

## APPENDIX N

### N.1 BENEFITS OF CONSERVATION MEASURES FOR LOCAL CONCERN SPECIES

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

#### N.1.1 Greater Roadrunner

In California, the greater roadrunner's distribution extends the length of the Central Valley and Sierra foothills, in Coast Ranges and valleys, and throughout Southern California. Few confirmed breeding locations have been reported in California, all of which are in the south (Famolaro 2002). The species is considered rare in Northern California and in Butte County (Snowden 2001). There are no recent records of breeding greater roadrunners in Butte County; however, Snowden (2001) considers it a potentially breeding bird. 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. Riparian forest patches also have the potential to serve as greater roadrunner habitat.

Greater roadrunner is found in arid, semi-open grassland and scrub habitat, including chaparral and coastal scrub communities. It is also considered a bird of riparian areas and their agricultural edges in parts of the species' distribution including in California (e.g., Warner and Hendrix 1984). In the northern part of the state, the greater roadrunner is associated with a mix of open grasslands and chaparral, and occasionally with oak savanna habitats supporting patches of shrubs and thickets. It is generally found in flat to semi-flat terrain. 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.

The greater roadrunner has no special status in California. Reportedly fairly common during the first half of the twentieth century, it is currently considered rare and declining. Overhunting and extensive residential and agricultural development are responsible for population declines and local extirpations in the state. Habitat loss and fragmentation caused by urbanization continue to be the main threat to the species in California (Unitt 1984).

##### N.1.1.1 *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

### **N.1.1.2 Rationale and Conservation Approach**

The conservation approach for the greater roadrunner relies on the protection and management of grassland, oak woodland/savanna, chaparral, and riparian forest natural communities, particularly on the eastern side of the Plan Area. Full implementation of the BRCP will protect an additional 20,491 acres of oak woodland and savanna natural community, 34,841 acres of grassland natural community, and 6,370 acres of riparian natural community, as well as 190 acres of restored riparian habitat that support habitat for the greater roadrunner. Protection and restoration of these land cover types will result in protecting over 26 percent, 49 percent, and 48 percent of these natural communities in the Plan Area, respectively (Tables 5–21a to 5–21g). 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 (see Section 5.4.2.2, *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.1.2 Northern Harrier**

In California, the northern harrier 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. Nesting records of northern harrier are not well documented in the Plan Area, due in part to the difficulty locating nests. The species likely breeds in all suitable habitat areas noted below, 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.

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. 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). They also roost on the ground, using tall grasses and forbs in wetlands, or along wetland/field borders for cover (MacWhirter and Bildstein 1996).

The northern harrier is designated by the CDFW as a state species of special concern (Remsen 1978). 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). The species has likely declined in Butte County as a result of agricultural conversion, particularly incompatible crop types such as orchards.

### **N.1.2.1 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

### **N.1.2.2 Rationale and Conservation Approach**

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 34,841 acres of grasslands natural community, 695 acres of wetland natural community (as well as up to 126 acres of restored wetland), and 26,962 acres of compatible (non-orchard/vineyard) agricultural habitats that provide suitable habitat for the northern harrier. Protection and restoration of these land cover types will result in protecting of over 49 percent, 85 percent, and 24 percent of these natural communities and habitats in the Plan Area, respectively (Tables 5–21a to 5–21g). Protected lands will include large expanses of wetlands and agricultural lands that currently support northern harrier breeding populations. Enhancement and management of these communities to achieve the biological goals and objectives (see Section 5.4.2.2) is compatible with northern harrier habitat management. Protection and management of these natural communities under the BRCP will maintain suitable habitat to support existing northern harrier populations and enhance protected habitats to provide for future increases of breeding and wintering populations in the Plan Area.

### **N.1.3 Golden Eagle**

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). 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. Golden eagles are occasionally observed in the Plan Area (<http://chicobirding.com>, [ebird.org](http://ebird.org)).

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). 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.

