

## Appendix E. Special-Status Wildlife Species in Mono Basin and Upper Owens River Basin

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Thirty-nine special-status wildlife species have been observed or have potential to occur in Mono Basin or along Upper Owens River in Long Valley (the project areas) (Table E-1). This section describes the prediversion status, historical changes during Los Angeles Department of Water and Power (LADWP) water diversions, and the current status of these species. Sources of information consulted include Jones & Stokes Associates 1991 habitat survey data, pertinent literature, California Department of Fish and Game's (DFG's) Natural Diversity Data Base (NDDDB), and discussions with knowledgeable individuals.

Special-status species are animals that are legally protected under state and federal Endangered Species Acts or other regulations, and species that are considered sufficiently rare by the scientific community to qualify for such listing. These wildlife types fall into the following categories:

- # animals listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (50 CFR 17.11 [listed animals] and various notices in the Federal Register [proposed species]);
- # animals that are Category 1 or 2 candidates for possible future listing as threatened or endangered under the federal Endangered Species Act (54 Federal Register 554, January 6, 1989);
- # animals listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (14 CCR 670.5);
- # animal species of special concern to the California Department of Fish and Game (Remsen 1978, California Department of Fish and Game 1991 [birds] and Williams 1986 [mammals]);
- # animals listed as sensitive by the local U.S. Forest Service region (Forest Service Manual 2670) or U.S. Bureau of Land Management resource area.

### Invertebrates

Two special-status invertebrate species occur within the project areas. The Mono Lake brine shrimp is a candidate (Category 1) for federal listing as threatened or endangered due to its unique

occurrence at Mono Lake; its status is discussed in more detail elsewhere in this report (Chapter 3E, "Aquatic Productivity").

The Apache silverspot butterfly, which occurs in the project area, has been redesignated by U.S. Fish and Wildlife Service (USFWS) as a Category 3c species and is no longer considered a special-status species (Ngano pers. comm.).

### **Mono Checkerspot Butterfly**

Status: Federal Candidate (Category 2)

The Mono checkerspot is a rare subspecies of the Editha checkerspot (Garth and Tilden 1986). The Mono checkerspot occurs on the east side of the Sierra Nevada, and Mono County is the center of its distribution. Larval food plants include dwarf plantain and several other plant species in the Scrophulariaceae family (Garth and Tilden 1986).

**Prediversion Conditions and Changes.** The status of the Mono checkerspot prior to diversions is unknown; however, the species was reported as being common prior to the early 1970s (Ngano pers. comm.).

**Status at Point of Reference.** Rangewide, populations are considered scarce (Garth and Tilden 1986), and the species has not been reported in Mono Basin during the past 20 years (Ngano pers. comm.). Jones & Stokes Associates did not conduct surveys to determine the status of this subspecies; however, no Mono checkerspots or their preferred larval food plants were observed during the 1991 botanical or wildlife surveys.

## **Amphibians**

One special-status amphibian, the Mount Lyell salamander (status: DFG Species of Special Concern, Federal Category 2), occurs at the headwaters of Rush Creek (Natural Diversity Data Base 1991). However, suitable habitat for this species does not occur within the project areas. Mountain yellow-legged frogs and Yosemite toads (both Federal Category 2 Candidates) occur at high elevations of Yosemite National Park, but neither species is known to occur in Mono Basin (Zeiner et al. 1990c).

## **Birds**

Twenty-two of the 27 special-status bird species that have been recorded or potentially occur within the project areas are described in this section. The common loon, double-crested cormorant, and

white-faced ibis are not known to nest within the project areas (Gaines 1988). Because the breeding, rather than wintering, areas of these species are considered sensitive (California Department of Fish and Game 1990), they are not addressed in this section. The status of California gulls and snowy plovers at Mono Lake is presented in Chapter 3F.

