

# APPENDIX N Local Concern Species

## N.1 Local Concern Species

This section describes how implementation of the conservation measures described in Section 5.4, *Conservation Measures*, will benefit each of the Butte Regional Conservation Plan (BRCP) local concern species.

### N.1.1 Bald Eagle

#### N.1.1.1 Species Account

##### Status

The bald eagle was listed as endangered under the federal Endangered Species Act (ESA) in 1978 (43 Federal Register [FR] 6230). In 1995, the bald eagle was reclassified as threatened (60 FR 36000); and in 2007, the bald eagle was delisted (72 FR 37346). The bald eagle is listed as endangered under the California ESA and is a California Fully Protected species.

##### Description

The bald eagle is one of the largest birds in North America. Adults have white heads and tails with dark brown bodies and wings. Their legs and bills are bright yellow. Immature birds have mostly dark heads and tails; their brown wings and bodies are mottled with white in varying amounts. Young birds attain adult plumage in about 5 years.

##### Distribution

The bald eagle is found throughout North America. It nests on both coasts from Baja California to Florida in the south and from the Aleutian Islands in Alaska to Labrador in the Northwest Territories (64 FR 36454). In California, bald eagle nesting locations are located primarily in the northern two-thirds of the state, the Central Coast Range, and on Santa Catalina Island.

##### Habitat Associations

This species is found at lakes, reservoirs, rivers, offshore islands, and some rangelands and coastal wetlands in California. Bald eagles generally require large bodies of water or free-flowing rivers with abundant fish and adjacent snags or other perches. This species swoops from hunting perches, or soaring flight, to capture its prey. Individual eagles perch high in large, stoutly limbed trees, on snags or broken-topped trees, or on rocks near water (USFWS 1986). Bald eagles nest in large, old-growth, or dominant live trees with open branches, especially ponderosa pine. Nests are commonly located in the highest branches of tall trees near water and occasionally on cliffs.

## Habitat Availability in the Plan Area

Bald eagle nesting habitat includes cottonwood-willow riparian forest, valley oak riparian forest, mixed oak woodland, interior live oak woodland and dredger tailings with riparian within 1 mile of the Sacramento and Feather Rivers, Big Chico and Butte Creeks, and Lake Oroville.

## Occurrence/Distribution in the Plan Area

In Butte County, bald eagles are considered a permanent resident, an uncommon winter migrant, and a known, but uncommon, breeder in Butte County. From the early 1970s through the early 1980s, only one bald eagle nest was documented in the far eastern side of the county (Thelander 1973; Lehman 1983). By 1990, two nesting territories were documented (Jurek 1990). As of 2018, it's estimated there are about 200 nesting pairs of bald eagles throughout California. There are at least eight nesting territories at Lake Oroville, and at least four along the Sacramento River (Hacking 2018).

Currently, there are at least five documented breeding sites in Butte County that are outside the Plan Area, including the north fork of the Feather River in the Big Bend area, on Fall River in Feather Falls Territory, south of the middle form of the Feather River Arm of Lake Oroville in the Spring Hollow Territory, near the Bloomer Campground on Lake Oroville, and Little Butte Creek between Paradise Lake and Magalia Reservoir. California Department of Water Resources also reports two nesting territories within the Plan Area, one along the edge of the Diversion Pool approximately 1 mile downstream of the Oroville Dam and the other along the Feather River near the southeast end of the California Department of Fish and Game (DFG) Oroville Wildlife Area (David Bogener pers. comm.). All Pacific Recovery Plan goals (number of breeding pairs and production/active nests) have been met in Recovery Zone 27 (which includes Butte County) during the last two nesting seasons.

California Department of Water Resources also reports a recently discovered winter roost site near Lake Oroville that has been occupied by at least 60 individuals. Bald eagles regularly winter around the Plan Area, including at Lake Oroville, Thermalito Forebay and Afterbay, along the Feather and Sacramento Rivers, and in the wetlands associated with Llano Seco and the Gray Lodge Wildlife Area.

### N.1.1.2 Benefits of Conservation Measures for the Species

#### Applicable Conservation Measures

- CM1: Acquire Lands
- CM4: Develop and Implement Site-Specific Wetland and Riparian Restoration Plan
- CM5: Enhance Protected Natural Communities for Covered Species

#### Benefits of the BRCP Conservation Strategy for the Species

Bald eagles require relatively tall and robust trees for nesting which are located near (usually within 1 mile of) a source of aquatic foraging habitat (e.g., large river or stream, lake, reservoir) (Lehman 1979). Therefore, it is assumed that potential nesting habitat for bald eagles in the Plan Area is restricted to large and protected trees within riparian forest and other woodland habitats within 1 mile of the Sacramento and Feather Rivers, Big Chico and Butte Creeks, and Lake Oroville. While the Thermalito Forebay/Afterbay and seasonal wetland and rice land cover types represent potential foraging habitat for bald eagles, there are no suitable nest trees associated with these areas other than those along the Sacramento and Feather Rivers, Big Chico and Butte Creeks, and Lake Oroville. Nesting habitat along Big

Chico Creek and Butte Creek, however, is considered less optimal nesting habitat than other areas in the model because habitat along these creeks is in close proximity to developed areas.

Full implementation of the BRCP will protect an additional 5,650 acres of cottonwood-willow and valley oak riparian forest (48 percent of this natural community in the Plan Area), 20,100 acres of oak woodland (22 percent of this natural community in the Plan Area), which provide nesting habitat for bald eagle. Enhancement and management of these communities to achieve the biological goals and objectives (*CM5: Enhance Protected Natural Communities for Covered Species*) is compatible with bald eagle habitat management. Protection and management of these natural communities under the BRCP will maintain habitat and provide for future occurrences of this species in the Plan Area.

## **N.1.2 American Peregrine Falcon**

### **N.1.2.1 Species Account**

#### **Status**

The American peregrine falcon (*Falco peregrinus anatum*) was initially listed under the precursor to the federal ESA in 1970 (35 FR 16047). Due to its recovery, the species was federally delisted by the U.S. Fish and Wildlife Service (USFWS) on August 25, 1999 (64 FR 46542).

The American peregrine falcon was listed by the California Fish and Game Commission in 1971 as an endangered species under the California ESA. In 2009, the California Fish and Game Commission voted to remove the American peregrine falcon from California's endangered species list.

#### **Description**

Peregrine falcons are the largest falcon over most of the continent, with long, pointed wings and a long tail. Be sure to look at shape as well as size—long primary feathers give the peregrine a long-winged shape. As with most raptors, males are smaller than females. Adults are blue-gray above with barred underparts and a dark head with thick sideburns. Juveniles are heavily marked, with vertical streaks instead of horizontal bars on the breast. Despite considerable age-related and geographic variation, an overall steely, barred look remains.

#### **Distribution**

The American peregrine falcon occurs throughout much of North America, from the subarctic boreal forests of Alaska and Canada south to Mexico. It nests from central Alaska, central Yukon Territory, and northern Alberta and Saskatchewan, east to the Maritime Provinces, and south (excluding coastal areas north of the Columbia River in Washington and British Columbia) throughout western Canada and the United States to Baja California, Sonora, and the highlands of central Mexico (64 FR 46542). While distributed widely, it nests in low densities with an estimated historical population of approximately 4,000 breeding pairs (64 FR 46542, White et al. 2002).

#### **Habitat Associations**

This species is often associated with water, nests are often situated along rivers, lakes, or coastal shorelines. Cliff sites range from 26 to 1,312 feet (8 to 400 meters) high with most between 164 to 656

feet (50 to 200 meters) (Bond 1946). A variety of atypical sites in artificial habitats have been reported, particularly for reintroduced.

Nest sites are usually selected based on available foraging opportunities. Foraging habitat consists of open water (e.g., lakes, reservoirs, estuaries, rivers, and oceans), marshes, mudflats, and tidal zones where shorebirds and other water birds congregate, or pasturelands with potholes or vernal pools that provide habitat for waterfowl and other water birds. Urban nesting falcons may forage within the urban environment on rock doves or other urbanized species.

## **Habitat Availability in the Plan Area**

Nesting habitat is variable throughout Butte County. Throughout the species range, including Butte County, most traditional sites are associated with cliffs and generally open landscapes for foraging.

## **Occurrence/Distribution in the Plan Area**

While there are no reports of peregrine falcon in Butte County in the California Natural Diversity Database (CNDDDB), peregrine falcons are known to occur, and possibly breed, along the eastern edge or just east of the eastern Plan Area boundary. A relatively substantial amount of peregrine falcon activity has been reported by state agencies and local experts from within the Plan Area. Altacal Audubon Society reports a breeding pair in upper Butte Creek Canyon, as well as recent activity in the Upper Bidwell Park area and on a suspension bridge across Lake Oroville. California Department of Fish and Wildlife (CDFW) reports a nest site along the southern bluffs of Upper Bidwell Park. CDFW also reports activity along the western bluffs of CDFW's Table Mountain Ecological Reserve. The California Department of Water Resources reports nest sites on three of the four bridges over Lake Oroville. These and other reports of peregrine falcon activity will be refined and updated through additional contact with local biologists.

### **N.1.2.2 Benefits of Conservation Measures for the Species**

#### **Applicable Conservation Measures**

- CM1: Acquire Lands
- CM5: Enhance Protected Natural Communities for Covered Species

#### **Benefits of the BRCP Conservation Strategy for the Species**

The only available breeding habitat for peregrine falcons within the Plan Area occurs on cliffs along the eastern edge of the Plan Area, where there are two known nest sites in the Plan Area, and three known nest sites east of the Plan Area boundary. Most peregrine falcon cliff nest sites are nearly vertical and are between 50 and 200 meters high (164 to 656 feet) (Bond 1946; White et al. 2002). Peregrine falcon seasonal foraging habitat is defined as grassland with vernal swale complex, and vernal pools or altered vernal pools contained by grassland with vernal swale complex within the entire Plan Area. Peregrine falcons prey on waterfowl, shorebirds, and other birds that may use vernal pools. Vernal pools typically fill during November and dry by May. For purposes of this model, all suitable foraging habitat within the Plan Area is assumed to be within the foraging range of peregrine falcons nesting along the eastern edge of the Plan Area (CDFW 1989).

Peregrine falcon year-round foraging habitat includes managed wetland, emergent wetland, rice, and open water land cover types within the entire Plan Area. Full implementation of the BRCP will protect an additional 13,150 acres of grassland natural community (16 percent of the natural community in the Plan Area), 21,270 acres grasslands with vernal pool swale complex (63 percent of the natural community in the Plan Area), 500 acres of managed seasonal wetlands (24 percent of the natural community in the Plan Area), 700 acres of emergent wetland (16 percent of the natural community in the Plan Area), and 12,250 acres of rice (10 percent of the natural community in the Plan Area) that support habitat for the peregrine falcon.

Enhancement and management of these communities to achieve the biological goals and objectives (*CM5: Enhance Protected Natural Communities for Covered Species*) is compatible with peregrine falcon habitat management. Protection and management of these natural communities under the BRCP will maintain habitat and provide for future occurrences of this species in the Plan Area.

## **N.1.3 Greater Roadrunner**

### **N.1.3.1 Species Account**

#### **Status**

No federal or state status. No other special status.

#### **Description**

Greater roadrunner is a medium-sized bird (50–60 centimeters [cm]) with relatively short, broad wings (43–61 cm). The head, neck, back, and wings are dark brown-black and heavily streaked with white, and the breast is mostly white. The legs and beak are blue. The eyes are bright yellow and there is a postocular streak of blue and red skin. Other notable features include the crest of black feathers, which can be raised or lowered, and a long tail that may be carried at an upward angle (Famolaro 2002).

#### **Distribution**

The current distribution in California extends the length of the Central Valley and Sierra foothills, Coast Ranges and valleys, and throughout Southern California. Few confirmed breeding locations have been reported in California, all of which are in Southern California (Famolaro 2002). The species is considered rare in northern California and in Butte County (Snowden 2001).

#### **Habitat Associations**

Greater roadrunner is found in arid, semi-open scrub habitat, primarily chaparral and coastal scrub communities. In Northern California, it is associated with a mix of open grasslands and chaparral, and occasionally with oak savanna habitats with patches of shrubs and thickets. It is generally found in flat to semi-flat terrain.

#### **Habitat Availability in the Plan Area**

The grassland and chaparral communities on the east side of the Plan Area provide suitable habitat conditions for the greater roadrunner. While the species could potentially occur further westward onto

the valley floor, the intensive agricultural and increasing development-related fragmentation preclude regular use of this area.

## **Occurrence/Distribution in the Plan Area.**

There are no recent records of breeding greater roadrunners in Butte County; however, Snowden (2001) considers it a potentially breeding bird. Reportedly fairly common during the first half of the twentieth century, it is currently considered rare and declining. While there are insufficient records to establish a current distribution of the species in the Plan Area, the grassland and chaparral communities and the oak woodland/grassland communities on the east side of the Plan Area are considered potential habitat.

### **N.1.3.2 Benefits of Conservation Measures for the Species**

#### **Applicable Conservation Measures**

- CM1: Acquire Lands
- CM4: Develop and Implement Site-Specific Wetland and Riparian Restoration Plans
- CM5: Enhance Protected Natural Communities for Covered Species

#### **Benefits of the BRCP Conservation Strategy for the Species**

The conservation approach for the greater roadrunner relies on the protection and management of grassland, oak woodland/savanna, and chaparral, particularly on the eastern side of the Plan Area. Full implementation of the BRCP will protect an additional 20,100 acres of oak woodland and savanna natural community (22 percent of the natural community in the Plan Area), 34,000 acres of grassland natural community (32 percent of the natural community in the Plan Area), that support habitat for the greater roadrunner. Protected lands will include a mosaic of grassland and savanna with smaller patches of chaparral and stringers of riparian forest. Enhancement and management of these communities to achieve the biological goals and objectives (*CM5: Enhance Protected Natural Communities for Covered Species*) is compatible with greater roadrunner habitat management. Protection and management of these natural communities under the BRCP will maintain habitat and provide for future occurrences of this species in the Plan Area.

## **N.1.4 Northern Harrier**

### **N.1.4.1 Species Account**

#### **Status**

The northern harrier is designated by California Department of Fish and Wildlife (CDFW) as a state species of special concern (Remsen 1978). The northern harrier currently has no special federal status.

#### **Description**

The northern harrier is a medium-sized hawk (46–50 cm) with a slight build and relatively long tail and wings (102–118 cm). Adult males are pale gray, while juveniles and females are brown. All plumages show a distinctive white rump patch in flight (Sibley 2003).

## Distribution

In California, this species is a permanent resident of the northeastern plateau, coastal areas, and the Central Valley. It is also a widespread winter visitor and migrant in suitable habitat. While declines in the California population have been noted for many years (Grinnell and Miller 1944; Remsen 1978), the species can be locally abundant where suitable habitat remains free of disturbance, especially from intensive agriculture. Breeding populations have declined from destruction of wetland habitats, native grasslands, and moist meadows, and in agricultural areas from burning and plowing of nest sites during early stages of the breeding cycle (MacWhirter and Bildstein 1996).

## Habitat Associations

Throughout its range, northern harriers occur primarily in open wetland, grassland, and agricultural habitats. The northern harrier is a ground-nesting raptor, constructing rudimentary nest sites on the ground in marsh, grassland, and some agricultural habitats, particularly grain fields. They forage in seasonal wetland, grassland, and agricultural habitats for voles and other small mammals, birds, frogs, and small reptiles, crustaceans, and insects. They also roost on the ground, using tall grasses and forbs in wetlands, or along wetland/field borders for cover (MacWhirter and Bildstein 1996).

## Habitat Availability in the Plan Area

Nesting and foraging habitat for northern harriers occurs throughout most of the Plan Area. The large wetland habitats in the western and southwestern portions of the Plan Area, such as Llano Seco and wetlands associated with Gray Lodge Wildlife Area, probably represent the most intact, least disturbed, and highest value nesting and foraging habitat. Also, the row- and grain-crop agricultural lands throughout the western and central portions of the Plan Area provide suitable foraging habitat and can provide suitable nesting habitat; however, as noted above agricultural practices in these habitats can result in the destruction of active nests. Finally, the grasslands, grassland/vernal pool complexes, and grassland meadows in the eastern portion of the Plan Area also provide suitable foraging habitat and occasional nesting opportunities.