Formerly designated by CDFW as a species of special concern, the golden eagle is not included on the revised list of California bird species of special concern (Shuford and Gardali 2008). The golden eagle is protected under the federal Bald and Golden Eagle Protection Act. Golden eagle habitat has been reduced throughout its range from urbanization and agricultural conversion. The species is also sensitive to a variety of human disturbances during the breeding season and thus proximity to altered landscapes and human activities influences the distribution of nest sites.

### ***N.1.3.1 Applicable Conservation Measures***

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

### ***N.1.3.2 Rationale and Conservation Approach***

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 20,491 acres of oak woodland and savanna natural community, 34,841 acres of grassland natural community, and 26,962 acres of compatible (non-orchard/vineyard) agricultural habitats that provide suitable habitat for the golden eagle. Protection and restoration of these land cover types will result in protection of over 26 percent, 49 percent, and 24 percent of these natural communities and habitats in the Plan Area, respectively (Table 5–26a to 5–26g). 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 (see Section 5.4.2.2) is compatible with golden eagle habitat management. Protection and management of these natural communities under the BRCP will maintain suitable habitat to support existing golden eagle populations and enhance protected habitats to provide for future increases of breeding and wintering populations in the Plan Area.

## ***N.1.4 Merlin***

The merlin occurs throughout the Northern Hemisphere. In North America, it breeds in Alaska and Canada south of the tree line, south to some of the contiguous United States, including Washington and Oregon along the Pacific coast, and Idaho, Montana, and Wyoming in the interior west (Wheeler 2003). The merlin is a partial migrant, with some populations wintering as far south as Central America, Columbia, Ecuador, northern Peru, and Venezuela. The winter range also includes coastal western Canada, Alaska, California and other western states, the Midwest, and the mid-Atlantic and southeastern coasts of the United States (Wheeler 2003). In

California, the merlin is an uncommon winter migrant from September to May, occurring in most of the western half of the state below 1,500 meters (Zeiner et al. 1990). Merlins are occasionally reported in Butte County during the non-breeding season. The species occurs uncommonly throughout the non-orchard agricultural, grassland, vernal pool grassland, and wetland communities.

Merlins occupy a wide variety of vegetation types during the winter including open grasslands, savannas, and woodlands. It frequents coastlines, wetlands, and lake shorelines but can also be found in open ponderosa pine and montane hardwood-conifer habitats (Zeiner et al. 1990). The species is also occasionally found in or along agricultural fields or in urban areas, but require concentrations of small-bird prey (Stahlecker 2010). 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 shorebird and other avian prey (Jones & Stokes 2005).

The merlin is on the CDFW Watch List (California Department of Fish and Game 2011). Otherwise it has no special federal or state status. Once negatively affected by DDT and described as having “markedly” declined over the past several decades in California, the North American merlin population is currently increasing in size and exhibiting a breeding range expansion (Zeiner et al. 1990, Stahlecker 2010).

#### ***N.1.4.1 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

#### ***N.1.4.2 Rationale and Conservation Approach***

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 20,491 acres of oak woodland and savanna natural community, 34,841 acres of grassland natural community, 695 acres of wetland natural community (as well as 126 acres of restored wetland), and 26,962 acres of compatible (non-orchard/vineyard) agricultural habitats that provide suitable habitat for the merlin. Protection and restoration of these land cover types will result in protection of over 26 percent, 49 percent, 84 percent, and 24 percent of these natural communities and habitats in the Plan Area, respectively (Tables 5–21a to 5–21g). 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 (see Section 5.4.2.2) is compatible with merlin habitat management. Protection and management of these natural communities under the BRCP will maintain suitable habitat to

support existing merlin populations and enhance protected habitats to provide for future increases of breeding and wintering populations in the Plan Area.

### **N.1.5 Prairie Falcon**

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). 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.

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. 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.

Formerly designated by CDFW as a species of special concern, the prairie falcon is not included on the revised list of California bird species of special concern (Shuford and Gardali 2008) and otherwise has no special status in California. Prairie falcon habitat has been reduced throughout its range from urbanization and agricultural conversion. The species is also sensitive to a variety of human disturbances during the breeding season and thus proximity to altered landscapes and human activities influences the distribution of nest sites.