## **American White Pelican**

Status: DFG Species of Special Concern

American white pelicans winter along the coast and in the Central Valley and formerly nested at large lakes throughout much of California. In California, white pelican nesting areas are now limited to Clear Lake in the Klamath Basin (Zeiner et al. 1990a) and at Honey lake Wildlife Area when water levels are sufficiently high to create nesting islands (Shuford pers. comm.). The loss of nesting colonies is attributed primarily to the destruction of nesting islands and breeding habitat, although human disturbance of colonies and pesticide contamination may also be factors affecting this species.

**Prediversion Conditions and Changes.** The prediversion status of American white pelicans in the project areas is unknown; however, they probably occurred in the project area during migration (Grinnell and Miller 1944). Numbers of pelicans using the project area may have increased as a result of the construction of Lake Crowley reservoir. White pelicans using Lake Crowley reservoir probably nest at Pyramid Lake in Nevada (Tillemans pers. comm.) and, because the project areas are situated between Lake Crowley reservoir and Pyramid Lake, white pelicans occur regularly in Mono Basin (Jehl and Shuford pers. comms.).

**Status at Point of Reference.** American white pelicans occur occasionally at Mono Lake and Grant Lake Reservoir (Gaines 1988), but they are common transients at Lake Crowley reservoir (Tillemans pers. comm.). Over 200 pelicans were observed at the DeChambeau ponds in 1984, and over 500 at Lake Crowley reservoir in 1987, using it as a migratory stopover (Gaines 1988). Possibly due to recent drought conditions, approximately 100 nonbreeding white pelicans have summered at Lake Crowley reservoir (Tillemans pers. comm.). Currently, American white pelicans are regular and sometimes common transients through the Owens Valley and Mono Lake and may stay for months at local reservoirs (Jehl pers. comm.). Their numbers in Mono Basin probably vary in direct proportion to the size of the Pyramid Lake colony (Jehl pers. comm.). The number staying to feed in summer and fall has almost surely increased with construction of Lake Crowley reservoir, which has a fish stocking program (Jehl pers. comm.).

## Osprey

Status: DFG Species of Special Concern

Ospreys occur as breeding residents and migrants along the east side of the Sierra Nevada. The osprey is piscivorous and requires lakes or large streams that support fish (Zeiner et al. 1990a).

Osprey populations have declined in California since the 1940s because of pesticide contamination, habitat destruction, and disturbance during the breeding season (Remsen 1978). Currently, however, their numbers appear to be increasing in the state (Gould and Jurek 1988).

**Prediversion Conditions and Changes.** The historical status of ospreys is unknown; however, this species is not known to have nested in Mono Basin prior to the diversion of tributaries (Gaines and Mandelbaum pers. comms.) Thus, ospreys probably have always been uncommon in Mono Basin and Upper Owens River.

In Mono Basin, reduced or discontinued streamflows and channel incision have reduced the quantity and quality of Mono Basin's introduced brown trout fishery (Chapter 3D, "Fisheries Resources"). Therefore, the quality of the stream foraging habitat has been significantly reduced. The created fishery at Grant Lake reservoir, however, may have benefited this species. The nearly total loss of large cottonwood trees on Rush and Lee Vining Creeks below the U.S. Highway 395 crossings (Chapter 3E, "Vegetation") has eliminated potential nesting and perching structures from these areas and may explain why a currently nesting pair selected its tufa tower nesting site near Navy Beach. Jehl (pers. comm.), however, pointed out that rock towers are used by ospreys nesting on the offshore Baja California islands, and for this reason tufa towers should not be considered unusual nest sites for this species.

Osprey have benefited from construction of Lake Crowley reservoir, which created higher quality osprey foraging habitat than previously existed (Tillemans pers. comm.).

Augmentation of flows to Upper Owens River in itself probably has not had a substantial effect on the river's fishery (see Chapter 3D, "Fisheries Resources"). Due to the creation of Lake Crowley reservoir and angler interest, DFG and other organizations have implemented management actions (e.g., stocking the river with fish) that has enhanced Upper Owens River's fishery; therefore, the quality of osprey foraging habitat below East Portal has probably increased since diversions began.