## Occurrence/Distribution in the Plan Area

Nesting records of northern harriers are not well documented, due in part to the difficulty locating and confirming nests. The species likely breeds in all suitable habitat areas noted above, but the largest and most secure nesting areas are those with a marsh component and are relatively undisturbed, such as the Gray Lodge and Llano Seco wetland areas. The species is considered an uncommon breeder (Snowden 2001) and has likely declined in Butte County as a result of agricultural conversion, particularly incompatible crop types such as orchards. Foraging activity occurs throughout all suitable habitats and is particularly important during the winter season when northern migrants are present in the Plan Area (Snowden 2001).

### N.1.4.2 Applicable Conservation Measures

- CM1: Acquire Lands
- CM4: Develop and Implement Site-Specific Wetland and Riparian Restoration Plans
- CM5: Enhance Protected Natural Communities for Covered Species

## Benefits of the BRCP Conservation Strategy for the Species

The conservation approach for the northern harrier relies on the protection, restoration, and management of grassland, wetland, and agricultural natural communities throughout the Plan Area. Full implementation of the BRCP will protect an additional 34,400 acres of grasslands natural community, 695 acres of wetland natural community, and 26,962 acres of compatible (irrigated pasture and irrigated cropland) agricultural habitats that provide suitable habitat for the northern harrier. Protection and restoration of these land cover types will result in protecting of over 34 percent, 85 percent, and 10 percent of these natural communities and habitats in the Plan Area. Protected lands will include large expanses of wetlands and agricultural lands that currently support northern harrier breeding. Enhancement and management of these communities to achieve the biological goals and objectives (*CM5: Enhance Protected Natural Communities for Covered Species*) is compatible with northern harrier habitat management. Protection and management of these natural communities under the BRCP will maintain habitat and provide for future occurrences of this species in the Plan Area.

### N.1.5 Golden Eagle

#### N.1.5.1 Species Account

##### Status

Currently designated by CDFW as a fully protected species (CDFW 2011); the golden eagle is also protected under the federal Bald and Golden Eagle Protection Act and is designated by the USFWS as a federal species of concern.

##### Description

The golden eagle is a large bird of prey (70–84 cm in height) with very long and broad wings (185–220 cm). They are light brown in color with dark brown eyes and a faintly banded tail. Adults have a golden mantle. Females are somewhat larger, but otherwise the sexes are similar (Kochert et al. 2002).

##### Distribution

In North America, golden eagles breed from Alaska to Mexico and from the west coast east to Texas. In California, the species breeds throughout the mid- to higher elevation portions of the state and throughout the Southern California deserts (Kochert et al. 2002).

##### Habitat Associations

In California, golden eagles are generally found in open country, including open woodlands and coniferous forests, grasslands, chaparral habitats, and deserts. They forage primarily on lagomorphs and ground squirrels (Olendorff 1976). They nest on cliff ledges, large outcrops, and where these habitats are limited they will readily nest in a variety of trees (Bruce et al. 1982).

##### Habitat Availability in the Plan Area

Available nesting habitat is found in the far eastern portion of the Plan Area. Cliff faces associated with steep canyons provide potential nesting substrates. Large oak trees, foothill pine, and other conifers also provide potential nesting habitat. Suitable foraging habitat includes grassland and chaparral areas in the

eastern portion of the Plan Area, and cultivated farmland and pasturelands in the interior and western portions of the Plan Area.

## Occurrence/Distribution in the Plan Area

There are no recent records of nesting golden eagles from the Plan Area. A south-facing cliff-site nest has been recorded just west of Table Mountain, but there has been no recently recorded activity at this site. Golden eagles are known to nest on the Sutter Buttes, just south of the Plan Area.

### N.1.5.2 Applicable Conservation Measures

- CM1: Acquire Lands
- CM5: Enhance Protected Natural Communities for Covered Species

## Benefits of the BRCP Conservation Strategy for the Species

The conservation approach for the golden eagle relies on the protection and management of grassland, oak woodland/savanna (and associated chaparral), and agricultural natural communities throughout the Plan Area. Full implementation of the BRCP will protect an additional 20,100 acres of oak woodland and savanna natural community, 34,400 acres of grassland natural community, and 2,100 acres of compatible (Irrigated pasture and irrigated cropland) agricultural habitats that provide suitable habitat for the golden eagle. Protection and restoration of these land cover types will result in protection of over 22 percent, 34 percent, and 10 percent of these natural communities and habitats in the Plan Area. Protected lands will include large expanses of grasslands and woodlands on the eastern edge of the Plan Area where golden eagles may potentially nest in the future and compatible agricultural foraging habitats throughout the Plan Area to support wintering golden eagles. Enhancement and management of these communities to achieve the biological goals and objectives (*CM5: Enhance Protected Natural Communities for Covered Species*) is compatible with golden eagle habitat management. Protection and management of these natural communities under the BRCP will maintain habitat and provide for future occurrences of this species in the Plan Area.

## N.1.6 Merlin

### N.1.6.1 Species Account

#### Status

The merlin was previously designated as a state species of special concern by CDFW (Remsen 1978); however, the species is not included on the recently published revision of CDFW's Bird Species of Special Concern (Shuford and Gardali 2008). Currently, it is on CDFW's Watch List. The merlin currently has no special federal status.

#### Description

The merlin is a small falcon (24–30 cm) with long, pointed wings (53–68 cm) and a long, banded tail. It is the least distinctively marked falcon in North America with a faint mustache mark, brown streaking on the chest and belly, and with an unmarked gray or brown back (Sodhi et al. 1993). The sexes are similar, but the male is smaller and with a gray back; the female has a brown back.

## Distribution

The merlin's breeding range extends across Alaska and Canada and southward to the most northern United States. The species also occurs across northern Eurasia. The merlin does not breed in California. Merlins winter from southern Canada to northern South America (Sodhi et al. 1993). In California, it is an uncommon winter migrant from September to May, occurring throughout most of the western half of the state below 1,500 meters (Zeiner et al. 1990).

## Habitat Associations

In California, merlins winter in open woodland, grasslands, open cultivated fields, marshes, estuaries, and along the coast. In the Central Valley, merlins are generally associated with agricultural and open grassland or savannah habitats, particularly when associated with seasonal or permanent marsh habitats (Sodhi et al. 1993). They are generally not found in heavily wooded areas (Garrett and Dunn 1981). They prey primarily on birds, but also take small mammals, reptiles, and insects.

## Habitat Availability in the Plan Area

Within the Plan Area, available habitat includes non-orchard agricultural fields, grasslands and vernal pool grasslands, and seasonal and permanent marshes and wetlands. Merlins may benefit from rice fields because these areas concentrate shorebirds and other avian prey (Jones & Stokes 2005).

## Occurrence/Distribution in the Plan Area

Merlins are occasionally reported in Butte County during the nonbreeding season. The species occurs uncommonly throughout the non-orchard agricultural, grassland, vernal pool grassland, and wetland communities.

### N.1.6.2 Applicable Conservation Measures

- CM1: Acquire Lands
- CM4: Develop and Implement Site-Specific Wetland and Riparian Restoration Plans
- CM5: Enhance Protected Natural Communities for Covered Species

## Benefits of the BRCP Conservation Strategy for the Species

The conservation approach for the merlin relies on the protection, restoration, and management of grassland, oak savanna, wetland, and agricultural natural communities throughout the Plan Area. Full implementation of the BRCP will protect an additional 20,100 acres of oak woodland and savanna natural community, 34,400 acres of grassland natural community, 695 acres of emergent wetland natural community, and 2,100 acres of compatible (Irrigated pasture and irrigated cropland) agricultural habitats that provide suitable habitat for the merlin. Protection and restoration of these land cover types will result in protection of over 22 percent, 34 percent, 85 percent, and 10 percent of these natural communities and habitats in the Plan Area, respectively. Protected lands will include large expanses of savanna, grassland, wetlands, and agricultural lands that currently support wintering merlins. Enhancement and management of these communities to achieve the biological goals and objectives (*CM5: Enhance Protected Natural Communities for Covered Species*) is compatible with merlin habitat management. Protection and management of these natural communities under the BRCP will maintain habitat and provide for future occurrences of this species in the Plan Area.

## **N.1.7 Prairie Falcon**

### **N.1.7.1 Species Account**

#### **Status**

The prairie falcon is designated by the USFWS as a federal species of concern, and is on the CDFW Watch List.

#### **Description**

The prairie falcon is large falcon (37–47 cm) with long, pointed wings (90–113 cm) (Steenhof 1998). It has a pale brown back, whitish chest with brown spots and bars, and brown head and facial markings, including a distinctive dark “mustache” mark on the face. The female is larger than the male but otherwise the sexes are similar.

#### **Distribution**

The prairie falcon is distributed throughout the arid west, ranging from southern Canada to northern Mexico and east to Texas. In California, the species is found primarily in the coastal ranges, Great Basin deserts of northeastern California and east of the Sierra Nevada, and the Southern California deserts. Prairie falcons are also found, although rarely, along the western slope of the Sierra Nevada and is considered a rare breeding bird in Butte County (Snowden 2001).

#### **Habitat Associations**

The Prairie falcon nests almost exclusively on cliff ledges and protected large rock outcrops. They forage in grasslands, prairies, and in cultivated fields and pasture habitats.

#### **Habitat Availability in the Plan Area**

Available nesting habitat is restricted to the cliff faces associated with steep canyons on the eastern edge of the Plan Area. Available foraging habitat includes the grassland and open chaparral and woodland habitats on the east side and, to a lesser extent, cultivated habitats in the interior and western portions of the Plan Area.

#### **Occurrence/Distribution in the Plan Area**

There are no recent records of nesting prairie falcons in the Plan Area. Snowden (2001) considers the species a rare breeder along the eastern edge of the Plan Area. The species is more frequently observed during the winter, when it can be found hunting in agricultural, grassland, and scrub habitats throughout the Plan Area.

### **N.1.7.2 Applicable Conservation Measures**

- CM1: Acquire Lands
- CM5: Enhance Protected Natural Communities for Covered Species

## Benefits of the BRCP Conservation Strategy for the Species

The conservation approach for the prairie falcon relies on the protection and management of grassland, oak savanna, and agricultural natural communities throughout the Plan Area. Full implementation of the BRCP will protect an additional 20,100 acres of oak woodland and savanna natural community, 34,400 acres of grassland natural community, and 2,100 acres of compatible (Irrigated pasture and irrigated cropland) agricultural habitats that provide suitable habitat for the prairie falcon. Protection and restoration of these land cover types will result in protection of over 22 percent, 34 percent, and 10 percent of these natural communities and habitats in the Plan Area, respectively. Protected lands will include large expanses of grasslands and savannas on the eastern edge of the Plan Area where prairie falcons may potentially nest in the future and compatible agricultural foraging habitats throughout the Plan Area to support wintering prairie falcons. Enhancement and management of these communities to achieve the biological goals and objectives (*CM5: Enhance Protected Natural Communities for Covered Species*) is compatible with prairie falcon habitat management. Protection and management of these natural communities under the BRCP will maintain habitat and provide for future occurrences of this species in the Plan Area.

### N.1.8 Long-Eared Owl

#### N.1.8.1 Species Account

##### Status

The long-eared owl is designated by CDFW as a state species of special concern. Currently, it has no special federal status.

##### Description

The long-eared owl is a medium-sized owl (35–40 cm) with long, rounded wings (90–100 cm). It is mostly brown, but is cryptically marked with brown and black, streaking and barring on the breast and belly, which makes it difficult to detect in dense vegetation. It has large conspicuous “ear” tufts and an orange facial disk and distinctive white markings on the face that form an “x” between the eyes. It has fully feathered legs and feet. The sexes are similar; however, males are somewhat smaller and often slightly paler than females (Marks et al. 1994).

##### Distribution

The breeding distribution extends throughout most of southern Canada, northern and eastern United States, the Great Lakes region, and throughout much of the northern prairie and western United States. In California, the species occurs throughout much of the state with reported historic concentrations in the Sacramento Valley, San Joaquin Valley, and in the San Diego area, where it is now rare, and more current concentration areas at various locations on the east side of the Sierra, such as the Susan River, and in desert oases in Southern California deserts (Marks et al. 1994). While thought to be extirpated in many locations, including the Sacramento Valley, the species is very secretive and potentially more common than recorded observations would suggest.

## Habitat Associations

The long-eared owl requires dense wooded areas for daytime roosting and nesting with adjacent open areas where they hunt for small rodents and occasionally small birds. Long-eared owls are often associated with coniferous forest edges or patches of conifers, riparian woodland, and oak woodland habitats where sufficient cover is available. Snowden (2001) reports a preference for riparian vegetation dominated by box elder or willow. They do not construct their own nest, instead, they use stick nests built by other species, including American crows and various hawk species. Adjacent foraging habitats include grasslands, shrublands, open woodlands, cultivated farmland, and other open habitats. Habitat requirements are similar during breeding and wintering seasons (Marks et al. 1994).

## Habitat Availability in the Plan Area

Available nesting and roosting habitat includes dense riparian woodlands along the Sacramento River, Feather River, Big Chico Creek, and Butte Creek, willow and box elder thickets along smaller drainages, and woodlands along the edges of grassland and chaparral habitats in the eastern portion of the Plan Area.

## Occurrence/Distribution in the Plan Area

Considered rare by Snowden (2001) and an uncertain breeder, there are no recent reported breeding occurrences of long-eared owls from the Plan Area. Historical breeding sites include a Sacramento River oxbow near the former M&T Ranch west of Chico and near Hamlin Canyon, south of Butte Creek on the east side of the Plan Area (Snowden pers. comm.). Occurrences reported by Altcal Audubon and others are winter occurrences.

### N.1.8.2 Applicable Conservation Measures

- CM1: Acquire Lands
- CM4: Develop and Implement Site-Specific Wetland and Riparian Restoration Plans
- CM5: Enhance Protected Natural Communities for Covered Species

## Benefits of the BRCP Conservation Strategy for the Species

The conservation approach for the long-eared owl relies on the protection, restoration, and management of oak woodland, grassland, riparian, and agricultural natural communities throughout the Plan Area. Full implementation of the BRCP will protect an additional 20,100 acres of oak woodland and savanna natural community, 34,400 acres of grassland natural community, 6,370 acres of riparian natural community (as well as 190 acres of restored riparian habitat), and 2,100 acres of compatible (Irrigated pasture and irrigated cropland) agricultural habitats that provide suitable habitat for the merlin. Protection and restoration of these land cover types will result in protection of over 22 percent, 34 percent, 48 percent, and 10 percent of these natural communities and habitats in the Plan Area, respectively. Enhancement and management of these communities to achieve the biological goals and objectives (*CM5: Enhance Protected Natural Communities for Covered Species*) is compatible with long-eared owl habitat management. Protection and management of these natural communities under the BRCP will maintain habitat and provide for future occurrences of this species in the Plan Area.

## **N.1.9 Short-Eared Owl**

### **N.1.9.1 Species Account**

#### **Status**

The short-eared owl is designated by CDFW as a state species of special concern. Currently, it has no special federal status.

#### **Description**

The short-eared owl is a medium-sized owl (34–43 cm) with relatively long (85–103 cm) rounded wings. Its ear tufts are small and appear as ridges that begin above the bill and curve up and over the forehead and crest. It has a large, round off-white facial disk with fine brown tinges and black around the eyes. Underparts are white to buffy with dark brown streaks and the back is dark brown with white mottling. The female is slightly larger than the male but otherwise the sexes are similar (Holt and Leasure 1993).

#### **Distribution**

The breeding range extends from Alaska to Central California in the west and Northern Quebec and Newfoundland to Northern Virginia in the east. The winter ranges includes all of southern United States to southern Mexico (Holt and Leasure 1993). In California, the historic breeding range included most of the lowland portions of the state. The current breeding distribution includes remaining open wetland, marsh, and prairie habitats in the Central Valley and coastal areas. The species winters primarily in the Central Valley, Sierra Nevada foothills, and Southern California.

#### **Habitat Associations**

Short-eared owls are usually found in open areas with few trees, including annual and perennial grasslands, prairies, meadows, freshwater emergent marshes, dunes, and irrigated pasturelands where it nests and roosts on the ground in dense vegetation and forages on small rodents and birds.