#### **N.1.5.1 Applicable Conservation Measures**

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

#### **N.1.5.2 Rationale and Conservation Approach**

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 20,491 acres of oak woodland and savanna natural community, 34,841 acres of grassland natural community, and 26,962 acres of compatible (non-orchard/vineyard) agricultural habitats that provide suitable habitat for the golden eagle. Protection and restoration of these land cover types will result in protection of over 26 percent, 49 percent, and 24 percent of these natural communities and habitats in the Plan

Area, respectively (Table 5–26a to 5–26g). 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 (see Section 5.4.2.2) is compatible with prairie falcon habitat management. Protection and management of these natural communities under the BRCP will maintain suitable habitat to support existing prairie falcon populations and enhance protected habitats to provide for future increases of breeding and wintering populations in the Plan Area.

### **N.1.6 Long-eared Owl**

The breeding distribution of the long-eared owl extends throughout most of southern Canada, the northeastern United States, the Great Lakes region, and throughout much of the northern prairie and western United States. In California, the species occurs uncommonly 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 Nevada, 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. Considered rare by Snowden (2001) and an uncertain breeder, there are no recent reported breeding occurrences of long-eared owls from the Plan Area. Occurrences reported by Altacal Audubon and others are winter occurrences.

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). 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.

The long-eared owl is designated by CDFW as a state bird species of special concern (Shuford and Gardali 2008). The loss and degradation of riparian and oak woodland habitat from urban expansion, agricultural conversion, timber management, water storage projects, and other factors are responsible for population declines and extirpations of this species.

### **N.1.6.1 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

### **N.1.6.2 Rationale and Conservation Approach**

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 20,491 acres of oak woodland and savanna natural community, 34,841 acres of grassland natural community, 6,370 acres of riparian natural community (as well as 190 acres of restored riparian habitat), and 26,962 acres of compatible (non-orchard/vineyard) agricultural habitats that provide suitable habitat for the long-eared owl. Protection and restoration of these land cover types will result in protection of over 26 percent, 49 percent, 48 percent, and 24 percent of these natural communities and habitats in the Plan Area, respectively (Tables 5–21a to 5–21g). Enhancement and management of these communities to achieve the biological goals and objectives (see Section 5.4.2.2) is compatible with long-eared owl habitat management. Protection and management of these natural communities under the BRCP will maintain suitable habitat to support existing long-eared owl populations and enhance protected habitats to provide for future increases of breeding and wintering populations in the Plan Area.

### **N.1.7 Short-eared Owl**

The short-eared owl breeding range extends from Alaska to Central California in the west and Northern Quebec and Newfoundland to Northern Virginia in the east. The winter range includes all of southern U.S. 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. Few breeding records for Butte County are available. Snowden (2001) reports the short-eared owl as a rare breeder in Butte County. Breeding records are from the Llano Seco and Butte Creek watershed areas.

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. 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.

The short-eared owl is designated by CDFW as a state species of special concern (Shuford and Gardali 2008). The loss and degradation of grassland, pastureland, and wetland breeding and foraging habitats from urban expansion, agricultural conversion, incompatible water management, and grazing are considered the primary threat to this species.

#### **N.1.7.1 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

#### **N.1.7.2 Rationale and Conservation Approach**

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 34,841 acres of grassland natural community, 695 acres of wetland natural community (as well as 126 acres of restored wetland), and 26,962 acres of compatible (non-orchard/vineyard) agricultural natural communities that provide suitable habitat for the short-eared owl. Protection and restoration of these land cover types will result in protection of over 49 percent, 85 percent, and 24 percent of these natural communities and habitats in the Plan Area, respectively (Table 5–26a to 5–26g). 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 (see Section 5.4.2.2) is compatible with short-eared owl habitat management. Protection and management of these natural communities under the BRCP will maintain suitable habitat to support existing short-eared owl populations and enhance protected habitats to provide for future increases of breeding and wintering populations in the Plan Area.

### **N.1.8 Willow Flycatcher**

The breeding range of the willow flycatcher extends across southern Canada and throughout most of the U.S. with the exception of the southeast U.S. 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). 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.