**Status at Point of Reference.** Ospreys prey on fish and occur as rare summer residents or as transients in both Mono Basin and the Upper Owens River Basin (Gaines 1988).

A pair of ospreys has nested on an exposed tufa tower near Navy Beach every year since 1984, but it is unknown whether the same individuals were present each year (Carle pers. comm.). The nesting ospreys fledged no young from 1984 through 1988; however, in 1989, 1990, and 1992, two young were successfully fledged, and one bird was fledged in 1991 (Carle pers. comm.). These ospreys apparently forage along lower Rush Creek and the lakes near the June Lake Loop. The created fishery at Grant Lake reservoir may have benefited this species.

On Upper Owens River, ospreys are most common in late summer and early fall (Tillemans pers. comm.). The Owens River provides suitable osprey foraging habitat; however, trees suitable for nesting and perching (e.g., large snags and dead-top trees) are lacking along most of the river's course.

## **Bald Eagle**

Status: Federal-Listed Endangered, State-Listed Endangered

Bald eagles winter in both Mono and the Owens River Basins (Gaines 1988). This species generally winters near lakes or large streams and rivers supporting abundant fish, its preferred prey; they also forage on waterbirds and carrion. Large trees or snags adjacent to foraging areas that provide a wide field of view are preferred hunting perches (Zeiner et al. 1990a).

The numbers and distribution of bald eagles breeding in California has declined significantly since the late 1800s (Jurek 1990). Losses are attributed to habitat destruction, hunting, human disturbance, and pesticide contamination. California's bald eagle population is probably recovering as evidenced by a significant increase in the number of occupied bald eagle breeding territories observed since 1970 (Jurek 1990).

**Prediversion Conditions and Changes.** Prior to diversions of its primary streams (especially larger streams such as Rush Creek), preferred bald eagle habitat was more abundant in Mono Basin, but the status of the bald eagle population at that time is unknown. Reduced or discontinued streamflows and channel incision have reduced the quantity and quality of the basin's fishery (see Chapter 3D, "Fisheries Resources") and stream foraging habitat for bald eagles. The created fishery at Grant Lake reservoir, however, may have benefited this species. The nearly total loss of large cottonwood trees on Rush and Lee Vining Creeks below the U.S. Highway 395 crossings (see Chapter 3C, "Vegetation") has eliminated potential hunting and resting perches from these areas.

Bald eagles have benefited from construction of Lake Crowley reservoir, which created higher quality bald eagle habitat than previously existed (Tillemans pers. comm.).

Augmentation of flows to Upper Owens River probably had little or no overall effect on the river's fishery (see Chapter 3D, "Fisheries Resources"). Due to the creation of Lake Crowley reservoir and angler interest, DFG and other organizations have implemented management actions (e.g., stocking the river with

fish) that has enhanced the Owens River fishery; therefore, the quality of bald eagle foraging habitat below East Portal has probably increased.

**Status at Point of Reference.** Bald eagles are locally uncommon to common winter residents and transients in both Mono and Owens River Basins (Gaines 1988).

Gaines and Mandelbaum (pers. comms.) observed up to five individual bald eagles in the winter of 1984-1985 roosting and foraging for fish on lower Rush Creek. Bald eagles also forage at Grant Lake reservoir and other freshwater lakes in the basin that support a sufficient fishery (Gaines 1988). Bald eagles may be present in Mono Basin from November through April (Hart and Gaines 1983); they probably leave in years sufficiently cold to freeze lakes and streams, which eliminates access to a favored food source (Gaines and Mandelbaum pers. comm.).

Bald eagles also winter in Upper Owens River valley. Five bald eagles were observed on Upper Owens River in the winter of 1990 and one in 1991 (Tillemans pers. comm.). Eighteen bald eagles were counted in the winter of 1978, 17 in the spring of 1987, and six in the winter of 1991 at Lake Crowley Reservoir (Gaines 1988, Tillemans pers. comm.).