#### **Habitat Availability in the Plan Area**

Potential nesting habitat for short-eared owls in the Plan Area is similar to the northern harrier. Probably the highest value potential nesting habitat occurs in the wetland habitats of Llano Seco and the Butte Creek watershed in and around Gray Lodge Wildlife Area. Irrigated cropland and the grassland and grassland/vernal complexes in the eastern portion of the Plan Area also provide suitable wintering habitat.

#### **Occurrence/Distribution in the Plan Area**

Few breeding records for Butte County are available. Snowden (2001) reports the short-eared owl as a rare breeder in Butte County. Potential breeding habitat includes the Llano Seco and Butte Creek watershed area in and around Gray Lodge Wildlife Area. Wintering birds could potentially use this area and grassland habitats in the eastern portion of the Plan Area.

### N.1.9.2 Applicable Conservation Measures

- CM1: Acquire Lands
- CM4: Develop and Implement Site-Specific Wetland and Riparian Restoration Plans
- CM5: Enhance Protected Natural Communities for Covered Species

### Benefits of the BRCP Conservation Strategy for the Species

The conservation approach for the short-eared owl relies on the protection, restoration, and management of grassland, wetland, and agricultural natural communities throughout the Plan Area. Full implementation of the BRCP will protect an additional 34,400 acres of grassland natural community, 695 acres of emergent wetland natural community, and 2,100 acres of compatible (Irrigated pasture and irrigated cropland) agricultural habitats that provide suitable habitat for the short-eared owl. Protection and restoration of these land cover types will result in protection of over 34 percent, 85 percent, and 10 percent of these natural communities and habitats in the Plan Area, respectively. Protected lands will include large expanses of wetlands, grasslands, and agricultural lands that currently support short-eared owl breeding or wintering populations. Enhancement and management of these communities to achieve the biological goals and objectives (*CM5: Enhance Protected Natural Communities for Covered Species*) is compatible with short-eared owl habitat management. Protection and management of these natural communities under the BRCP will maintain habitat and provide for future occurrences of this species in the Plan Area.

## N.1.10 Willow Flycatcher

### N.1.10.1 Species Account

#### Status

State Endangered. Of the three subspecies present in California, *E. t. brewsteri* is the most likely to occur in the Plan Area. All subspecies are state-threatened, but *E. t. brewsteri* has no federal status. It is designated by the USFWS as a federal species of concern.

#### Description

The willow flycatcher is a small flycatcher (13–17 cm) similar in appearance to other *Empidonax* flycatchers. Its upper parts are drab olive to brownish gray and underparts are light gray washed with yellow on the belly during spring. It has two whitish wingbars, and a white throat contrasting with a dull brownish breast band. It has a short, wide bill and a medium-long tail. The sexes are similar (Craig and Williams 1998).

#### Distribution

The breeding range extends across southern Canada and throughout most of the United States with the exception of the southeast United States. It winters in Central and South America (Sedgewick 2000). In California, Grinnell and Miller (1944) reported nesting willow flycatchers throughout the state wherever deciduous shrubs, mainly thickets of willows, occurred. Currently, the species is considered a rare to locally uncommon summer resident in wet meadows and montane riparian habitats from 600 to 2,440 meters and a common spring and fall migrant at lower elevations (Craig and Williams 1998). *E.t.*

*brewsteri* is currently found primarily in isolated Sierra Nevada and Cascade meadows, but has more recently been detected in several new locales such as along the Klamath River (Craig and Williams 1998).

## Habitat Associations

Breeding habitat is typically moist meadows with perennial streams; lowland riparian woodlands dominated by willows (*Salix* spp.), primarily in tree form, and cottonwoods (*Populus* spp.); or smaller spring-fed or boggy areas with willow or alders (*Alnus* spp.) (Serena 1982; Harris et al. 1988 [in Craig and Williams 1998]). Riparian deciduous shrubs or trees, such as willow or alder, are essential elements on willow flycatcher territories (Sanders and Flett 1989; Harris et al. 1988 [in Craig and Williams 1998]). During migration, the species can be observed along riparian corridors at lower elevations.

## Habitat Availability in the Plan Area

There is no extensive wet meadow-riparian breeding habitat within the Plan Area. Riparian habitat along the Sacramento and Feather Rivers, Butte Creek and Big Chico Creek, and other smaller drainages, provides suitable cover and roosting habitat during the fall and spring migratory periods.

## Occurrence/Distribution in the Plan Area

There are no recent breeding occurrences of willow flycatcher from the Plan Area. Snowden (2001) reports breeding activity at a few wet meadow-riparian areas in northern Butte County, but outside of the Plan Area. Dawn Garcia of California State University Chico reports several migratory occurrences along Butte Creek in 2006. Other occurrences during the spring and fall migratory periods are periodically reported by local birders.

### N.1.10.2 Applicable Conservation Measures

- CM1: Acquire Lands
- CM4: Develop and Implement Site-Specific Wetland and Riparian Restoration Plans
- CM5: Enhance Protected Natural Communities for Covered Species

## Benefits of the BRCP Conservation Strategy for the Species

The conservation approach for the willow flycatcher relies on the protection, restoration, and management of riparian natural community throughout the Plan Area. Full implementation of the BRCP will protect an additional 6,370 acres of riparian natural community, as well as 190 acres of restored riparian forest, resulting in protection of over 48 percent of this community in the Plan Area. Enhancement and management of these communities to achieve the biological goals and objectives (*CM5: Enhance Protected Natural Communities for Covered Species*) is compatible with willow flycatcher habitat management. Protection and management of these natural communities under the BRCP will maintain habitat and provide for future occurrences of this species in the Plan Area.

## **N.1.11 Loggerhead Shrike**

### **N.1.11.1 Species Account**

#### **Status**

The loggerhead shrike is designated by the USFWS as a federal species of concern and by CDFW as a state species of special concern.

#### **Description**

The loggerhead shrike is a medium-sized (20–23 cm), stout, short-winged passerine that is often seen perched on barbed wire fences. The underparts and back are grey and the throat and upper breast is white, which distinctly contrasts with the black tail, wings and facemask (Sibley 2000).

#### **Distribution**

The breeding range extends from central Prairie Provinces and the Canadian border southward to Florida, west to California, and southern Mexico (Yosef 1996). In California, the loggerhead shrike is a permanent resident and winter visitor in foothills and lowlands throughout California, where it is considered a fairly common resident (Small 1994).

#### **Habitat Associations**

Shrikes prefer open habitats with scattered trees, shrubs, posts, fences, utility lines, or other perches. It nests in small trees and shrubs and forages for small rodents and insects in pastures and agricultural lands.

#### **Habitat Availability in the Plan Area**

Most of the Plan Area is considered potential habitat for loggerhead shrike, particularly the lower elevation pasture and non-orchard agricultural lands with small trees and shrubs for nesting. Highest value lands may occur in the open pastures and irrigation croplands in the southwestern portion of the Plan Area, and in the open grassland habitats on the eastern side of the Plan Area.

#### **Occurrence/Distribution in the Plan Area**

Nest sites are infrequently reported and documented, likely due to the difficulty locating nests; however, occurrences of individual birds are regularly, although infrequently, reported by local birders. Snowden (2001) considers the species uncommon in Butte County and notes that populations may be declining as a result of the loss of potential nest sites (small trees and shrubs).

### **N.1.11.2 Applicable Conservation Measures**

- CM1: Acquire Lands
- CM5: Enhance Protected Natural Communities for Covered Species

## Benefits of the BRCP Conservation Strategy for the Species

The conservation approach for the loggerhead shrike relies on the protection and management of grassland and agricultural natural communities throughout the Plan Area. Full implementation of the BRCP will protect an additional 34,400 acres of grassland natural community and 2,100 acres of compatible (Irrigated pasture and irrigated cropland) agricultural habitats that provide suitable habitat for the loggerhead shrike. Protection and restoration of these land cover types will result in protection of over 34 percent and 10 percent of these natural communities and habitats in the Plan Area, respectively. Protection and restoration of riparian habitats and protection of oak woodland/savanna habitats will also provide additional protected nesting and roosting habitat for shrikes where these habitats are adjacent to open grassland or agricultural foraging habitats. Protection of some seasonal wetlands may also contribute to overall habitat protection for this species. Protected lands will include large expanses of grasslands on the eastern edge of the Plan Area and compatible agricultural foraging habitats throughout the Plan Area. Enhancement and management of these communities to achieve the biological goals and objectives (*CM5: Enhance Protected Natural Communities for Covered Species*) is compatible with loggerhead shrike habitat management. Protection and management of these natural communities under the BRCP will maintain habitat and provide for future occurrences of this species in the Plan Area.

### N.1.12 Yellow-Billed Magpie

#### N.1.12.1 Species Account

##### Status

The yellow-billed magpie is designated by the USFWS as a federal species of concern. It currently has no special state status. The species is included here due to its sensitivity to the effects of the West Nile virus. Recent information regarding the susceptibility of magpies to the virus and the low survivability of infected magpies has led to concern regarding the future status of yellow-billed magpie populations.

##### Description

The yellow-billed magpie is a medium-sized corvid (43–50 cm) with a black head and chest, white shoulders and belly, iridescent blue wings, and a long tapered black tail. The bill is bright yellow. Males are slightly larger than females; otherwise, the sexes are alike.

##### Distribution

The species is endemic to California west of the Sierra Nevada. Its range includes Sacramento and San Joaquin valley floors and foothills, and valleys of the Coast Ranges from San Francisco Bay south to Santa Barbara County (Reynolds 1995).

##### Habitat Associations

Yellow-billed magpie inhabits open country with tall trees for nesting and roosting. It usually forages on the ground in agricultural fields, grasslands, pastures, and around farmyards and other disturbed sites. It nests high in trees, usually in valley oak, black walnut, and other tall trees. Yellow-billed magpies are highly social, foraging and roosting together often in large numbers. They nest individually or in loose colonies (Reynolds 1995).

## Habitat Availability in the Plan Area

Suitable habitat is found throughout the lower elevation portions of the Plan Area. All agricultural types are used, including orchards. Pasturelands and grasslands also provide suitable habitat for magpies. Magpie nests are commonly found along all of the major watercourses, including the Sacramento and Feather Rivers, along roadside trees, and in isolated oak trees.

## Occurrence/Distribution in the Plan Area

Yellow-billed magpie is widely distributed throughout the mid- and lower-elevation portions of the Plan Area. Populations have reportedly declined during the last 2 years (Altcal Audubon Society records) presumably as a result of West Nile Virus infestation.

### N.1.12.2 Applicable Conservation Measures

- CM1: Acquire Lands
- CM4: Develop and Implement Site-Specific Wetland and Riparian Restoration Plans
- CM5: Enhance Protected Natural Communities for Covered Species

## Benefits of the BRCP Conservation Strategy for the Species

The conservation approach for the yellow-billed magpie relies on the protection and management of oak woodland, grassland, riparian, and agricultural natural communities throughout the Plan Area. Full implementation of the BRCP will protect an additional 20,100 acres of oak woodland and savanna natural community, 34,400 acres of grassland natural community, 6,370 acres of riparian natural community (as well as 190 acres of restored riparian habitat), and 2,100 acres of compatible (Irrigated pasture and irrigated cropland) agricultural habitats that provide suitable habitat for the yellow-billed magpie. Protection and restoration of these land cover types will result in protection of over 22 percent, 34 percent, 48 percent, and 10 percent of these natural communities and habitats in the Plan Area, respectively. Protected lands will include large expanses of grassland and woodland habitats on the eastern edge of the Plan Area and agricultural and riparian habitats throughout the Plan Area. Enhancement and management of these communities to achieve the biological goals and objectives (*CM5: Enhance Protected Natural Communities for Covered Species*) is compatible with yellow-billed magpie habitat management. Protection and management of these natural communities under the BRCP will maintain habitat and provide for future occurrences of this species in the Plan Area.

## N.1.13 California Horned Lark

### N.1.13.1 Species Account

#### Status

The California horned lark is currently on CDFW's Watch List. It currently has no special federal status. Of the numerous subspecies of horned lark, *E.a. rubea* is the locally breeding race within the Plan Area (Snowden 2001); however, other subspecies likely occur in the Plan Area during the migratory and wintering periods.

## Description

Horned larks are small, sparrow-sized ground-dwelling birds. They are pale sandy-brown, with a yellowish chin and throat, black mask and breast band, and two small black tufts (“horns”) on the head.

## Distribution

Horned larks breed widely throughout North America, from northern Alaska to southern Mexico. They winter from southern Canada southward across the United States and Mexico (Beason 1995).

## Habitat Associations

Throughout their range, horned larks are associated with open desert scrub, grasslands, montane meadows, and similar open habitats (Beason 1995). Grinnell and Miller (1944) describe horned lark breeding habitat as level or gently sloping shortgrass prairie, montane meadows, “bald” hills, open coastal plains, fallow grain fields, and alkali flats. More recently in California, they are commonly found in open grasslands and rangelands in the Sierra Nevada foothills, Coast Ranges, and Southern California. Horned larks are also considered an agricultural pest as they increasingly find available foraging habitat in newly planted fields, particularly those near open grassland breeding habitat (Internet Center for Wildlife Damage Management 2011).

## Habitat Availability in the Plan Area

Breeding habitat for horned larks occurs throughout the foothill grassland and valley grassland/vernal pool habitats. Irrigated croplands also provide available foraging habitat; however, Snowden (2001) reports migratory subspecies likely use the valley floor habitats while *E.a. rubea* apparently remains within its foothill grassland breeding habitat.

## Occurrence/Distribution in the Plan Area

Snowden (2001) reports horned larks are a common breeding and wintering species in the Plan Area. Distribution includes all foothill grassland and lower elevation grassland and non-orchard irrigated cropland; however, the breeding distribution is limited largely to the noncultivated grassland habitats in the eastern portion of the Plan Area.

### N.1.13.2 Applicable Conservation Measures

- CM1: Acquire Lands
- CM5: Enhance Protected Natural Communities for Covered Species

## Benefits of the BRCP Conservation Strategy for the Species

The conservation approach for the horned lark relies primarily on the protection and management of the grassland natural community along the eastern edge of the Plan Area. Full implementation of the BRCP will protect an additional 34,400 acres of grassland that provides suitable habitat for the horned lark, resulting in protection of over 34 percent of this community in the Plan Area. Enhancement and management of these communities to achieve the biological goals and objectives (*CM5: Enhance Protected Natural Communities for Covered Species*) is compatible with yellow-billed magpie habitat management. Protection and management of these natural communities under the BRCP will maintain habitat and provide for future occurrences of this species in the Plan Area.

## N.1.14 Purple Martin

### N.1.14.1 Species Account

#### Status

The purple martin is designated by CDFW as a state species of special concern. It currently has no special federal status. Three subspecies of purple martin are currently recognized with *P. s. arboricola*, the only one found in California.

#### Description

Purple martin is the largest (15 cm) North American swallow. They are bluish-blackish above in all plumages, with females having paler underparts (Sibley 2003).

#### Distribution

The purple martin breeding range extends from central Alberta to the Gulf of Mexico east of the dry western section of the Great Plains. Disjunct populations are found in the southern Rocky Mountain region, Baja California, northern and central Mexico, and along the Pacific coast from Vancouver, British Columbia to central California. Smaller populations are found on the Modoc Plateau, Sacramento area, northern Sierra Nevada, and in the mountains of Southern California. The winter range is primarily in central South America (Brown 1997).

#### Habitat Associations

Purple martins develop colonial nests in cavities of large trees in oak or riparian woodlands and low-elevation coniferous forests. Nests are in old woodpecker cavities in dead snags and are often in residual snags in burned or logged forests (Brown 1997). With the extensive loss of mature riparian trees throughout much of their range in California, purple martins have begun using built structures such as buildings, bridges and highway overpasses for nesting (Airola and Grantham 2003).

#### Habitat Availability in the Plan Area

Potential breeding habitat is available in oak woodland and savanna habitats along the eastern edge of the Plan Area. Currently, potential built nesting habitat is unavailable at most freeway overcrossings or bridges where vertical “weep” holes could be present (Airola and Grantham 2003). Future construction, however, could create these nesting opportunities.

