were interviewed either in person or by phone to discuss current mitigation practices and needs.

Wildlands, Inc. also evaluated GIS data provided by Michael Hickey, GIS Analyst, Tulare County. This data projected future land use in Tulare County and estimated the total acreage converted from agricultural to urban and industrial use. In addition to the analysis provided by Mr. Hickey, Wildlands used the data he provided to evaluate projected Tulare County growth in relation to the wetlands mapped by the National Wetland Inventory of the United States Fish and Wildlife Service (NWI).

The NWI produces information on the characteristics, extent, and status of the nation’s wetlands and deepwater habitats. With funding from other Federal, State, Tribal, local and private organizations, the NWI has produced wetland maps for much of the nation.



Mr. Hickey's data indicates that approximately 23,200 acres will be converted from agriculture and open space to urban and industrial uses. The total converted acreage increases to over 26,000 acres if areas that overlap urban and agricultural reserves are included. Wildlands evaluation of Mr. Hickey's data with the NWI indicates that approximately 161 acres of wetlands will be impacted by this land use conversion (Table 3).

It should be noted that none of these estimates serve as official documentation of wetland impacts, wetland delineation, or wetland determination for projects in Tulare County. The NWI is an incomplete inventory of wetland resources, and depending on the type of agriculture and open space converted to urban and industrial use, habitat impacts will vary. This information was only used to generate estimates of potential wetland and habitat impacts. Each individual project will need to be evaluated to determine what its impacts are, and permits from the Corps and other regulatory agencies will need to be obtained when applicable.

This analysis can make two types of errors. The first is that wetlands that may occur within the zones marked for urban use are assumed to be already impacted and/or filled. If this is not accurate, then the project proponent will need to consult with the Corps and determine the appropriate steps for project approval, possibly including mitigation. An example is the construction of an elementary school and community recreation center in the City of Porterville. This project will fill approximately 0.59 acres of Porter Slough, which is a water of the United States. This project is within an area currently zoned for urban use, and does not show up as an impact in Wildlands analysis. The second potential error is the failure of this analysis to predict avoidance measures. A project may be able to avoid wetland impacts by its design and/or implementation.

Similarly, there is no way to provide an exact quantitative acreage for species' habitat impacts. Wildlands does not believe that the entire 23,000+ acres of agricultural conversion will be considered impacts to special status species habitat. Each project should consult with the appropriate regulatory agencies to determine which species are of concern at its project site.

However, impacts assessed by the regulatory agencies may be greater than first anticipated. The above mentioned City of Porterville Project also was determined to have potential impacts to the Valley elderberry longhorn beetle (VELB). The City of Porterville has established an elderberry restoration site to mitigate these impacts, and is currently working on a single species Habitat Conservation Plan (HCP) to avoid future VELB impacts. The Tulare County Redevelopment Agency (TCRA) was determined to have impacted 8.6 acres of San Joaquin kit fox habitat by the United States Fish and Wildlife Service (USFWS). The USFWS calculated that the Betty Drive/Avenue 312 Realignment and Improvement Project would disturb 15.8 acres. Of these 15.8 acres, the USFWS determined that 7.2 acres of paved roadway, concrete sidewalks, and gravel railroad bed had no habitat value, but that the 2.3 acres of ruderal land and 6.3 acres of

agricultural land (mostly cotton) was potential SJKF foraging habitat. The USFWS recommended 8.6 acres of SJKF mitigation.

Wildlands also contacted Virginia Vonberg, the former Mitigation Coordinator for Caltrans' Central California Region. Ms. Vonberg stated that Caltrans is supportive of mitigation banking, and at one time was working on developing either a bank of their own or another advanced mitigation option. Caltrans usually has a bit of a struggle with mitigation for their projects, because of the timing and difficulty of land acquisitions. In the past, Caltrans has typically mitigated on a case by case and project by project basis.

### Population Projections

Wildlands obtained population projections from the State of California's Employment Development Department (EDD). The EDD projection for Tulare County is 569,900 by 2020. This equates to a 53% increase in the population.

## MITIGATION SITE RECOMMENDATIONS

### Resource Types

Wildlands determined that many of the endangered and threatened species described in the "Tulare County Natural Resources" section of this document would require little or no mitigation by Tulare County or private entities. This decision is based on those species' range occurring predominantly on National Forest or National Park property within Tulare County. The following paragraphs describe Wildlands recommendations for mitigation and conservation banks based on mitigation "demand," described earlier in this document, and areas believed to be ecologically valuable for those species that may have more significant impacts to their habitat.

Wildlands currently recommends pursuing both a VELB mitigation bank and a SJKF conservation bank. Wildlands believes a SJKF conservation bank is particularly valuable because SJKF habitat often overlaps habitat of other upland species including blunt-nosed leopard lizard (BNLL), burrowing owl, and numerous kangaroo rat species. These habitats may suffer some impacts, but Wildlands does not believe the impacts will be at the same volume as SJKF. A SJKF conservation bank that also has habitat for these other species would provide a viable mitigation alternative for many species.