## **Northern Harrier**

Status: DFG Species of Special Concern

Northern harriers occur as a residents, winter residents, and migrants throughout much of the state (Zeiner et al. 1990a). Northern harriers prefer to construct nests on the ground near the edges of marshes or in grasslands; they forage in open habitats and feed primarily on small mammals, birds, reptiles, and amphibians (Zeiner et al. 1990a).

Resident breeding populations have declined throughout most of the state since at least the early 1940s. Conversion of wetland and grassland habitats for agriculture and urban development is thought to be the primary cause for statewide population declines (Remsen 1978).

**Prediversion Conditions and Changes.** The number of harriers breeding in Mono Basin today is thought to have substantially declined since the LADWP diversions (Remsen 1978). Gaines (1988) attributes population declines to loss of grasslands caused by over-grazing, water diversions, and reservoir and recreational development.

Augmentation of Owens River flows has probably not affected northern harrier population densities or distribution because the vegetation is similar to prediversion conditions (Chapter 3C, "Vegetation").

**Status at Point of Reference.** A small population of northern harriers nests in Mono Basin (Remsen 1978). Northern harriers occur in the project areas as uncommon summer residents and common winter residents and fall migrants (Gaines 1988). Suitable nesting habitat exists in the extensive marshlands and meadows around the lakeshore. However, the highly saline and saturated soils associated with these habitats make them unattractive to small mammals (Harris pers. comm.), and they are relatively unproductive foraging areas for harriers and other raptors.

Northern harriers are known to nest along Upper Owens River (Gaines 1988). Suitable nesting and foraging habitat for this species is present, and harriers were observed on numerous occasions during 1991 surveys.

### **Sharp-Shinned Hawk**

Status: DFG Species of Special Concern

The sharp-shinned hawk occurs as a migrant or winter resident throughout most of California (Zeiner et al. 1990a). Its breeding distribution is poorly documented, and few nesting records exist for the east slope of the Sierra Nevada (Gaines 1988). This species prefers to breed in coniferous or deciduous woodland habitats. Sharp-shinned hawks prey primarily on small birds and forage in wooded or scrub habitats and adjacent open areas (Zeiner et al. 1990a).

The status of the breeding population is unknown but is thought to have declined statewide and has probably been extirpated in some regions (Remsen 1978).

**Prediversion Conditions and Changes.** Change in population status or distribution of this species is unknown; however, reduction of riparian forest habitats in Mono Basin have resulted in the loss of about 200 acres of potential nesting and foraging habitat (Appendix D).

Augmentation of Owens River flows has probably not affected the sharp-shinned hawk's population or distribution because vegetation is similar to prediversion conditions (Chapter 3C, "Vegetation").

**Status at Point of Reference.** Sharp-shinned hawks are uncommon to rare and may be present year around in Mono and Upper Owens River Basins (Airola et al. 1980, Gaines 1988).

Sharp-shinned hawk nesting has not been documented in Mono Basin; however, year-long observations of this species indicate some breeding probably occurs (Gaines 1988). Approximately 85 acres of conifer-broadleaf forest, cottonwood-willow woodland, and aspen woodland located primarily along Lee Vining and Rush Creeks upstream from U.S. Highway 395, is potential nesting and foraging

habitat for this species (Appendix D). Riparian willow and mixed scrub habitats and conifer forests in Mono Basin are also potential foraging habitat.

Preferred nesting habitat is absent from Upper Owens River, but willow thickets adjacent to the river channel are potential foraging habitat for this species.

## **Cooper's Hawk**

Status: DFG Species of Special Concern

Cooper's hawks occur throughout most of California. This species prefers to nest in second-growth conifers or broadleaved evergreen forests (Zeiner et al. 1990a). Riparian aspen groves are currently the most important Cooper's hawk breeding habitats in Mono Basin (Shuford pers. comm.). Cooper's hawks forage in broken woodlands and adjacent habitats, and prey primarily on small birds (Zeiner et al. 1990a).