#### Occurrence/Distribution in the Plan Area

Snowden (2001) reports the possible extirpation of purple martins from Butte County. Available and otherwise suitable nesting habitat is unoccupied likely as a result of nest cavity competition from European starlings (*Sturnus vulgaris*).

### N.1.14.2 Applicable Conservation Measures

- CM1: Acquire Lands
- CM4: Develop and Implement Site-Specific Wetland and Riparian Restoration Plans

- CM5: Enhance Protected Natural Communities for Covered Species

## Benefits of the BRCP Conservation Strategy for the Species

The conservation approach for the purple martin relies on the protection and management of oak woodland/savanna and riparian natural communities throughout the Plan Area. Full implementation of the BRCP will protect an additional 20,100 acres of oak woodland and savanna natural community and 6,370 acres of riparian natural community (as well as 190 acres of restored riparian habitat) habitats that provide suitable habitat for the purple martin. Protection and restoration of these land cover types will result in protection of over 22 percent and 48 percent of these natural communities and habitats in the Plan Area, respectively. Protected lands will include large blocks of oak woodland/savanna along the eastern edge of the Plan Area and riparian habitats throughout the Plan Area. Enhancement and management of these communities to achieve the biological goals and objectives (*CM5: Enhance Protected Natural Communities for Covered Species*) is compatible with purple martin habitat management. Protection and management of these natural communities under the BRCP will maintain habitat and provide for future occurrences of this species in the Plan Area.

### N.1.15 Bank Swallow

#### Species Account

##### Status

The bank swallow (*Riparia riparia*) is listed as a threatened species under the California ESA. The bank swallow has no federal regulatory status.

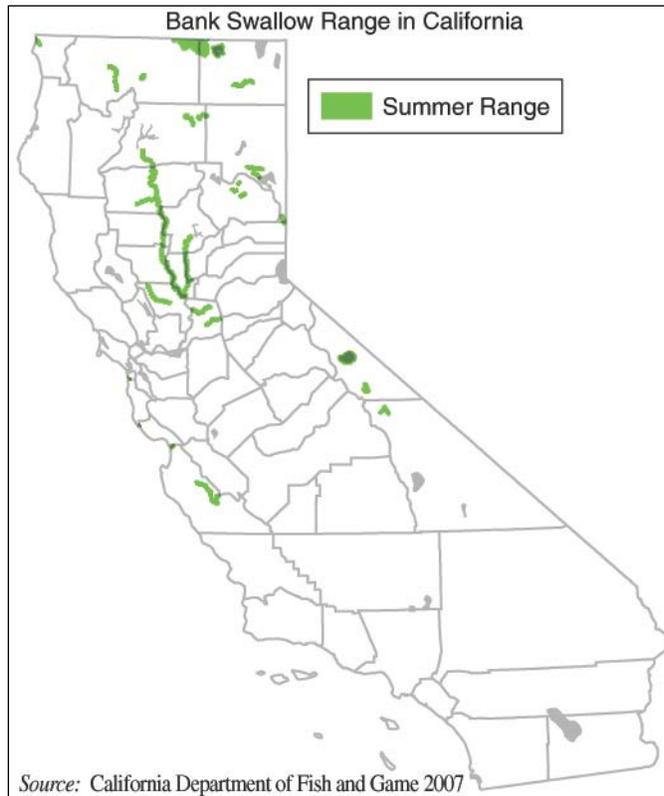
##### Description

The 12 cm (4.7 in) long bank swallow is brown above and white below with a narrow brown band on the breast, black bill, and brown legs. It has a quick jerky flight and a continuous twittering song.

##### Distribution

The bank swallow occurs throughout most of the northern United States, Canada, and Alaska, with a disjunct breeding population in southern Texas and northern Mexico (Garrison 1999). In California, the species historically occurred as a localized breeder along coastal areas and rivers in central and Southern California (Grinnell and Miller 1944). Most Southern California populations are now considered extinct and only a few central California populations remain extant. Southern and central California extirpations were due to channelization and other modifications of rivers and streams that disrupted the natural hydrological conditions responsible for creation of suitable banks for nesting.

Currently, the species is a locally common to uncommon breeding season resident in portions of



Northern and central California (Garrison 1999). Breeding distribution is primarily a function of the presence of alluvial soils suitable for nesting. As a result, breeding areas within the current range of the species are widely dispersed throughout Northern and central California in major lowland valleys and coastal areas where these conditions still exist. An estimated 75 percent of California's breeding population is confined to the Sacramento and Feather Rivers and their major tributaries from their confluence north to Redding along the Sacramento River and northeast to Oroville along the Feather River.

Laymon et al. (1988) reported a total of 111 colonies (including 66 [59.4 percent] along the Sacramento River and 18 [16.2 percent] along the Feather River) and consisting of 45,045 burrows (an index of population abundance) during surveys conducted in 1987. Since then, populations have reportedly decreased, apparently due to

ongoing bank stabilization projects along the Sacramento River and elsewhere (Schlorff 1995). Schlorff (1995) reported a 42 percent decline in the number of active colonies and a 44 percent decline in the number of burrows along the Sacramento River between 1986 and 1994. Since 1994, the number of active colonies reached a reported decline of 62 percent in 1998, followed by a recovery to approximately 1994 levels the following year and resulting in a recommendation to reclassify the species as state endangered (Hight pers. comm.).

## Habitat Associations

Bank swallow nesting colonies only occur in vertical banks or bluffs of friable soils (e.g., sandy loam soils) suitable for burrowing. Banks or bluffs must be at least 3 feet tall to deter predators. Suitable soil characteristics are typically maintained through bank erosion, and some source of continual erosion is almost always present where colonies occur. Thus, most colonies occur along rivers, streams, lakes, and ocean coasts; however, the proximity to water is a function of the presence of alluvial soils, the erosive action of water, and because these sites often afford greater vertical flying space around nesting burrows (Hjertaas 1984).

Vegetation associated with breeding sites is varied because breeding sites are selected primarily for the suitability of the nesting bank (Garrison 1999).

The vertical faces of banks and bluffs are typically devoid of vegetation around nesting burrows, but the vegetation surrounding the colony varies depending on location. Garrison (1989) determined that soil

type, height, and slope are the primary factors determining whether sites will be used for nesting and that specific vegetation communities were not factors used in site selection.

Bank Swallows usually forage in flight, consuming mainly flying or jumping insects during the nesting season within 50 to 200 meters of nesting colonies. Foraging habitat includes wetlands, open water, grasslands, riparian woodland, orchards, agricultural fields, shrub lands, and upland woodlands (Bank Swallow Technical Advisory Committee 2013).

## Habitat Availability in the Plan Area

Nesting habitat for the bank swallow in the Plan Area includes banks that are located along unleveled and unchannelized portions of the following waterways:

- Sacramento River
- Feather River
- Big Chico Creek
- Butte Creek

Bank swallow nesting colonies occur only in vertical banks or bluffs of friable soils (e.g., sandy loam soils) that are suitable for burrowing (Humphrey and Garrison 1987). Suitable soil characteristics are typically maintained through bank erosion, and some source of continual erosion is almost always present where colonies occur; thus, most colonies occur along rivers, streams, lakes, and ocean coasts (Humphrey and Garrison 1987). Channelization of streams, as well as bank stabilization and flood control projects lead to direct loss of suitable colony sites (Garrison et al. 1987). Given these habitat preferences and constraints, suitable nesting habitat in the Plan Area is defined as banks along unleveled and unchannelized portions of the Sacramento and Feather Rivers, and of Big Chico and Butte Creeks. Levees setback from channels at least 50 feet (as measured from the channel bank to the centerline of the levee) may also support nesting habitat because they likely have enough floodplain material and space to allow for meandering and natural river processes to occur.

Most colonies are associated with lowland vegetation types such as riparian forests and coastal grasslands; however, the few higher elevation colonies are associated with coniferous forests or desert shrub habitats. Most extant colonies in California, particularly those occurring along the Sacramento and Feather Rivers, are associated with narrow bands of riparian forests dominated by willow (*Salix* spp.) and Fremont cottonwood (*Populus fremontii*). These sites occur in association with cultivated croplands, including irrigated row crops, grain crops, and orchards. Garrison (1999) notes that bank swallows generally nest in 40 to 60 percent of the total number of banks that are suitable for nesting in any given year along the Sacramento River, and suggests that bank swallow populations may require some habitat surplus in order to remain viable over the long term.

Foraging habitat in the Plan Area consists of wetlands, open water, grasslands, riparian woodland, orchards, agricultural fields, and upland woodlands in the vicinity of nesting colonies.

## Occurrence/Distribution in the Plan Area

Humphrey and Garrison (1987) report 17 colonies along the Sacramento River within or immediately adjacent to the Plan Area (nine on the eastern bank and eight on the western bank). Hight (pers. comm.) indicates an estimated 47 percent reduction in the number of colonies in this area between 1986 and

1994, followed by a gradual increase through 1999 when the number was similar to that found in 1986. Colony size (as number of burrows) in this stretch of the Sacramento River ranged from 21 to 3,192 in 1986 (Humphrey and Garrison 1987) for a total of 8,982 burrows supporting an estimated 5,019 breeding pairs. Hight (pers. comm.) reports an estimated 27 percent decline in the number of burrows along this stretch between 1986 and 1999, indicating that while the number of colonies rebounded to near 1986 levels, the number of burrows per colony decreased.

Laymon et al. (1988) also report 23 colonies along the Feather River between the confluence with the Sacramento River and Oroville. Several of these colonies occur within the Plan Area and are considered extant. Despite an apparent continuing decline in local populations, the Butte County stretch of the Sacramento and Feather Rivers remains a key area for the bank swallow nesting population in California.

The species is on its breeding grounds from late March through mid-August and is absent from the state between September and February.

## **Applicable Conservation Measures**

CM1: Acquire Lands

CM2: Develop an Invasive Species Control Program

CM4: Develop and Implement Site-Specific Wetland and Riparian Restoration Plans

CM5: Enhance Protected Natural Communities for Covered Species

## **Benefits of the Conservation Strategy for the Species**

The BRCP Permittees do not have jurisdiction over the river banks and associated hydrology that are associated with bank swallow nesting habitat; therefore, the BRCP does not conserve nesting habitat for this species. The BRCP does, however, conserve associated natural communities that buffer nesting habitat and provide foraging habitat, including wetlands, open water, grasslands, riparian woodland, orchards, agricultural fields, and upland woodlands in the vicinity of nesting colonies. Protection, restoration, and enhancement of these natural communities is expected to benefit bank swallow to the extent that it occurs in the vicinity of nesting colonies.

## **N.1.16 California Thrasher**

### **N.1.16.1 Species Account**

#### **Status**

The California thrasher has no federal or state status and no other special status; however, the species is of local concern and thought to be declining (Snowden 2001).

#### **Description**

The California thrasher is a large thrasher (28–33 cm) with a long, deeply curved bill. It is dark brown above with lighter gray-brown breast and buff-brown to orange undertail coverts. It has dark brown eyes, indistinct light brown eyebrow and dark “mustache.” The sexes are alike (Cody 1998).

## Distribution

Endemic to California and northern Baja California, the species is found in chaparral and coastal scrub communities along the coast and Coast Ranges, western Sierra Nevada, and Southern California and Baja California deserts (Sibley 2003).

## Habitat Associations

The California thrasher is found primarily in chaparral and other shrub communities from sea level to montane chaparral. It will also breed in adjacent oak woodlands, pine-juniper scrub, and occasionally in parks and gardens, but only if dense cover is available (Cody 1998).

## Habitat Availability in the Plan Area

Chaparral habitats on the eastern edge of the Plan Area provide suitable habitat for thrashers.

## Occurrence/Distribution in the Plan Area

There are few nesting records of California thrasher in Butte County; however, it has been regularly (although infrequently) reported during the breeding season. Snowden (2001) reports the species as possibly declining in Butte County as a result of rural urbanization and predation by house cats. The distribution likely is directly associated with the distribution of chaparral vegetation in the Plan Area.

### N.1.16.2 Applicable Conservation Measures

- CM1: Acquire Lands
- CM5: Enhance Protected Natural Communities for Covered Species

## Benefits of the BRCP Conservation Strategy for the Species

The conservation approach for the California thrasher relies on the protection and management of oak woodland natural communities along the eastern edge of the Plan Area. Full implementation of the BRCP will protect an additional 20,100 acres of oak woodland and savanna that supports small patches of chaparral habitat that may support California thrasher, resulting in protection of over 22 percent of this community in the Plan Area. Enhancement and management of these communities to achieve the biological goals and objectives (*CM5: Enhance Protected Natural Communities for Covered Species*) is compatible with California thrasher habitat management. Protection and management of these natural communities under the BRCP will maintain habitat and provide for future occurrences of this species in the Plan Area.

## N.1.17 Yellow Warbler

### N.1.17.1 Species Account

#### Status

The yellow warbler is designated by CDFW as a species of special concern and is designated by the USFWS as a federal species of concern.

## Description

The yellow warbler is a small (12–13 cm), plain yellow wood-warbler with few distinguishing marks. It is the only bright yellow wood-warbler with yellow spots on the tail. The fresh-plumaged adult males have distinctive small red streaks on the underparts (Sibley 2003).

## Distribution

The breeding distribution extends from northern Alaska and Canada southward to the central United States and west into Mexico. The species winters in Mexico and Central and South America. Throughout California, yellow warbler is summer resident and transient in suitable riparian habitats (Small 1994; Lowther et al. 1999).

## Habitat Associations

In California, yellow warblers nest primarily in riparian habitats (Grinnell and Miller 1944), but in some montane areas they also nest in a variety of shrub habitats (e.g., manzanita, ceanothus) far removed from water (Grinnell et al. 1930; Beedy and Granholm 1985). Migrants prefer edges to the interior of forests and broad-leaf trees to conifers. They can be found in a variety of habitats, including riparian, oak woodland, and suburban parks and gardens (Dunn and Garrett 1997).

## Habitat Availability in the Plan Area

Available breeding habitat includes riparian woodlands association with the Sacramento River, Feather River, Butte Creek, Big Chico Creek, and other small drainages with suitable riparian vegetation.

## Occurrence/Distribution in the Plan Area

Snowden (2001) notes that yellow warblers nest in riparian and chaparral habitats in the montane zone, presumably outside of the Plan Area, and are a rare breeding bird in valley riparian habitats within the Plan Area. Heath (1998) reports breeding occurrences in the Plan Area along the Sacramento River. Dawn Garcia of California State University Chico reports several migratory occurrences along Butte Creek and several possible breeding occurrences along Butte Creek and Big Chico Creek from 2006 and 2007.

### N.1.17.2 Applicable Conservation Measures

- CM1: Acquire Lands
- CM4: Develop and Implement Site-Specific Wetland and Riparian Restoration Plans
- CM5: Enhance Protected Natural Communities for Covered Species

### Benefits of the BRCP Conservation Strategy for the Species

The conservation approach for the yellow warbler relies primarily on the protection, restoration, and management of riparian natural community throughout the Plan Area. Full implementation of the BRCP will protect an additional 6,370 acres of riparian natural community, as well as 190 acres of restored riparian habitat, resulting in protection of over 48 percent of this community in the Plan Area. Additional conservation will be provided through protection of chaparral habitats associated with the conservation of oak woodland communities along the eastern edge of the Plan Area. Enhancement and management of these communities to achieve the biological goals and objectives (*CM5: Enhance*

*Protected Natural Communities for Covered Species*) is compatible with yellow warbler habitat management. Protection and management of these natural communities under the BRCP will maintain habitat and provide for future occurrences of this species in the Plan Area.