For wetlands, a vernal pool bank would address both the listed vernal pool species habitat impacts and "no net loss" wetland impacts. Other types of wetland banks may be needed in the future, but until the court ruling on the Corps' jurisdiction in Tulare County is complete, Wildlands would be hesitant in promoting a wetlands bank.

## Tulare County Bank Locations

Please note the following recommendations for site location are guidelines. Any site with high ecological values should receive consideration as a conservation bank. An example would be the proposed Sand Creek Conservation Bank. Even though this site was not mentioned by any of the agencies as a viable preserve/conservation bank, all of the agencies have been supportive through the initial process and discussions about this site.

The proposed Sand Creek Conservation Bank will preserve existing vernal pools as well as restoring vernal pool and elderberry woodlands. This conservation will provide a viable mitigation option for projects impacting vernal pools and VELB.

Two locations that will provide conservation benefits for VELB and be suitable as conservation banks are the areas near the Tule River and the Kaweah River (Figure 8). Creating a VELB conservation bank at the Tule River may provide a mitigation option for all VELB habitat impacts in Tulare County. If a service area will not cover the entire County, a second VELB conservation bank located further north should provide coverage for the entire county. This could either be at the Kaweah River where some offsite VELB mitigation has occurred in the past, or at the proposed Sand Creek Conservation Bank (see above). It is possible a Kaweah River site or the proposed Sand Creek Conservation Bank may also provide coverage for the entire county.

Vernal pool conservation banks in the Stone Corral area and the southwest area of the county should provide coverage for all of Tulare County (Figure 9). The proposed Sand Creek Conservation Bank should also serve the function of a vernal pool conservation bank in the northeastern portion of Tulare County. The two bank approach preserves different types of vernal pools that may occur within Tulare County. By having the two vernal pool conservation banks, Tulare County should have a viable mitigation option for most vernal pool impacts. This recommendation provides the maximum coverage, but as a vernal pool conservation bank is approved, it may be allowed a service area for the entire Tulare County.

The area surrounding and connecting the Allensworth Ecological Reserve and the Pixley National Wildlife Refuge is an ideal location for a San Joaquin kit fox conservation bank. Preserving this area also protects habitat for Tipton's kangaroo rat, blunt-nosed leopard lizards, BUOW and other species. As a conservation bank, this area could serve the entire valley region within Tulare County, covering all existing SJKF habitat and a large majority of SJKF habitat impacts.

Other mitigation options for Tulare County include two San Joaquin kit fox conservation banks in Kern County, but the service area is limited to west of Highway 99, leaving the area east of Highway 99 without a SJKF mitigation option.

## Mitigation and Conservation Bank Implementation and Management

There are three primary methods that mitigation and conservation banks can be implemented in Tulare County. These methods are allowing private individuals to develop banks independently of Tulare County support or guidance, Tulare County owning and operating the mitigation and conservation banks itself, or Tulare County functioning as a bank coordinator and a clearinghouse for banking information.

There are no costs or liabilities to Tulare County if private individuals implement mitigation and conservation completely by themselves. The positive aspect of this approach is Tulare County does not have to create new resources or reallocate existing resources to the banking effort. The drawback of this approach is that establishing banks in this method may not meet all the needs of Tulare County.

The obvious benefit of Tulare County owning and operating its own mitigation and conservation banks is Tulare County maintains maximum control and coordination. The obvious drawback is that Tulare County will need to reallocate large amounts of existing resources or generate new resources to implement this effort, especially in the beginning when banking costs are at their highest. In addition, there are several concerns about mitigation and conservation banking on public land.

These are the four primary issues that arise when mitigation banking is conducted on public land:

1. Public subsidy of private mitigation obligations. Mitigation banks on public lands are sometimes criticized if they provide mitigation for private development, because the costs in establishing and operating the bank may have been paid for in some way by public funds. For example, the mitigation bank land may have been purchased by tax-generated funds; or, the public agency staff time in developing and managing the bank may have been funded through tax revenues. If these public revenues reduce the cost to the private party that is required to perform the mitigation, then the public has, in effect, subsidized that private party.
2. Failure to provide the “preservation component” of mitigation. If the mitigation bank site is in public ownership, there may be a perception that the land is already protected. This is particularly the case if the land was purchased with funds earmarked for open space land acquisition.
3. Conflict of interest. A public agency operating a mitigation bank that sells credits to regulated parties may have a conflict of interest if that public agency had a role in regulating that party.
4. Economic efficiency. Often the private sector can operate in a more timely and cost-effective manner than the public sector.

These issues may or may not be pertinent in any given situation. For example, there may be public goals in a particular community that lessen the importance of the

timeframes and costs of the mitigation bank project (issue #4). Also, there may be ways of addressing the public subsidy issue; for example, a portion of the revenues may be earmarked for acquisition of additional lands for preservation, thereby accounting for the public subsidy inherent in using publicly purchased lands (issue #1) and providing the “preservation component” of the mitigation (issue #2).

The third option for Tulare County is acting in a coordinator role for mitigation and conservation banks. Tulare County would serve as a clearinghouse of information for potential mitigation and conservation bankers. An example of this approach is the San Diego County Mitigation Banking Policy (Attachment 1). Wildlands believes this may be a good method for Tulare County involvement while considering the above-mentioned concerns and costs.

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