As a breeding species, the Cooper's hawk has declined throughout California and loss of riparian habitats, human disturbance at nest sites, and perhaps pesticide contamination may have contributed to its decline (Remsen 1978).

**Prediversion Conditions and Changes.** Reduction of riparian forests on Lee Vining and Rush Creeks has resulted in the loss of about 200 acres of potential nesting and foraging habitat in conifer-broadleaf forests, cottonwood-willow woodlands, and aspen woodlands (Appendix D). Cooper's hawks historically nested along lower Rush Creek and are thought to have been extirpated as a nesting species from this area (Gaines and Mandelbaum pers. comms.).

Augmentation of Owens River flows has probably not affected Cooper's hawk population density or distribution because vegetation is similar to prediversion conditions.

**Status at Point of Reference.** Cooper's hawks are year-long residents in Mono and Upper Owens River Basins (Zeiner et al. 1990a), and nesting Cooper's hawks have been documented in Mono Basin (Gaines 1988). Approximately 25 acres of potential nesting habitat occurs within the project area. One Cooper's hawk was observed foraging near Black Point during the Jones & Stokes Associates 1991 field surveys, but its nesting status was not determined.

Suitable nesting habitat for this species is absent from Upper Owens River project area.

## Northern Goshawk

Status: Federal Category 2, DFG Species of Special Concern

Goshawks occur as a breeding and wintering species along the east slope of the Sierra Nevada from Plumas County south to northern Inyo County (Zeiner et al. 1990a). This species is most closely associated with mature conifer forests and prefers to select nest trees in the densest portions of stands located near water (Zeiner et al. 1990a). On the Inyo National Forest, northern goshawks primarily breed in Jeffrey and lodgepole pine forests. Gaines (1988), however, mentioned aspen groves as potential nesting habitat in Mono Basin, and in Great Basin regions of Nevada preferred nest sites are located in dense, mature aspen stands (Herron et al. 1985). Goshawks generally forage in wooded habitats and prey primarily on small mammals and birds (Zeiner et al. 1990a), but they also forage in open, sagebrush scrub in winter (Gaines 1988).

**Prediversion Conditions and Changes.** Goshawk populations have probably not been significantly affected by water diversions from Mono Basin or augmentation of Upper Owens River since the acreage of aspen habitats in these areas remains almost unchanged from the prediversion period (Chapter 3C, "Vegetation").

**Status at Point of Reference.** Goshawks are year-long residents and are known to breed in Mono and Upper Owens River Basins (Gaines 1988, Airola ed. 1980). Fragmented forests within the project area appear to be marginal nesting habitat for this species. However, riparian woodlands and shrublands provide potential foraging and roosting habitat for wintering and migrant goshawks.

## Swainson's Hawk

Status: State-Listed Threatened

Swainson's hawks are uncommon summer residents and migrants in California where they typically nest in isolated large trees or shrubs within open habitats (Sharp 1986). This species forages in open grasslands, fields, and pastures and preys primarily on small mammals, birds, large insects, reptiles, and amphibians (Zeiner et al. 1990a).

Breeding populations have declined significantly throughout the state and this species has been extirpated from some regions (Sharp 1986). Conversion of grasslands and pasturelands to croplands is thought to be a major factor in the decline of this species, but other possible factors include human disturbance at nest sites, pesticide contamination, and loss of South American wintering habitat (Remsen 1978).

**Prediversion Conditions and Changes.** The change in Swainson's hawk populations from prediversion conditions in both Mono and Upper Owens River Basins is unknown. Population declines documented in other portions of the state indicate, however, that populations also may have declined in the project areas (Remsen 1978).

**Status at Point of Reference.** Hart and Gaines (1983) listed the Swainson's hawk as a very rare breeding species in Mono Basin. During the Jones & Stokes 1991 field surveys Swainson's hawks were not observed in the Mono or Upper Owens River Basins. One Swainson's hawk, however, was observed in June 1991 north of Mono Lake at Bridgeport, California.