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. 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, provide suitable cover and roosting habitat during the fall and spring migratory periods.

The willow flycatcher is listed as State Endangered. Of the three subspecies present in California, *E.t. brewsteri* is the most likely to occur in the Plan Area. The loss and degradation of riparian habitat from urban expansion, agricultural conversion, water projects, and grazing is considered the primary threat to this species.

#### **N.1.8.1 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

#### **N.1.8.2 Rationale and Conservation Approach**

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 (Table 5–26a to 5–26g). Enhancement and management of these communities to achieve the biological goals and objectives (see Section 5.4.2.2) is compatible with willow flycatcher habitat management and will maintain suitable habitat and provide for existing and future occurrences of this species in the Plan Area.

### **N.1.9 Loggerhead Shrike**

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). Nests 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).

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. 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 irrigated croplands in the southwestern portion of the Plan Area, and in the open grassland habitats on the eastern side of the Plan Area.

The loggerhead shrike is designated by CDFW as a state species of special concern (Shuford and Gardali 2008). The loss and degradation of open grasslands and shrublands from urban expansion and conversion of agricultural lands to incompatible crops (e.g., orchards/vineyards) are among the threats to this species.

#### ***N.1.9.1      Applicable Conservation Measures***

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

#### ***N.1.9.2      Rationale and Conservation Approach***

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 34,841 acres of grassland natural community and 26,962 acres of compatible (non-orchard/vineyard) agricultural habitat that support suitable habitat for the loggerhead shrike. Protection and restoration of these land cover types will result in protection of over 49 percent and 24 percent of these communities in the Plan Area, respectively (Table 5–26a to 5–26g). 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 (see Section 5.4.2.2) is compatible with loggerhead shrike habitat management. Protection and management of these natural communities under the BRCP will maintain suitable habitat to support existing

loggerhead shrike populations and enhance protected habitats to provide for future increases of breeding and wintering populations in the Plan Area.

### **N.1.10 Yellow-billed Magpie**

The yellow-billed magpie is endemic to California, west of 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). Yellow-billed magpie is widely distributed throughout the mid- and lower-elevation portions of the Plan Area.

Populations have reportedly declined during the last two years (Altacal Audubon Society records) presumably as a result of West Nile Virus infestation.

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). 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.

The yellow-billed magpie has no federal or state status and no other special 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.

#### **N.1.10.1 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

#### **N.1.10.2 Rationale and Conservation Approach**

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 20,491 acres of oak woodland and savanna natural community, 34,841 acres of grassland natural community, 6,370 acres of riparian natural community (including 190 acres of riparian restoration), and 26,962 acres of agricultural natural community that provide suitable habitat for the yellow-billed magpie.

Protection and restoration of these land cover types will result in protection of over 26 percent, 49 percent, 48 percent, and 24 percent of these communities in the Plan Area, respectively

(Tables 5–21a to 5–21g). 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 (see Section 5.4.2.2) is compatible with yellow-billed magpie habitat management. Protection and management of these natural communities under the BRCP will maintain suitable habitat to support existing magpie populations and enhance protected habitats to provide for future increases of breeding and wintering populations in the Plan Area.

### **N.1.11 Horned Lark**

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). Of the numerous subspecies of horned lark, California horned lark 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. 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 non-cultivated grassland habitats in the eastern portion of the Plan Area.

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. Breeding habitat in the Plan Area 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 California horned lark apparently remains within its foothill grassland breeding habitat.

Horned lark has no special status in California. Horned larks are 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).

#### **N.1.11.1 Applicable Conservation Measures**

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

### **N.1.11.2 Rationale and Conservation Approach**

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 34,841 acres of grassland that provides suitable habitat for the horned lark, resulting in protection of over 49 percent of this community in the Plan Area (Tables 5–21a to 5–21g). Enhancement and management of these communities to achieve the biological goals and objectives (see Section 5.4.2.2) is compatible with horned lark habitat management. Protection and management of this natural community under the BRCP will maintain suitable habitat to support existing horned lark populations and enhance protected habitats to provide for future increases of breeding and wintering populations in the Plan Area.