## N.1.18 Yellow-Breasted Chat

### N.1.18.1 Species Account

#### Status

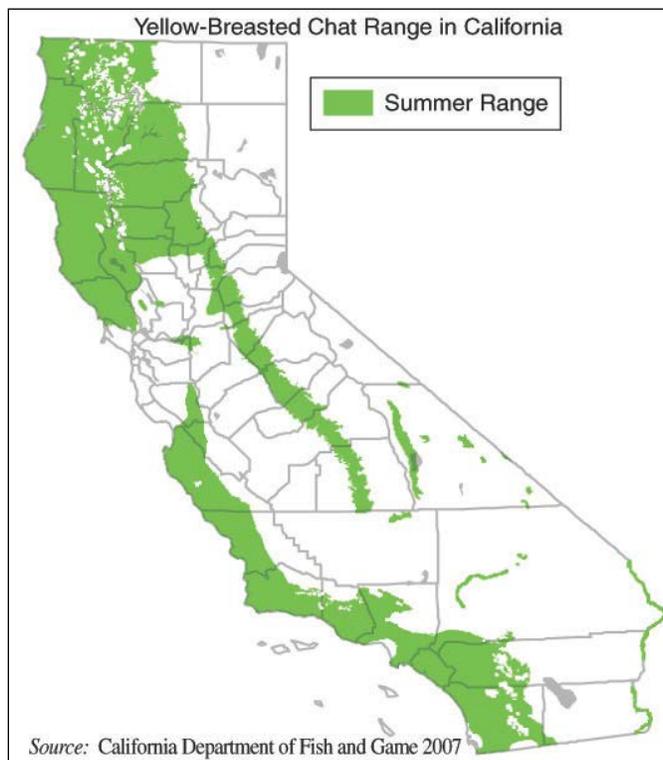
The yellow-breasted chat is designated as a state Bird Species of Special Concern by CDFW. Nest sites are protected in California under Fish and Game Code Section 3503.

The yellow-breasted chat has no federal regulatory status; however, the species is protected under the federal Migratory Bird Treaty Act.

#### Description

The yellow-breasted chat is a large (17–19.1 cm) songbird with olive upperparts, a white belly and bright yellow throat and breast. Other signature features of the yellow-breasted chat is its large white eye-rings and blackish legs. The yellow-breasted chat song is a variable mixture of cackles, clucks, whistles, and hoots. This species has been known to mimic the calls of other birds.

#### Distribution



The yellow-breasted chat is a neotropical migrant songbird. It breeds in North America and winters in Central America, primarily in Mexico and Guatemala; although a few birds have been observed wintering in southern California (Small 1994). Yellow-breasted chat range includes most of the continental United States and Mexico. In 1944, Grinnell and Miller reported that chats bred over the entire length and breadth of California, exclusive of higher mountains and coastal islands, and were more numerous towards the interior of the state. Chats were similarly widespread during migration, with less restriction as to habitat (typically, dense riparian vegetation). The current range of the yellow-breasted chat in California is not completely known because of population declines (Small 1994); however, the species is thought to potentially occur in suitable habitats throughout most of the state with the exception of most of the Central Valley

and southwest deserts.

Formerly a common summer resident in coastal southern and central California, along the Colorado River, and throughout the Central Valley (Grinnell and Miller 1944), the yellow-breasted chat is currently reported as an uncommon resident in riparian habitats on the Modoc Plateau, along the north and south Coast Ranges, in the Sierra Nevada foothills, and in the Transverse and Peninsular ranges. In terms of altitude, they can occur up to 1,463 meters (4,800 feet) in valley foothill riparian habitats and up to 1,981 meters (6,499 feet) in desert riparian habitats east of the Sierra Nevada (DeSante and Ainley 1980; Garrett and Dunn 1981; Gaines 1992). The yellow-breasted chat appears to have been extirpated from the San Joaquin and Sacramento valleys, but still occurs along some foothill tributaries. It has been described as uncommon in the north coast mountains (Small 1994), even though population declines have not been as dramatic in that area as in other provinces (Remsen 1978).

Population status and trends are largely unknown in the state. Ricketts and Kus (2000) summarized Breeding Bird Survey data (Sauer et al. 1999) and reported that Breeding Bird Survey data from 1966 to 1988 showed a nonsignificant increasing trend of 1.1 percent per year ( $P = 0.27$ ), along with subinterval trends of +4.7 percent ( $P = 0.18$ ) from 1966 to 1979 and +0.4 percent ( $P = 0.61$ ) from 1980 to 1999. They noted, however, that these data exhibit several deficiencies, including low abundance (less than 1.0 birds/route), low sample size (less than 14 routes), imprecision (3 percent-year change would not be detected over the long term), and possible inconsistency in trend over time (subinterval trends were significantly different [ $P < 0.05$ ] from each other). They concluded that the Breeding Bird Survey data should, therefore, be interpreted with extreme caution. In general, western populations are considered to be generally stable, but some local declines have occurred recently in California (Dunn and Garrett 1997).

## Habitat Associations

Yellow-breasted chats nest and forage in dense riparian thickets of willows, vines, and brush associated with streams and other wetland habitats (Small 1994). Some taller trees are also required for song perches (Dunn and Garrett 1997). Several studies indicate a strong association with early successional vegetation, including clearcut areas and powerline corridors with dense shrubby vegetation with sapling-sized trees as opposed to mature riparian forest (Kroodsma 1982; Melhop and Lynch 1986; Annand and Thompson 1997). Kroodsma (1982) also reported a preference for blackberry (*Rubus* spp.) thickets.

Yellow-breasted chats typically nest in loose colonies, although males usually defend distinct territories (Ehrlich et al. 1988). Territory size ranges from 0.30 to 3.21 acres (0.12 to 1.3 hectares) (Zeiner et al. 1990). Gaines (1974) reported a breeding density from the Sacramento Valley of one chat per 10 acres (4 hectares). Although some known breeding sites are consistently active each year, there is some data that suggests low site fidelity (Thompson and Nolan 1973).

Nests are usually constructed low to the ground (usually within 3 feet [1 meter]) in dense shrubs (Barber and Martin 1997; Ricketts 1999). A variety of trees and shrubs are used as nesting substrate, including willow (*Salix* spp.), alder (*Alnus* spp.), and several shrub species, including blackberry. At the Lower Clear Creek Floodway in Shasta County, Burnett and DeStaebler (2003) report that most chat nests are found in Himalayan blackberry (*Rubus discolor*). Other plant species used for nesting include California blackberry (*Rubus ursinus*), California wild rose (*Rosa californica*), and pipevine (*Aristolochia macrophylla*).

## Habitat Availability in the Plan Area

Yellow-breasted chat meets all of its life requirements for breeding, food, and cover within riparian habitat (Ricketts and Kus 2000). While the species is generally associated with a relatively dense riparian shrub layer (Small 1994), this microhabitat is not differentiated by the mapped land cover types in the BRCP Plan Area. Thus, it is acknowledged that willow scrub, cottonwood-willow riparian forest, and valley oak riparian forest include but likely overestimate the extent of available habitat for chats.

## Occurrence/Distribution in the Plan Area

There is little historical or current information regarding the distribution of yellow-breasted chats in Butte County. While none are reported in the CNDDDB, recent detections have been made along Big Chico Creek, east of Chico (Kemper 1999) and in other foothill canyons within the Plan Area. In addition to detections in the Upper Park area of Big Chico Creek, the species has been detected in Lower Butte Creek Canyon and Little Chico Creek (Phil Johnson and Scott Huber, Altacal Audubon pers. comm.). Dawn Garcia of California State University, Chico has detected several yellow-breasted chats during banding and point count surveys conducted at the Butte Creek Ecological Preserve. Yellow-breasted chat has been seen in valley floor riparian habitat along the Sacramento River. There is also potential for occurrence along portions of the Feather River.

### N.1.18.2 Applicable Conservation Measures

CM1: Acquire Lands

CM2: Develop an Invasive Species Control Program

CM4: Develop and Implement Site-Specific Wetland and Riparian Restoration Plans

CM5: Enhance Protected Natural Communities for Covered Species

### Benefits of the BRCP Conservation Strategy for the Species

Full implementation of the BRCP will protect an additional 6,370 acres of riparian natural community, as well as 191 acres of restored riparian habitat, resulting in protection of over 59 percent of this community in the Plan Area. Enhancement and management of the riparian natural community to achieve the biological goals and objectives (*CM5: Enhance Protected Natural Communities for Covered Species*) is compatible with yellow-breasted chat habitat management. Protection and management of the riparian natural community under the BRCP will maintain habitat and provide for future occurrences of this species in the Plan Area.

## N.1.19 Blainville's Horned Lizard

### N.1.19.1 Species Account

#### Status

Blainville's horned lizard<sup>1</sup> is designated as a CDFW Species of Concern

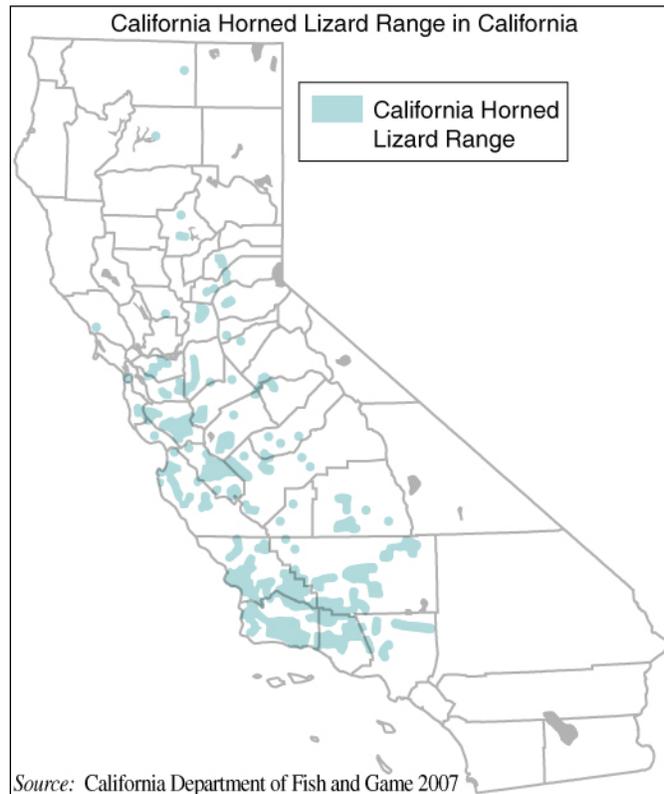
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<sup>1</sup> Formerly California horned lizard (*Phrynosoma coronatum frontale*).

## Description

Blainville's horned lizard is a flat-bodied lizard with a wide oval-shaped body, scattered enlarged pointed scales on the upper body and tail, and a large crown of spines on the head. This species is reddish, brown, yellow, or gray, with dark blotches on the back and large dark spots on the sides of the neck. The belly is cream, beige, or yellow, usually with dark spots, and the belly scales are smooth.

## Distribution



This California endemic is distributed from known localities in Shasta County southward to Los Angeles County and extending east into the Sierra Nevada and Cascade Mountain foothills. The distribution includes historical locations in Santa Barbara and Ventura counties (CDFW 2007). CDFW notes that this subspecies remains abundant only in localized areas along the South Coast Ranges and in isolated sections of natural habitat in the Central Valley (CDFW 2007). Blainville's horned lizard has disappeared from approximately 35 percent of its range in central and Northern California. In addition, extant populations are becoming increasingly fragmented as development in the region continues (Jennings and Hayes 1994).

### Habitat Associations

The Blainville's horned lizard can occur in many habitat types, including grassland, oak woodland, and riparian habitats. Limiting habitat requirements are believed to include

an exposed gravelly sandy substrate such as clearings in riparian woodlands, or annual grassland with scattered perennial species (Jennings and Hayes 1994; SDMNH 2007). Individuals burrow into loose soil to escape extreme heat and predators (Morey 2000). Periods of inactivity and winter hibernation are also spent burrowed into the soil under surface objects such as logs or rocks, in mammal burrows, or in crevices (Morey 2000). Blainville's horned lizard is found below 2,000 feet (600 meters) in the northern part of its range and 3,000 feet (900 meters) in the southern part of its range (Morey 2000). Within the Plan Area, the only known occurrence is on North Table Mountain, which generally supports annual grassland with scattered rocks (CNDDDB 2006). Historically, this taxon was identified as most abundant in relict lake sand dunes and old alluvial fans bordering the San Joaquin Valley (CDFW 2007).

### Habitat Availability in the Plan Area

There is insufficient information regarding the distribution of the physical attributes that supports this species' habitat in the Plan Area (e.g., gravelly sandy substrates).

### Occurrence/Distribution in the Plan Area

CDFW has one record of the Blainville's horned lizard within Butte County (CNDDDB 2011). The occurrence is located north of Oroville, on North Table Mountain, just east of Coal Canyon (see Figure A.13-1, *Blainville's Horned Lizard Recorded Occurrences*).

## N.1.19.2 Applicable Conservation Measures

CM1: Acquire Lands

CM2: Develop an Invasive Species Control Program

CM5: Maintain and Enhance Natural Communities

### Benefits of the Conservation Strategy for the Species

Protection of grasslands, oak woodland and savanna, and riparian natural communities is expected to benefit Blainville's horned lizard in the Plan Area where protection is targeted at natural communities supporting patches of this species' habitat along the eastern side of the Plan Area, where it is most likely to occur. Control of invasive species will help maintain the open habitat required for this species.

## N.1.20 Tule Perch

### N.1.20.1 Species Account

#### Status

Tule perch have no federal or state status and no other special status. Moyle (2002) identifies them as a 1D "watch list" species.

#### Description

Tule perch are medium-sized (less than 15 cm total length), deep-bodied embiotocids (surfperch). Their color is highly variable, but is generally dark blue or purple on their backs and white or yellow on their undersides. There are three color variants of side barring: unbarred, broad-barred, and narrow-barred. Only unbarred and narrow-barred individuals are found in the Plan Area. Adults often have a hump on their back between their head and dorsal fin. Both dorsal fin rays and anal fin rays extend to the caudal peduncle.

#### Distribution

The Sacramento-San Joaquin subspecies of tule perch (*H. t. traski*) is found in Central Valley rivers up to major canyons or waterfalls. It also occurs in the Delta, Suisun Marsh, the Napa River, and other creeks in the San Francisco Bay Area. The Russian River subspecies is found throughout the Russian River and lower reaches of its tributaries. The Clear Lake subspecies is found in Clear Lake and nearby lakes. Tule Perch have established in Silver and Pyramid reservoirs, presumably carried there from the Delta via the California Aqueduct.

#### Habitat Associations

Tule perch are typically found in lowland lakes, estuarine sloughs, and clear rivers and streams. They require cool, well-oxygenated water and have a high salinity tolerance. As their name suggests, they are commonly associated with tules (*Schoenoplectus* spp. and *Scirpus* spp.)

#### Habitat Availability in the Plan Area

There are a number of creeks and rivers in the Plan Area that support or could support tule perch populations.

## Occurrence/Distribution in the Plan Area

The Sacramento-San Joaquin River subspecies of tule perch is found in Big Chico Creek and tributaries (T. McReynolds pers. comm.) and the Feather River (A. Seesholtz pers. comm.). It is likely that tule perch are found in other waterways with appropriate habitat conditions throughout the Plan Area.

### N.1.20.2 Applicable Conservation Measures

- CM1: Acquire Lands
- CM5: Enhance Protected Natural Communities for Covered Species
- CM9: Replenish Spawning Gravels for Salmonids
- CM10, Remove Impediments to Upstream and Downstream Fish Passage
- CM11: Remove, Modify, or Screen Unscreened Diversions

### Benefits of the BRCP Conservation Strategy for the Species

The major premise of the conservation approach for tule perch is to reduce the effects of environmental stressors on tule perch. Improved water quality is expected to have a direct benefit to tule perch, which are thought to be sensitive to toxics and other water quality parameters. Entrainment of smaller tule perch into water diversions is expected to decrease with the screening and/or modification of unscreened diversions. The combined benefits of these conservation measures is expected improve survival and growth rates of tule perch.

## N.1.21 Hardhead

### N.1.21.1 Species Account

#### Status

Hardhead have no federal status, but are identified as a California species of special concern by CDFW. Moyle (2002) identifies them as a 1D “watch list” species.

#### Description

Hardhead are large, native cyprinids (60 cm or greater standard length) that have an elongate body, forked tail, and a shape similar to pikeminnow. Juveniles are silver colored, turning brown to dark bronze with maturity.

#### Distribution

Hardhead are widely distributed in undisturbed stretches of low- to mid-elevation streams in the Sacramento-San Joaquin River watershed. In the Sacramento drainage, hardhead are typically found in larger tributary streams as well as the mainstem Sacramento River.