Gaines (1988) reported that one to two pairs of Swainson's hawks nested along the Owens River. In recent years six to eight pairs of Swainson's hawks have been reported nesting in cottonwood trees or tall willow shrubs in the Upper Owens River Basin (Tillemans pers. comm.).

## **Golden Eagle**

Status: DFG Species of Special Concern

The golden eagle occurs throughout most of California as a resident, migrant, or wintering species (Zeiner et al. 1990a). Golden eagles forage over open terrain and feed primarily on rabbits and rodents (Zeiner et al. 1990a); they have also been reported foraging on nesting gulls at Mono Lake (Jehl pers. comm.). This species nests on cliff faces with suitable ledges or in large trees in open areas (Zeiner et al. 1990a).

**Prediversion Conditions and Changes.** Golden eagle populations probably have not been significantly affected by water diversions from Mono Basin or augmentation of Upper Owens River. Areas with permanently saturated soils do not support small mammals (Harris pers. comm.); therefore, within Mono Basin, prey populations may have increased on meadows that became drier due to dewatering. However, reduction of riparian forests on Lee Vining and Rush Creeks has resulted in the loss of potential nest and roost sites for this species. Jehl (pers. comm.) surmised that the increase in Mono Lake's gull colony may have benefited this species.

**Status at Point of Reference.** Golden eagles are permanent residents in Mono and Upper Owens River Basins (Zeiner et al. 1990a). They have been recorded nesting in Mono Basin (Hart and Gaines 1983), and a pair is known to nest in the Rush Creek bottomlands (Banta pers. comm.). A pair of eagles was observed at the mouth of Lee Vining Creek during the Jones & Stokes Associates 1991 field surveys, but the pair's nesting status was not determined.

## **Peregrine Falcon**

Status: Federal-Listed Endangered, State-Listed Endangered

Peregrine falcon populations declined throughout their range in the lower 48 states, primarily due to pesticide contamination (King 1981). During the past two decades, however, restrictions on pesticides

and captive breeding programs have allowed peregrine falcon populations to recover in some portions of the United States (Johnsgard 1990).

Peregrines prey primarily on birds and prefer to nest and forage near wetlands, lakes, and rivers (Zeiner et al. 1990a).

**Prediversion Conditions and Changes.** Peregrine falcons formerly nested near the mouth of Lundy Canyon in Mono Basin (Gaines 1988), and circumstantial evidence indicated that a pair probably nested on Negit Island in 1916 (Dixon 1916). Evidence from feeding sites indicate the pair fed heavily on eared grebes (Grinnell and Storer 1924).

Peregrine falcon populations were unaffected by contamination from chlorinated hydrocarbon pesticides, such as DDT, at the time diversions were initiated (Gaines 1988). Due to their dramatic rangewide declines by the 1960s, however, falcons were probably more common in the Mono and Owens River Basins prior to the diversions than today.

Redistribution of water in both basins has changed the number and distribution of waterbirds, the peregrine falcon's primary prey species. The effects of this change on their prey availability cannot be determined due to historical and current rarity of this species in the project area.

**Status at Point of Reference.** The peregrine falcon is rare in Mono Basin and occurs as a summer resident or migrant (Gaines 1988). Peregrine falcons were observed along Rush Creek in August and October 1984 (Gaines and Mandelbaum pers. comms.). Jehl (pers. comm.) observes this species approximately once every 2 years and feels their frequency in Mono Basin has probably increased during the past 5 years.

The status of wild peregrine falcons in the Owens River Basin is probably similar to Mono Basin; however, approximately 10 peregrine falcons have been successfully reintroduced at Lake Crowley reservoir, and these birds have fledged 15-20 "hacked" young over the last 3 years (Tillemans pers. comm.). Although nesting is suspected in the Owens River gorge and possibly above Grant Lake reservoir on Rush Creek, no confirmed eyries have been found at either location (Tillemans pers. comm.).

## **Prairie Falcon**

Status: DFG Species of Special Concern

In California, the prairie falcon occurs as an uncommon resident and migrant species closely associated with open habitats (Zeiner et al. 1990a). This species nests on cliff ledges and preys primarily on small mammals (Zeiner et al. 1990a).