### **N.1.12 Purple Martin**

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). Snowden (2001) reports the possible extirpation of purple martins from Butte County. 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 man-made structures such as buildings, bridges and highway overpasses for nesting (Airola and Grantham 2003). Potential breeding habitat is available in oak woodland and savanna habitats along the eastern edge of the Plan Area. Currently, potential man-made 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.

The purple martin is designated by CDFW as a state species of special concern. The loss and degradation of riparian forests and oak woodland habitats has reduced available habitat for this species throughout its range in California; however, available and otherwise suitable nesting habitat is currently unoccupied likely as a result of nest cavity competition from European starlings.

### **N.1.12.1 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

### **N.1.12.2 Rationale and Conservation Approach**

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 20,491 acres of oak woodland and savanna natural community and 6,370 acres of riparian natural community (as well as 190 acres of riparian restoration) that provide suitable habitat purple martin, resulting in protection of about 26 percent and 48 percent of these communities in the Plan Area, respectively (Tables 5–21a to 5–21g). 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 (see Section 5.4.2.2) is compatible with purple martin habitat management. Protection and management of these natural communities under the BRCP will maintain suitable habitat to support existing purple martin populations and enhance protected habitats to provide for future increases of breeding and wintering populations in the Plan Area.

### **N.1.13 California Thrasher**

Endemic to California and northern Baja California, the California thrasher 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). 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.

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 and pine-juniper scrub as well as occasionally in parks and gardens, but only if dense cover is available (Cody 1988). Chaparral habitats on the eastern edge of the Plan Area provide suitable habitat for thrashers.

The California thrasher has no federal or state status and no other special status.

#### **N.1.13.1 Applicable Conservation Measures**

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

#### **N.1.13.2 Rationale and Conservation Approach**

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 20,491 acres of oak woodland and savanna that supports small patches of chaparral habitat that may support California thrasher, resulting in protection of over 26 percent of this community in the Plan Area (Tables 5–21a to 5–21g). Enhancement and management of these communities to achieve the biological goals and objectives (see Section 5.4.2.2) is compatible with California thrasher habitat management. Protection and management of this natural community under the BRCP will maintain suitable habitat to support existing thrasher populations and enhance protected habitats to provide for future population increases in the Plan Area.

### **N.1.14 Yellow Warbler**

The Yellow warbler breeding distribution extends from northern Alaska and Canada southward to the middle U.S. 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). 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.

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). 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.

The yellow warbler is designated by CDFW as a species of special concern. The loss and degradation of riparian forests from urbanization, agricultural conversion, water storage projects, and other factors has reduced available habitat for this species throughout its range in California;

#### **N.1.14.1 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

### **N.1.14.2 Rationale and Conservation Approach**

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 (Tables 5–21a to 5–21g). 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 (see Section 5.4.2.2) is compatible with yellow warbler habitat management and will maintain suitable habitat and provide for existing and future occurrences of this species in the Plan Area.

### **N.1.15 Tule Perch**

The Sacramento-San Joaquin tule perch is one of three tule perch subspecies native to California. The other two are located in Clear Lake and the Russian River. Tule perch are found primarily in the Sacramento River watershed and have been largely extirpated from the San Joaquin watershed (Moyle 2002). Within the Plan Area, tule perch have been found in Big Chico Creek and its tributaries (T. McReynolds, pers. comm.) and in the Feather River, including in the high flow channel (A. Seesholtz, pers. comm.). It is likely that they exist in other creeks with similar physical characteristics, although not documented.

Tule perch occurrences are generally associated with natural habitat features including deep pools, emergent vegetation, such as tules, and banks with complex habitat, such as overhanging banks, overhanging vegetation, and large woody debris, although they may be common in riprapped areas, possibly due to the small scale habitat complexity (Moyle 2002). They are also common in areas with mature riparian vegetation but are rare in areas that have been heavily modified by humans (Moyle 2002). Tule perch generally require water with temperatures that are cool (less than 25 °C) and well-oxygenated. Poor water quality and toxics have been hypothesized as the cause of localized extirpations in the Pajaro and Salinas rivers, much of the San Joaquin watershed, and smaller streams (Moyle 2002). Competition with nonnative centrarchids, such as smallmouth bass, may also be a cause of decline in some creeks (Marchetti pers. comm.).