#### Habitat Associations

Hardhead prefer clean, deep pools and runs with well-oxygenated water, substrate with a mix of sand, gravel, and boulders, and slow flows.

## Habitat Availability in the Plan Area

There are several moderately large creeks and rivers in the Plan Area that support or could support hardhead populations.

## Occurrence/Distribution in the Plan Area

Hardhead are found in scattered populations in waterways throughout the Plan Area. They have been seen in high numbers in Big Chico Creek (T. McReynolds pers. comm.) and the Feather River (A. Seesholtz pers. comm.). Hardhead are considered “plentiful” upstream of Lake Oroville (Oroville Facilities FERC Relicensing Project 2004). It is likely that hardhead are found in other waterways with appropriate habitat throughout the Plan Area.

### N.1.21.2 Applicable Conservation Measures

- CM1: Acquire Lands
- CM5: Enhance Protected Natural Communities for Covered Species
- CM9: Replenish Spawning Gravels for Salmonids
- CM10, Remove Impediments to Upstream and Downstream Fish Passage
- CM11: Remove, Modify, or Screen Unscreened Diversions

## Benefits of the BRCP Conservation Strategy for the Species

The major premise of the conservation approach for hardhead is to reduce the effects of environmental stressors on hardhead. Hardhead appear to prefer natural streams and do not inhabit areas that have been heavily altered by humans. Loss of habitat has been hypothesized as a reason for hardhead population declines (Moyle 2002) and protection of stream channels will reduce the potential for future degradation of habitat conditions. Entrainment of smaller hardhead into water diversions is expected to decrease with the screening and/or modification of unscreened diversions. The combined benefits of these conservation measures is expected improve survival and growth rates of hardhead.

## N.1.22 Hitch

### N.1.22.1 Species Account

#### Status

Hitch have no federal or state status and no other special status. Moyle (2002) identifies them as a 1D “watch list” species.

#### Description

Hitch are native cyprinids (minnows) with laterally compressed, moderately deep bodies, moderately large scales, and a small head. The body tapers to a narrow caudal peduncle. They have a large forked tail and long anal fin, which distinguishes this species from most other California cyprinids. Individuals can reach up to 35 cm (standard length).

## Distribution

Hitch are native to the Sacramento-San Joaquin River Delta and upstream tributaries, Clear Lake and associated lakes, the Russian River, and Pajaro-Salinas Rivers and major upstream tributaries. They have been introduced into upstream reservoirs within their native range and are found in the San Luis Reservoir in Merced County and in Los Angeles County, presumably by introduction via the California Aqueduct.

## Habitat Associations

Hitch are found in warm, low elevation lakes, sloughs, and slow-moving portions of rivers and clear, low-gradient streams. Individuals are generally found in streams with sandy bottoms but can live in urbanized channels with high turbidity and silt loads.

## Habitat Availability in the Plan Area

Most creeks and rivers in the Plan Area have stretches of slow-moving water that are potential habitat for hitch.

## Occurrence/Distribution in the Plan Area

The Central Valley subspecies of hitch (*L. e. exilicauda*) is found most commonly in undisturbed reaches in the Plan Area (M. Marchetti pers. comm.). Hitch are found occasionally in the Feather River and in other waterways in Butte County (McReynolds pers. comm.). It is likely that hitch are found in other waterways with appropriate habitat throughout the Plan Area.

### N.1.22.2 Applicable Conservation Measures

- CM1: Acquire Lands
- CM5: Enhance Protected Natural Communities for Covered Species
- CM9: Replenish Spawning Gravels for Salmonids
- CM10, Remove Impediments to Upstream and Downstream Fish Passage
- CM11: Remove, Modify, or Screen Unscreened Diversions

### Benefits of the BRCP Conservation Strategy for the Species

The major premise of the conservation approach for hitch is to reduce the effects of environmental stressors on hitch. Improvements in urban stormwater quality are expected to benefit hitch by providing clean water in which to spawn, rear, and hold. Entrainment of smaller hitch into water diversions is expected to decrease with the screening and/or modification of unscreened diversions. The combined benefits of these conservation measures is expected improve survival and growth rates of hitch.

## N.1.23 Sacramento Splittail

The Sacramento splittail is endemic to California. Historically, it inhabited sloughs, lakes, and rivers of the Central Valley with populations extending upstream to Redding in the Sacramento River, to the vicinity of Colusa State Park in Butte Creek/Sutter Bypass, to Oroville in the Feather River, to Folsom in the American River, and to Friant in the San Joaquin River (Moyle 2002). Splittail migrate upstream to

spawn in the Sacramento River along the western border of Butte County up to Red Bluff Diversion Dam (Moyle et al. 2004). CDFW has no records of Sacramento splittail within Butte County (CNDDDB 2006) and SWRI (2003) indicated that splittail are not expected to be in Feather River within Butte County. However, there have been multiple anecdotal reports of individuals in the Feather River up to the Thermalito Outlet (B. Cavallo pers. comm. as cited in Moyle et al. 2004; B. Oppenheim pers. comm.).

Sacramento splittail are adapted to living in freshwater and estuarine habitats as well as alkaline lakes and sloughs (Moyle 2002). Adults move upstream in winter and spring to feed and spawn. Flooded vegetation is necessary for spawning and to provide cover for larvae and young. Year class success is highest in wet years, and the fish live more than eight years. The splittail feeds on benthic invertebrates such as opossum shrimp, benthic amphipods, and harpacticoid copepods, as well as detritus (Moyle 2002). Piscivorous fish, including striped bass, prey upon splittail.

### **N.1.23.1 Applicable Conservation Measures**

- CM1: Acquire Lands
- CM5: Enhance Protected Natural Communities for Covered Species
- CM10, Remove Impediments to Upstream and Downstream Fish Passage
- CM11: Remove, Modify, or Screen Unscreened Diversions

### **N.1.23.2 Benefits of the BRCP Conservation Strategy for the Species**

The major premise of the conservation approach for Sacramento splittail is to reduce the effects of environmental stressors on Sacramento splittail. Entrainment of Sacramento splittail into water diversions is expected to decrease with the screening and/or modification of unscreened diversions. Maintaining spawning and rearing habitat by protecting and improving floodplain and removing impediments to upstream habitats is expected to improve survival and growth of Sacramento splittail.

## **N.1.24 River Lamprey**

The river lamprey is known to occur from near Juneau, Alaska, to San Francisco Bay, California. The species appears to be more abundant in the lower Sacramento-San Joaquin River system than in other streams in California, but few surveys for river lamprey have been conducted (Moyle 2002). CDFW has no records of river lamprey within Butte County (CNDDDB 2006); this species is expected to occur in the Plan Area. River lamprey are found in the Feather River to the Fish Barrier Dam from April through July (SWRI 2003). The habitat requirements of river lamprey have not been well studied. It is thought that adults need clean, gravelly riffles in permanent streams to spawn successfully. The ammocoete stage requires high quality, perennial backwaters or stream edges over a sandy substrate, into which they burrow, with water temperatures below 25°C (Moyle et al. 1995). Although lamprey can pass barriers that other fish cannot, large dams and other habitat modifications remain barriers to migration.

The river lamprey is anadromous and migrates from the ocean up rivers and streams to spawning grounds. Adults enter freshwater in the fall and move upstream to suitable spawning areas with perennial water (Moyle et al. 1995; Moyle 2002). They reach sexual maturity in streams, at which time they may shrink in length by up to 20 percent. Spawning occurs from February through May in gravelly riffles where the adults dig saucer-shaped depressions. The ammocoetes begin to transform into adults during the summer at approximately 12 cm total length. This process takes 9 to 10 months, and the new adults enter the ocean in late spring. They spend approximately 3 to 4 months in the ocean where they

grow rapidly to 25–31 cm total length. River lamprey feed on a variety of host fish species in the 10–31 cm total length range, but the most common prey appear to be herring and salmon.

### **N.1.24.1 Applicable Conservation Measures**

- CM1: Acquire Lands
- CM10, Remove Impediments to Upstream and Downstream Fish Passage
- CM11: Remove, Modify, or Screen Unscreened Diversions

### **N.1.24.2 Benefits of the BRCP Conservation Strategy for the Species**

The major premise of the conservation approach for river lamprey is to reduce the effects of environmental stressors on river lamprey. Entrainment of river lamprey into water diversions is expected to decrease with the screening and/or modification of unscreened diversions. Maintaining spawning and rearing habitat by protecting and improving watershed conditions and removing impediments to upstream habitats is expected to maintain or improve survival and growth of river lamprey.

## **N.1.25 Ferris' Milkvetch**

### **Distribution**

The *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon* reports 18 occurrences of Ferris' milkvetch distributed through the Sacramento Valley. Seven historical records are from Butte County, near Biggs, Nord, Oroville Road, the Sacramento River, and in the Upper Butte Basin Wildlife Management Area. Some of these sites are within the boundary of the Northeastern Sacramento County Vernal Pool Region. Four additional occurrences have been discovered and mapped within that region since 1989. Seven additional occurrence sites are distributed in the Solano-Colusa Vernal Pool region, in Solano, Colusa, Yolo, and Glenn counties. One is in Sutter County near Yuba City (USFWS 2005; CNDDDB 2007).

### **Habitat Associations**

Ferris' milkvetch has historically been found in a diversity of alkaline or sub-alkaline, low-elevation (less than 60 meters) habitat types, including marshes, drainage edges, fallow rice fields, and vernal wet meadows, typically within a valley grassland matrix. The taxon is often found in areas containing vernal pools, but it is not strictly a vernal pool subspecies. Soil substrate is typically dry, adobe clay, which is often heavy. The appearance and morphology of Ferris' milkvetch is somewhat variable depending on its habitat and associated species (USFWS 2005).

Associated plants have not consistently been reported in occurrence records, but have included Hairy checkerbloom (*Sidalcea hirsuta*), bog bulrush (*Scirpus mucronatus*), blunt spikerush (*Eleocharis obtusa*), Lemmon's canary grass (*Phalaris lemmonii*), yellowray goldfields (*Lasthenia glabrata*), European wild rye (*Lolium multiflorum*), dwarf dwarf-cudweed (*Hestpervax caulescens*), Sacramento mesamint (*Pogogyne zizyphoroides*), harlequin calicoflower (*Downingia insignis*), and other grasses and forbs (Hickman 1993, USFWS 2005, CNDDDB 2007).

## Occurrence/Distribution in the Plan Area

As of January 2007, the CNDDDB includes eight total occurrences of Ferris' milkvetch, four of which are in Butte County (see Figure A.25-1, *Ferris's Milkvetch Modeled Habitat and Recorded Occurrences*).

The location of one occurrence from 1922 is unknown and another is now in intensive rice production. Three occurrences are located in the Llano Seco division of the Sacramento National Wildlife Refuge (CNDDDB Occurrences 11, 12, and 13), and one is in the Gray Lodge Wildlife Area (occurrence 15). All are as listed as "presumed extant," but during surveys for the Recovery Plan, Occurrence 15 contained only two plants and is described in poor condition; no Ferris' milkvetch plants were seen at the three other sites. Only two of the 18 total documented occurrences of the taxon were found again during the Recovery Plan surveys. CNDDDB records indicate that in 1996 an estimated 200 Ferris' milkvetch plants were present at each of the Sacramento National Wildlife Refuge occurrences and that there were two plants at the Gray Lodge Wildlife Area occurrence in 2002. No plants were found at the sites of the three Sacramento National Wildlife Refuge occurrences in 2002 surveys and Joe Silveira of USFWS reported that no plants have been detected during surveys of the Sacramento National Wildlife Refuge or the Llano Seco unit of the Upper Butte Basin Wildlife Area during surveys since 1996 (Silveira pers. comm. April 4, 2012). Based on this information, it is likely that these occurrences are extirpated from the Plan Area.

There is some discrepancy in documented populations of this taxon between the Recovery Plan and the CNDDDB. The Recovery Plan mentions additional populations of Ferris' milkvetch in Butte City, in the Upper Butte Basin Wildlife Management Area and at Mountain House; these populations are not reported in the CNDDDB.

### N.1.25.1 Applicable Conservation Measures

- CM1: Acquire Lands
- CM2: Develop an Invasive Species Control Program
- CM4: Develop and Implement Site-Specific Wetland and Riparian Restoration Plans
- CM5: Enhance Protected Natural Communities for Covered Species

### Benefits of the BRCP Conservation Strategy for the Species

The conservation approach provides for the protection, restoration, and enhancement of large patches of Ferris' milkvetch vernal pool habitat that are spatially distributed to provide landscape-level connectivity among areas of protected habitat. Implementation of the BRCP will conserve the Ferris' milkvetch in the Plan Area and mitigate the direct and indirect impacts of covered activities. Full implementation of the BRCP will protect an additional 34,410 acres and restore 300 acres of the grassland natural community, as well as 700 acres and restore 626 acres of the wetland natural community. Protection and restoration under BRCP will result in conservation of over 34 percent of the grassland natural community and 4 percent of the wetland natural community. As stated in Chapter 5, *Conservation Strategy*, implementation of BRCP actions to protect, enhance, and manage the grassland natural community and restore vernal pools and other seasonal wetlands embedded in grassland are expected to maintain and improve the habitat function of the grassland natural community in support of conserving the abundance and distribution of associated covered and other native species in the Plan Area found in grasslands. The implementation of the BRCP is also expected to maintain and improve the habitat function of the wetland natural community in support of conserving the abundance and

distribution of associated covered and other native species in the Plan Area. Under the BRCP, the grassland and wetland natural communities would be included within a larger conservation lands system that provides for a sufficient extent of habitat protection, spatial distribution, and management of species' occurrences that will allow for future expansion of this species' into unoccupied habitats.

## N.1.26 Lesser Saltscale

### Distribution

Lesser saltscale, a California endemic, is known from 27 documented occurrences, primarily in the southern San Joaquin Valley. Five occurrences have been documented in Fresno County, two in Stanislaus County, nine in Madera County, six in Tulare County, two in Merced County, one in Kern County, and two in Butte County (CNDDDB 2009). The Kern County occurrence is the southernmost population. The occurrences in the Butte County Plan Area are the most northern, and are 100 air miles from the next most northern documented occurrence in Stanislaus County. Many of the documented occurrences have not been visited since the 1930s or 1950s; a number were reclassified from brittlescale (*Atriplex depressa*) or heartscale (*A. cordulata*) and have not been revisited since. The taxon was first described in the botanical literature as unique until the publication of the Jepson Manual (Hickman 1993; USFWS 1998).

### Habitat Associations

Little has been reported on specific habitat requirements for lesser saltscale. It is found in intermittently inundated, alkaline soils at low elevations (less than 100 meters), typically in slough systems and river floodplains, occasionally bordering vernal pools (USFWS 1998). Vegetation communities associated with the species include Valley Sink Scrub, Valley Sacaton Grassland, and Nonnative Annual Grassland (USFWS 1998). Parent material information is not readily available; soils are described in the CNDDDB more often as clay, in some places as sandy.

Plants associated with lesser saltscale include other halophytes (salt-tolerant species) and a variety of native and nonnative graminoids, non-woody perennials, and perennial sub-shrubs. Halophytes include alkali sacaton (*Sporobolus airoides*, native perennial herb), brittlescale (rare, native annual herb), heartscale (rare, native annual), poor oracle (*A. persistens*, rare annual herb), erectstem saltbush (*A. erecticaulis*, rare annual herb) and seepweed (*Suaeda moquini* or *S. fruticosa*, new name *S. nigra*, native perennial herb). Other reported associates include alkali weed (*Cressa truxillensis*, native perennial herb), western nitrophila (*Nitroplila occidentalis*, native perennial herb), "*Trichostoma ovatum*" (not found in Calflora), smooth tarplant (*Centromadia*, or *Hemizonia pungens*, a rare annual herb), five hook bassia (*Bassia hyssopifolia*, invasive annual herb), California dodder (*Cuscuta californica*, native annual parasitic herb/vine), Italian wild rye (*Lolium multiflorum*, nonnative annual grass), barley (*Hordeum marinum* var. *gussoneanum*, nonnative annual grass), Chinese parsley (*Heliotropium curassavicum*, native perennial herb), saltgrass (*Distichlus spicata*, native perennial grass), shepherd's purse (*Capsella bursa-pastoris*, nonnative annual herb), rough cocklebur (*Xanthium strumarium*, native annual herb), curly dock (*Rumex crispus*, invasive perennial herb), sand spurry (*Spergularia macrotheca*, native perennial herb), Byron larkspur (*Delphinium recurvatum*, rare perennial herb), Mojave red sage (*Kochia californica*, native perennial herb), and Colusa grass (*Neostapfia colusana*, endangered native grass) (Calflora 2007).

## Occurrence/Distribution in the Plan Area

Lesser saltscare is found in two occurrences in the Plan Area (see Figure A.26-1, *Lesser Saltscare Recorded Occurrences*). Both are located in the Gray Lodge Wildlife Area, public lands, which are managed by CDFW for waterfowl and upland game hunting. One is located just east of the headquarters buildings, and the other near Rutherford and Levee roads. The former was visited in 1993 and the habitat was reported in good condition (no census data was reported) during a survey for brittlescale, also a rare species; the occurrence was later reclassified as lesser saltscare. The latter occurrence was visited in 1993 and 1998; habitat was reported to be in good condition but there were only 20 plants seen in 1993 (unreported in 1998).

### N.1.26.1 Applicable Conservation Measures

- CM1: Acquire Lands
- CM2: Develop an Invasive Species Control Program
- CM4: Develop and Implement Site-Specific Wetland and Riparian Restoration Plans
- CM5: Enhance Protected Natural Communities for Covered Species

### Benefits of the BRCP Conservation Strategy for the Species

Current distribution of lesser saltscare within the Plan Area is limited and all known occurrences are protected in the Gray Lodge Wildlife Management Area. Protected lesser saltscare habitat will be managed to maintain its habitat functions for lesser saltscare over time. Implementation of the BRCP will conserve the lesser saltscare in the Plan Area. Full implementation of the BRCP will protect an additional 34,410 acres and restore 300 acres of the grassland natural community, as well as 700 acres and restore 626 acres of the wetland natural community. Protection and restoration under BRCP will result in conservation of over 34 percent of the grassland natural community and 4 percent of the wetland natural community. As stated in Chapter 5, *Conservation Strategy*, implementation of BRCP actions to protect, enhance, and manage the grassland natural community and restore vernal pools and other seasonal wetlands embedded in grassland are expected to maintain and improve the habitat function of the grassland natural community in support of conserving the abundance and distribution of associated covered and other native species in the Plan Area found in grasslands. The implementation of the BRCP is also expected to maintain and improve the habitat function of the wetland natural community in support of conserving the abundance and distribution of associated covered and other native species in the Plan Area. Under the BRCP, the grassland and wetland natural communities would be included within a larger conservation lands system that provides for a sufficient extent of habitat protection, spatial distribution, and management of species' occurrences that will allow for future expansion of this species' into unoccupied habitats.

## N.1.27 Ahart's Dwarf Rush

### Distribution

The CNDDDB documents Ahart's dwarf rush at 10 locations in California: six in Butte County, two in Sacramento County, and one each in Calaveras, Yuba, Tehama, and Placer Counties (CNDDDB 2007). One population in Sacramento County is believed to be extirpated due to development. All occurrences fall within the Northeastern Sacramento Valley or Southeastern Sacramento Valley Vernal Pool regions (see Figure A.28-1, *Ahart's Dwarf Rush Modeled Habitat and Recorded Occurrences*).

## Habitat Associations

Little has been reported in the literature on specific habitat requirements of Ahart's dwarf rush. The taxon is in the rush family (Juncaceae) and is restricted to acidic soils in swales and shallow areas within low-elevation Northern Basalt Flow, Northern Claypan, Northern Hardpan, and Northern Volcanic Mudflow vernal pool types (Ertter 1986; Sawyer and Keeler-Wolf 1995; USFWS 2005).

Like most vernal pool plants, Ahart's dwarf rush is a low-growing, annual species (i.e., it germinates, grows, produces seed, and dies within one year) that is well-adapted to the Sacramento Valley's Mediterranean-type weather patterns, with its cool, wet winters and hot, dry summers (Zedler 1990). Ahart's dwarf rush is probably a fairly recent endemic, likely having co-evolved from more common upland species with recent climatic and geologic changes to extreme fluctuation in water availability between winter-spring inundation and spring-summer drought. It is known to thrive on gopher mounds (USFWS 2005).

Plants associated with Ahart's dwarf rush include numerous annual graminoids and forbs that specialize in the higher, less mesic edges of vernal pools. Other documented annual rushes include toad rush (*Juncus bufonius*, native), leafy bracted rush (*J. capitatus*, not native), and inch-high dwarf rush (*J. uncialis*, native). Other documented co-occurrences include annual hair-grass, (*Deschampsia danthonoides*, native annual grass), Sacramento pogogyne (*Pogogyne zizyphoroides*, native annual herb), marigold navarretia (*Navarretia tagetina*, native annual herb), smooth cat's ear (*Hypochaeris glabra*, nonnative invasive annual herb), hyssop loosestrife (*Lythrum hyssopifolium*, nonnative invasive herb, annual or perennial), hawkbit (*Leontodon taraxicoides*, nonnative perennial herb), cowbag clover (*Trifolium depauperatum*, native annual herb) and Fremont's goldfield (*Lasthenia fremontii*, native annual or perennial herb) (Hickman 1993; USFWS 2005; CNDDDB 2007).

## Occurrence/Distribution in the Plan Area

There are a total of 17 known occurrences in the Plan Area (Figure A.28-1). The CNDDDB includes six occurrences of Ahart's dwarf rush in Butte County. All are listed as "presumed extant"; however, two have not been visited for censusing since 1973 (CNDDDB Occurrences 5 and 6), when they were first documented on Ahart Ranch (Honcut quadrangle) by the owner. One other occurrence on Ahart Ranch (CNDDDB Occurrence 1), the type locality for the taxon, was last confirmed extant in 1991 (Figure A.28-2, *Distribution of Ahart's Dwarf Rush in California [USFWS 2005]*). In all, Ahart's dwarf rush has been documented in about 10 separate vernal pools at Ahart Ranch, which is located in the Northeastern Sacramento Valley Vernal Pool Region. The fourth occurrence in Butte County (CNDDDB Occurrence 4) is located near the city of Oroville (Palermo quadrangle), on both sides of the runway at the Oroville Municipal Airport, on Redding Series soils (CNDDDB 2007).

### N.1.27.1 Applicable Conservation Measures

- CM1: Acquire Lands
- CM2: Develop an Invasive Species Control Program
- CM4: Develop and Implement Site-Specific Wetland and Riparian Restoration Plans
- CM5: Enhance Protected Natural Communities for Covered Species

## Benefits of the BRCP Conservation Strategy for the Species

The conservation approach provides for the protection, restoration and enhancement of large patches of Ahart's dwarf rush vernal pool habitat that are spatially distributed to provide landscape-level connectivity among areas of protected habitat. Implementation of the BRCP will conserve the Ahart's dwarf rush in the Plan Area and mitigate the direct and indirect impacts of covered activities. The conservation approach provides for the protection, restoration and enhancement of large patches of Ahart's dwarf rush vernal pool habitat that are spatially distributed to provide landscape-level connectivity among areas of protected habitat. Implementation of the BRCP will conserve the Ahart's dwarf rush in the Plan Area and mitigate the direct and indirect impacts of covered activities. Full implementation of the BRCP will protect an additional 700 acres and restore 626 acres of the wetland natural community. Protection and restoration under BRCP will result in conservation of over 4 percent of the wetland natural community. As stated in Chapter 5, *Conservation Strategy* implementation of BRCP actions to protect, restore, enhance, and manage the wetland natural community are expected to maintain and improve the habitat function of the wetland natural community in support of conserving the abundance and distribution of associated covered and other native species in the Plan Area. Protection and restoration of the wetland natural community will contribute to the maintenance and support of population of Ahart's dwarf rush, and allow for future range expansion and distribution shifts in response to future changing environmental conditions.

### N.1.28 Red Bluff Dwarf Rush

#### Distribution

Red Bluff dwarf rush is endemic to California, where it is known from Tehama, Shasta, Placer, and Butte counties in the Sacramento Valley. It ranges in elevation from 115 to 3,346 feet (30 to 1,020 meters) (CNPS 2008).

Records from the CNDDDB indicate that Red Bluff dwarf rush is known from a total of 41 occurrences, of which 39 are listed as presumed extant (CNDDDB 2008). Of the 30 occurrences located outside of Butte County, 21 are in Shasta, nine are in Tehama, and one is in Placer.

#### Habitat Associations

Red Bluff dwarf rush inhabits vernal moist habitats, including vernal pools, within valley grassland, chaparral, and foothill woodland habitats (CNPS 2008; Friends of Bidwell Park 2008). Hickman (1993) described habitat as vernal pool margins and wet places in chaparral and woodland. The species is generally found between 300 to 1,000 feet (90 to 305 meters), but reaches 3,350 feet (1,020 meters) in the Goose Valley area of Tehama County (BLM 2008). It is often found in sparsely vegetated habitats (BLM 2008).

Common plant associates of Red Bluff dwarf rush include tricolor monkey flower (*Mimulus tricolor*), stalked popcorn flower (*Plagiobothrys stipitatus* var. *micranthus*), winged water starwort (*Callitriche mariginata*), Great Valley eryngo (*Eryngium castrense*), common monkey flower (*Mimulus guttatus*), Oregon wooly-heads (*Psilocarphus oregonus*), meadowfoam (*Limnanthes alba*), and Pacific foxtail (*Alopecurus saccatus*). Red Bluff dwarf rush also often grows with leafybract dwarf rush (*Juncus capitatus*), toad rush (*Juncus bufonius*), and twelfth rush (*Juncus uncialis*). Invasive nonnative species include Italian ryegrass (*Lolium multiflorum*) (CNDDDB 2008).

## Occurrence/Distribution in the Plan Area

In Butte County, the Red Bluff dwarf rush is known from 11 CNDDDB occurrences, found in the Oroville, Shippee, Campbell Mound, Richardson Spring and Cherokee quadrangles (CNDDDB 2008). Eight of these are in the Plan Area, of which the majority are found on or near Table Mountain, with one occurrence known from the valley floor. Twenty-one additional non-CNDDDB reported occurrences have been recorded in the Plan Area (see Figure A.29-1, *Red Bluff Dwarf Rush Modeled Habitat and Recorded Occurrences*). The occurrences within the Plan Area range from 1300 to 1550 feet in elevation (CNDDDB 2008).

## Benefits of the BRCP Conservation Strategy for the Species

The conservation approach provides for the protection, restoration and enhancement of large patches of Red Bluff dwarf rush vernal pool habitat that are spatially distributed to provide landscape-level connectivity among areas of protected habitat. Implementation of the BRCP will conserve the Red Bluff dwarf rush in the Plan Area and mitigate the direct and indirect impacts of covered activities. Full implementation of the BRCP will protect an additional 700 acres and restore 626 acres of the wetland natural community. Protection and restoration under BRCP will result in conservation of over 4 percent of the wetland natural community. As stated in Chapter 5, *Conservation Strategy* implementation of BRCP actions to protect, restore, enhance, and manage the wetland natural community are expected to maintain and improve the habitat function of the wetland natural community in support of conserving the abundance and distribution of associated covered and other native species in the Plan Area. Protection and restoration of the wetland natural community will contribute to the maintenance and support of population of Red Bluff dwarf rush, and allow for future range expansion and distribution shifts in response to future changing environmental conditions.

### N.1.28.1 Applicable Conservation Measures

- CM1: Acquire Lands
- CM2: Develop an Invasive Species Control Program
- CM4: Develop and Implement Site-Specific Wetland and Riparian Restoration Plans
- CM5: Enhance Protected Natural Communities for Covered Species

## N.1.29 Veiny Monardella

### Distribution

Veiny monardella is a California endemic, currently known from two extant populations. One occurrence is in central Butte County, located on private property, and the other is in Tuolumne County, on private land near the Peoria Basin (CNDDDB 2007).

From the known extant occurrences, the veiny monardella's elevation range is 270 feet (82 meters) in Butte County to 860 feet (262 meters) in Tuolumne County (CNDDDB 2007). Two extirpated populations were found at 100 feet (30 meters) in Yuba County, and possibly at 1,325 feet (403 meters) in Butte County (if the occurrence was near the town of Cherokee), indicating a large elevational range for the species. However, the location of the "Cherokee" occurrence is not specified and could have referred to a lower valley location. The two historical Chico occurrences were most likely close to 250 feet (80 meters) elevation (Castro pers. comm.).

## Habitat Associations

The veiny monardella is found in open grassland; both the Butte and Tuolumne County populations are found in heavy clay soils, with deep cracks, of volcanic or serpentine origin (Castro pers. comm.).

The Butte County occurrence is found in a canyon bottom creek terrace, in gray black vertisol soils, on seasonally wet land (CNDDDB 2007). Here it is found in flat to gently sloping terrain at the bottom edge of the Sierra Nevada foothills abutting the Sacramento Valley (Castro pers. comm.) (see Figure A.30-1). It is found in lenses of clay possibly derived from Tuscan Mudflow rock outcrops (Center for Plant Conservation 2007) or volcanic ash (Conlin pers. comm.) and is a component of the annual grassland in an area with sparsely clustered forbs and grasses. Common associates of the veiny monardella in this area include dwarf dwarf-cudweed (*Evax caulescens*), Tehama navarretia (*Navarretia heterandra*), adobe navarretia (*Navarretia nigelliformis*), and species in the tarweed genus (*Hemizonia* spp.) (CNDDDB 2007).

## Occurrence/Distribution in the Plan Area

The extant occurrence in Butte County occurs within the Plan Area on private property south of Chico near Neal Road. The population is found scattered among eight small sites, containing from fewer than 10 to over 1,000 plants each within a 60-hectare area in two separate but interconnected canyons. In 1992 more than 3,000 individuals were seen in this area and the population's numbers appear to have been steady since this time (Castro pers. comm.) (see Figure A.30-1, *Veiny Monardella Recorded Occurrences*).

### N.1.29.1 Applicable Conservation Measures

- CM1: Acquire Lands
- CM2: Develop an Invasive Species Control Program
- CM5: Enhance Protected Natural Communities for Covered Species

## Benefits of the BRCP Conservation Strategy for the Species

The conservation approach provides for the protection of the entirety of known veiny monardella occurrences and occupied habitat in the Plan Area (Table 5–8). Implementation of the BRCP will conserve the veiny monardella in the Plan Area. Full implementation of the BRCP will protect an additional 34,410 acres and restore 300 acres of the grassland natural community. Protection and restoration under BRCP will result in conservation of over 34 percent of the grassland natural community. As stated in Chapter 5, *Conservation Strategy*, implementation of BRCP actions to protect, enhance, and manage the grassland natural community and restore vernal pools and other seasonal wetlands embedded in grassland are expected to maintain and improve the habitat function of the grassland natural community in support of conserving the abundance and distribution of associated covered and other native species in the Plan Area found in grasslands. Under the BRCP, the grassland natural community would be included within a larger conservation lands system that provides for a sufficient extent of habitat protection, spatial distribution, and management of species' occurrences that will allow for future expansion of this species' into unoccupied habitats.

## N.1.30 Ahart's Paronychia

### N.1.30.1 Species Account

#### Distribution

Ahart's paronychia is endemic to California, where it is known from Tehama, Shasta, and Butte counties in the north-central portion of the state. The Honcut Creek population in Butte represents the species' southernmost population. Ahart's paronychia ranges in elevation from 98 to 1,653 feet (30 to 510 meters) (CNPS 2008).

#### Habitat Associations

Ahart's paronychia inhabits rocky soils, vernal pool edges, and volcanic uplands within valley grassland (Hickman 1993; Calflora 2008). Habitat is found on the nearly barren clay of vernal swales and higher ground around vernal pools (CNDDDB 2008), and vernal moist and vernal pool areas in thin soils (Stuart Consulting 2002). In the Redding area, habitat is described as rocky, clay-rich terraced soils, with the species growing on the stoniest microsites within these areas, where the density of annual plants is low (BLM 2008). Suitable soils are also described as bare red soils with small rocks and gravel, and on swales with red gravelly corning soils overlying gravelly clays, in areas of sparse vegetation on Tuscan cobbled loam (CNDDDB 2008).