#### **N.1.15.1 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

### **N.1.15.2 Rationale and Conservation Approach**

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.1.16 Hardhead**

Hardhead are found in the Central Valley in low to mid-elevation streams in the Sacramento and San Joaquin River waterheads, including the Delta. The once widespread distribution throughout central California has declined and hardhead have been locally extirpated in many locations (Brown and Moyle 1993, Moyle 2002). In the Plan Area, hardhead are found in high numbers in Feather River (A. Seesholtz, pers. comm.) and Big Chico Creek (Big Chico Creek Watershed Alliance 1999, T. McReynolds pers. comm.). It is likely that they exist in other creeks with similar physical characteristics, although not documented.

The primary causes of declines in hardhead populations are hypothesized to be predation by nonnative species and habitat loss (Moyle 2002). Hardhead typically inhabit undisturbed streams up to 1,500 meters in elevation and prefer temperatures of 24–28 °C (Knight 1985), although there is evidence that they can tolerate temperatures lower than 20 °C (Myrick and Cech 2000). Individual adults tend to aggregate in deep pools with rocky or sandy substrate (Page and Burr 1991) and well-oxygenated, slow moving water (Moyle 2002). Hardhead are generally absent from streams with major anthropogenic alterations and those with high abundances of centrarchids and other nonnative species (Baltz and Moyle 1993). Hardhead inhabit the bottom half of the water column in streams where they consume benthic invertebrates and plant material (Moyle 2002). They are invariably found in locations where Sacramento pikeminnow and Sacramento sucker also occur (Moyle 2002).

### **N.1.16.1 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

### **N.1.16.2 Rationale and Conservation Approach**

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.1.17 Hitch**

Hitch are found in multiple watersheds throughout central California, including the Sacramento-San Joaquin, Clean Lake, Russian River, and Pajaro-Salinas watersheds (Moyle 2002). The Central Valley subspecies is found within the Sacramento-San Joaquin drainage. Within the Plan Area, hitch are occasionally seen in the Feather River and other undisturbed waterways in the Plan Area (T. McReynolds, pers. comm., M. Marchetti, pers. comm.). It is likely that they exist in other creeks with similar physical characteristics, although not documented.

Hitch inhabit warm, low elevation, slow moving rivers and clear, low-sloped streams. Individuals are generally found in streams with sandy bottoms but can live in urbanized channels with high turbidity and siltation. Spawning occurs in riffles during high flow events in the spring. Larval and post-larval hitch rear near aquatic plants and other complex habitat (Moyle 2002). Hitch have gone locally extinct in some streams in the San Joaquin watershed (Brown and Moyle 1993) and populations have become more and more sparse throughout their range (Moyle 2002). It is hypothesized that the reason for this decline is the combination of loss of adequate flows during spring for spawning, loss of summer rearing and holding habitat, pollution, and predation by nonnative fish species (Moyle 2002).

#### **N.1.17.1 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

### **N.1.17.2 Rationale and Conservation Approach**

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.1.18 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). California Department of Fish and Game 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.1.18.1 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.1.18.2 Rationale and Conservation Approach**

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.1.19 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). California Department of Fish and Wildlife 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 centimeters (cm) total length (TL). 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 TL. River lamprey feed on a variety of host fish species in the 10–31 cm TL range, but the most common prey appear to be herring and salmon.

#### **N.1.19.1 Applicable Conservation Measures**

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

### **N.1.19.2 Rationale and Conservation Approach**

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.

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### **N.3 PERSONAL COMMUNICATIONS**

McReynolds, Tracy, Biologist, DFG. Phone conversation with Rick Wilder about fish distribution and abundance in Big Chico Creek. February 19, 2008.

Marchetti, Michael, Professor, California State University, Chico. Phone conversation with Rick Wilder regarding fish distribution and abundance in Butte County. February 18, 2008.

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