The species is often associated with annual grasses and forbs. Common plant associates include common catchfly (*Silene gallica*), white-headed navarretia (*Navarretia leucocephala*), smooth cat-ear (*Hypochaeris glabra*), Narrow-leaved owl's clover (*Castilleja attenuata*), California plantain (*Plantago erecta*), and silver hairgrass (*Aira caryophyllea*) (CNDDDB 2008).

#### Occurrence/Distribution in the Plan Area

A total of five occurrences of Ahart's paronychia are known in Butte County, four of which are reported in the CNDDDB and are located in the Loma Rica, Honcut, Oroville, Shippee, and Richardson Spring quadrangles (CNDDDB 2008) (Figure A.34-1, *Ahart's Paronychia Modeled Habitat and Recorded Occurrences*). All are in the Plan Area and located in the eastern part of the valley floor, evenly dispersed on a north to south axis of the county (see Figure A.34-1). The occurrences range in elevation from 150 to 240 feet (46 to 73 meters) (CNPS 2008).

### N.1.30.2 Applicable Conservation Measures

- CM1: Acquire Lands
- CM2: Develop an Invasive Species Control Program
- CM4: Develop and Implement Site-Specific Wetland and Riparian Restoration Plans
- CM5: Enhance Protected Natural Communities for Covered Species

#### Benefits of the BRCP Conservation Strategy for the Species

The conservation approach provides for the protection, restoration, and enhancement of large patches of Ahart's paronychia vernal pool habitat that are spatially distributed to provide landscape-level connectivity among areas of protected habitat. Implementation of the BRCP will conserve the Ahart's

paronychia in the Plan Area and mitigate the direct and indirect impacts of covered activities. Full implementation of the BRCP will protect an additional 34,410 acres and restore 300 acres of the grassland natural community. Protection and restoration under BRCP will result in conservation of over 34 percent of the grassland natural community. As stated in Chapter 5, *Conservation Strategy*, implementation of BRCP actions to protect, enhance, and manage the grassland natural community and restore vernal pools and other seasonal wetlands embedded in grassland are expected to maintain and improve the habitat function of the grassland natural community in support of conserving the abundance and distribution of associated covered and other native species in the Plan Area found in grasslands. Under the BRCP, the grassland natural community would be included within a larger conservation lands system that provides for a sufficient extent of habitat protection, spatial distribution, and management of species' occurrences that will allow for future expansion of this species' into unoccupied habitats.

### N.1.31 California Beaked-Rush

#### Distribution

California beaked-rush is endemic to California, where it is known from Marin, Sonoma, Napa, and Butte counties. The species ranges in elevation from 148 to 3,280 feet (45 to 1,000 meters) (CNPS 2008).

#### Habitat Associations

The California beaked-rush is known to occupy freshwater marshes, bogs, and seeps (Hickman 1993). Friends of Bidwell Park (2008) describes habitat as bogs, fens, meadows, and seeps in lower montane coniferous forest. One population in Marin County occupies the margins of a coastal marsh at Point Reyes National Seashore (CNDDDB 2008).

In Butte County, California beaked-rush inhabit hillside seeps within annual grassland or oak savanna (CNDDDB 2008). In Bidwell Park, habitat is described as the outer edge of seeps, and often in close association with deer grass (*Muhlenbergia rigens*) (Stuart Consulting 2002). In Butte County, all occurrences are found on Tuscan Formation soils (CNDDDB 2008).

Native plant associates of California beaked-rush include deer grass, dense sedge (*Carex densa*), spike rush (*Eleocharis* spp.), common blackseed (*Cyperus niger*), shortspike hedgenettle (*Stachys pycnantha*), Tinker's penny (*Hypericum anagalloides*), and arroyo willow (*Salix lasiolepis*). Common nonnative plant associates include little quaking grass (*Briza minor*), Italian ryegrass (*Lolium multiflorum*), Himalayan blackberry (*Rubus discolor*), and larger periwinkle (*Vinca major*) (CNDDDB 2008).

#### Occurrence/Distribution in the Plan Area

In Butte County, the California beaked-rush is known from eight occurrences, found in the Paradise West and Richardson Springs quadrangles (see Figure A.37-1, *California Beaked-Rush Recorded Occurrences*). Four of the five CNDDDB reported occurrences are in the Plan Area, of which three are located in Upper Bidwell Park and one just south of the park, near the Plan Area boundary (see Figure A.37-1). The occurrences within the Plan Area range from 385 to 850 feet in elevation (CNDDDB 2008).

#### N.1.31.1 Applicable Conservation Measures

- CM1: Acquire Lands

- CM2: Develop an Invasive Species Control Program
- CM4: Develop and Implement Site-Specific Wetland and Riparian Restoration Plans
- CM5: Enhance Protected Natural Communities for Covered Species

## Benefits of the BRCP Conservation Strategy for the Species

The conservation approach provides for the protection of the entirety of California beaked-rush occurrences and occupied habitat in the Plan Area (Chapter 5, *Conservation Strategy*, Table 5–8). Implementation of the BRCP will conserve the California beaked-rush in the Plan Area. Full implementation of the BRCP will protect an additional 700 acres and restore 626 acres of the wetland natural community. Protection and restoration under BRCP will result in conservation of over 4 percent of the wetland natural community. As stated in Chapter 5, *Conservation Strategy* implementation of BRCP actions to protect, restore, enhance, and manage the wetland natural community are expected to maintain and improve the habitat function of the wetland natural community in support of conserving the abundance and distribution of associated covered and other native species in the Plan Area. Protection and restoration of the wetland natural community will contribute to the maintenance and support of population of California beaked-rush, and allow for future range expansion and distribution shifts in response to future changing environmental conditions.

### N.1.32 Butte County Golden Clover

#### Distribution

Butte County golden clover is known from nine occurrences, all in Butte County, within the Oroville and Shippee quadrangles near Table Mountain (CNDDDB 2007). Butte County golden clover was first described in the botanical literature in 1998 subsequent to a revision of the *Trifolium barbigerum* (bearded clover) species group (Vincent and Morgan 1998). It is not included in the current edition of the Jepson Manual (Hickman 1993) but is recognized by the Jepson Flora Project and the California Native Plant Society as a distinct species (Baldwin and Ertter 2007; CNDDDB 2007).

#### Habitat Associations

Little has been reported on specific habitat requirements of Butte County golden clover. It is found within valley and annual grassland communities containing vernal pools, typically inhabiting the swales surrounding pools, margins of the pools, or banks of ephemeral streams. Elevation ranges from 180 to 1,300 feet. Site-specific soil conditions are not documented, but the parent material is volcanic basalt flow throughout the species' range.

Like most vernal pool plants, Butte County golden clover is a low-growing, annual species (i.e., germinates, grows, produces seed, and dies within 1 year) that is well-adapted to the Sacramento Valley's Mediterranean-type weather patterns, with its cool, wet winters and hot, dry summers (Zedler 1990). Butte County golden clover is probably a fairly recent endemic, likely having evolved from more common species (probably bearded clover) during recent climatic and geologic changes to survive extreme fluctuation in water availability between winter-spring inundation and spring-summer drought.

Plants associated with Butte County golden clover include numerous annual graminoids and forbs that typically prefer wet or mesic habitat or are vernal pool specialists. Rushes include toad rush (*Juncus*

*bufonius*, native) and the rare Red Bluff dwarf rush (*J. leiospermus* var. *leiospermus*, native). Other documented occurring species include native herbs Hartweg's checkerbloom (*Sidalcea hartwegii*), annual checkerbloom (*Sidalcea calycosa*), common vernal pool allocarya (*Plagiobothrys stipitata* var. *micranthus*), bracted popcornflower (*Plagiobothrys brateatus*), Austin's popcornflower (*Plagiobothrys austinae*), common meadowfoam (*Limnanthes douglasii*), peppergrass (*lepidium nitidum*), white-headed navarretia (*Navarretia leucocephala*), goldfields (*Lasthenia* spp.), cowbag clover (*Trifolium depauperatum*), white-tipped clover (*Trifolium variegatum*), seep monkeyflower (*Mimulus guttatus*), butter and eggs (*Triphysaria eriantha*) rough-fruited allocarya (*Plagiobothrys trachycarpus*), common blennosperma (*Blennosperma nanum*), which are all annuals. Documented invasive annual Mediterranean grasses include barley (*Hordeum marinum*) and Italian ryegrass (*Lolium multiflorum*) (Hickman 1993; Calflora 2007; CNDDDB 2007).

## Occurrence/Distribution in the Plan Area

Butte County golden clover is endemic to and reported from 18 occurrences in the Plan Area (see Figure A.37-1, *Butte County Golden Clover Modeled Habitat and Recorded Occurrences*). It is found on a mix of public and private lands near Table Mountain, a significant topographical feature in the area with a unique volcanic geology and associated flora.

Three CNDDDB occurrences (nos. 2, 3, and 6) are found on the North Table Mountain Ecological Reserve, managed by CDFW for botanical resources and hunting. These occurrences are considered in good (no. 3 and no.6) and excellent condition (no. 2). Occurrences nos. 2 and 3 contained several thousand individual plants at last census, and no. 6 contained less than 100. Similarly, occurrence no. 8 is on public land managed by the Bureau of Land Management, in excellent condition, and contained several thousand plants within four colonies at recent census. One occurrence was found at a private game reserve (no. 11), and one on a PG&E substation (no. 1). The remainder (nos. 7, 9, and 10) are on unspecified private lands near Table Mountain and were documented by a vernal pool monitoring team in 2001 (CNDDDB 2007).

### N.1.32.1 Applicable Conservation Measures

- CM1: Acquire Lands
- CM2: Develop an Invasive Species Control Program
- CM4: Develop and Implement Site-Specific Wetland and Riparian Restoration Plans
- CM5: Enhance Protected Natural Communities for Covered Species

### Benefits of the BRCP Conservation Strategy for the Species

The conservation approach provides for the protection, restoration and enhancement of large patches of Butte County golden clover habitat that are spatially distributed to provide landscape-level connectivity among areas of protected habitat. Implementation of the BRCP will conserve the Butte County golden clover in the Plan Area and mitigate the direct and indirect impacts of covered activities. Full implementation of the BRCP will protect an additional 34,410 acres and restore 300 acres of the grassland natural community. Protection and restoration under BRCP will result in conservation of over 34 percent of the grassland natural community. As stated in Chapter 5, *Conservation Strategy*, implementation of BRCP actions to protect, enhance, and manage the grassland natural community and restore vernal pools and other seasonal wetlands embedded in grassland are expected to maintain and improve the habitat function of the grassland natural community in support of conserving the

abundance and distribution of associated covered and other native species in the Plan Area found in grasslands. Under the BRCP, the grassland natural community would be included within a larger conservation lands system that provides for a sufficient extent of habitat protection, spatial distribution, and management of species' occurrences that will allow for future expansion of this species' into unoccupied habitats.

## N.2 Migratory Deer Herds in the Plan Area

Descriptions of deer herds in Butte County were developed primarily from the Butte County General Plan (Butte County 2005). A deer herd is defined as a breeding population of deer that occupies a range common to that population. Many covered natural communities, including oak woodland and savanna, grassland, and riparian communities provide important winter range for migratory and resident deer herds in Butte County. Herds of black-tailed deer are common in Butte County (Figure 3-20, *Deer Herds and Habitat Ranges in the Plan Area* [see separate file]).

Migratory deer use different areas for summer and winter activities and migrate between these areas to meet their year-round needs. Deer that remain in a restricted area on a year-round basis are considered resident populations. Migratory and resident deer that use the Plan Area are primarily associated with oak woodland and savanna and riparian communities. Three separate migratory deer herds, the East Tehama, Bucks Mountain, and Mooretown herds, occupy the eastern foothills and mountains in Butte County and depend on these areas for all or part of their habitat requirements. Resident deer herds in Butte County are the Camp Beale and Sacramento Valley herds.

**Migratory Deer Herds.** Migratory deer populations are less tolerant of humans and their pets, requiring a greater distance from areas of human habitation and use. They migrate mainly to take advantage of the availability of food. Migratory deer can occupy areas that will not support resident deer on a year-round basis. The majority of migratory deer habitat in Butte County is winter range. Winter range is considerably less abundant than summer range and is considered the limiting portion of the deer habitat because of its small size relative to summer range and its location in areas where land is in demand for other uses. The black-tailed deer winter range within Butte County extends from the valley floor to nearly 4,000 feet in elevation. The critical winter range generally extends from 1,000 to 3,000 feet in elevation.

The main factors limiting populations of migratory deer in Butte County are the quantity and quality of habitat. Habitat values include food-producing areas in summer and winter, water, thermal cover, fawning areas (protection from predation during critical periods), and areas that allow for freedom of movement. Availability of food and water for deer varies seasonally and the amount of food available in winter may be the most limiting factor to deer populations, as they must meet their minimum energy requirements during the winter to survive. The necessary winter range components preferred by deer include a good interspersion of vegetative cover, abundant browse and herbaceous forage, limited residential development, and southerly aspect.

**Eastern Tehama Deer Herd.** The Eastern Tehama deer herd is the largest migratory deer herd in the county and occupies a range considered to be the most extensive in the state. The range of the herd includes portions of Tehama, Plumas, Lassen, Shasta, and Butte counties. Winter range is approximately 520,000 acres; migratory and summer ranges total approximately 920,500 acres and migration routes to and from seasonal ranges are the longest in the state, covering a distance of 50 to 100 miles.

Approximately 40 percent of the critical winter range in Butte County has been severely impacted due to residential encroachment since the mid-1960s (Butte County 2005).

**Bucks Mountain Deer Herd.** The Bucks Mountain deer herd range extends from eastern Butte County to western Plumas County. Winter range is approximately 200,600 acres; migratory and summer ranges total approximately 265,600 acres. Approximately 28 percent of the critical winter range in Butte County has been lost to residential encroachment since the mid-1960s (Butte County 2005).

**Mooretown Deer Herd.** Mooretown deer herds occupy a range extending from the southern boundary of the Bucks Mountain deer herd into northwestern Sierra and northeastern Yuba counties. Winter range is approximately 232,000 acres; migratory and summer ranges total approximately 217,950 acres. Approximately 50 percent of the critical winter range in Butte County has been lost to residential encroachment since the mid-1960s (Butte County 2005).

## N.2.1 Land Use Conflicts with Migratory Deer

Residential development in the foothills of the western Sierra Nevada Mountains has increased substantially since the early 1960s and has been a major factor in the loss of winter range habitat for migratory deer. This habitat loss has seriously threatened the welfare of migratory deer. Most of the deer winter range in California is on private land. Subdivision and development of parcels allow land use changes, which result in a permanent loss of deer habitat. Habitat losses are due to the elimination of forage and cover plants; disturbance from noise, traffic, and domestic dogs; and public use as a result of improved road access and subdivisions. One of the direct effects of residential development in deer winter range is development of barriers that interfere with deer movement in and out of winter range and separate food and water source areas from shelter sites. Barriers to deer movement include areas with high housing densities, deer-proof or deer-resistant fencing, reservoirs, major streams or rivers, and major roads and highways.

Houses arranged in linear corridors through migratory pathways and rows of houses on small lots along roadways and streams present the greatest barriers to migratory deer. In addition, predation and harassment of deer by domestic dogs accompanies increased residential development in rural areas. Deer generally do not come within 1,000 or more feet of an occupied dwelling with dogs. Migratory deer appear to be far less tolerant of the presence of dogs than are resident deer.

Construction of large reservoirs and canals can block migratory deer movement and result in loss of habitat. Due to its size and location, Oroville Reservoir is a major obstacle to movement of migratory deer. Certain fence designs are barriers to deer movement, particularly to does and fawns. Landowners occasionally construct unusually high fences around large acreages to purposefully exclude deer and prevent damage to their horticultural plantings or crops. Deer-proof or deer-resistant fences around large acreages in winter range and across critical deer migration corridors adversely affect deer populations. Highways and roads are a source of deer mortality.

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Oppenheim, Bruce, Biologist. National Marine Fisheries Service. September 15, 2003 – email report to Randall Baxter (DFG) of a fresh angler-killed adult splittail thrown up on a river bank just below the Thermalito outlet.

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