Reproductive success of prairie falcons nesting on the periphery of the Central Valley was found to be extremely low during surveys conducted from 1969 to 1972 (Remsen 1978). The cause of poor

reproduction is unknown, but pesticide contamination, human disturbance at nest sites, shooting, and collection of young birds by falconers are cited as possibilities (Remsen 1978).

**Prediversion Conditions and Changes.** Prairie falcons probably have not been significantly affected by the LADWP diversions. Nesting sites for this species (ledges on cliff faces) were unaffected by the diversions and, because prairie falcons forage in many habitat types, it is unlikely that dewatering of Mono Basin or augmentation of flows to Upper Owens River would have reduced the area of available foraging habitat.

**Status at Point of Reference.** Prairie falcons occur as uncommon residents and migrants in Mono Basin and Upper Owens River (Gaines 1988, Tillemans pers. comm.). East of the Sierra Nevada, prairie falcons forage in meadow and upland scrub habitats and along the edges of Mono Lake and other small lakes and ponds (Gaines 1988).

## Sage Grouse

Status: DFG Species of Special Concern

Sage grouse are uncommon residents of Great Basin scrub and meadow habitats east of the Cascade Range and the Sierra Nevada (Zeiner et al. 1990a). Sage grouse require sagebrush for cover and in winter forage almost exclusively on sagebrush (Autenrieth et al. 1982). In other seasons, sage grouse prefer to forage on meadows for forbs and insects (Zeiner et al. 1990a).

Sage grouse populations have declined throughout their range in California. Major factors attributed to population declines include eradication of sagebrush to increase livestock forage, and over-grazing and subsequent deterioration of meadows. Over-hunting and hunting on leks (breeding display sites) in the early part of the century may have contributed to population declines. Human disturbance at active leks can also cause reduced reproductive success (Remsen 1978).

**Prediversion Conditions and Changes.** Sage grouse were common to abundant in Mono Basin in the 19th century and have since been extirpated from most of the basin (Gaines 1988).

The prediversion status of sage grouse on Upper Owens River is unknown; however, trends throughout the western United States indicate populations probably have declined since the early part of this century (Johnsgard 1973).

**Status at Point of Reference.** Sage grouse are considered to be a rare breeding species within Mono Basin (Hart and Gaines 1983). One sage grouse was observed in Great Basin scrub habitat on the Cain Ranch during 1991 wildlife surveys.

Sage grouse occur along the length of Upper Owens River and several leks are located near the river's course (Tillemans pers. comm.). Meadows adjacent to the Owens River would provide forage for

this species in late summer and early fall when forbs become an important dietary component (Johnsgard 1973).

## **Mountain Quail**

Status: Federal Category 2

Mountain quail are common to uncommon residents of montane habitats throughout California (Zeiner et al. 1990a). This species inhabits mountainous terrain supporting dense stands of brush and migrates downslope from high elevation areas prior to the first winter snowfalls.

**Prediversion Conditions and Changes.** The prediversion status of the mountain quail is unknown. Because mountain quail typically occupy dense stands of upland scrub species, this species has probably been largely unaffected by stream diversions in Mono Basin or augmentations to Owens River flows.

**Status at Point of Reference.** Mountain quail are an uncommon summer resident at higher elevations and a rare winter resident at lower elevations in Mono Basin (Gaines 1988). No mountain quail were observed in Mono Basin during the 1991 surveys. Breeding mountain quail in other parts of the Great Basin, however, are restricted to scrub habitats within walking distances of water (Shuford pers. comm.).

Mountain quail probably make little or no use of Upper Owens River because typical habitats frequented by this species are not present there.

## **Yellow Rail**

Status: DFG Species of Special Concern

Historically, yellow rails wintered at wetlands along the California coast but the state's only confirmed nesting was at a few locations in Mono County (Grinnell and Miller 1944). Their preferred breeding habitat is in freshwater marshes with low, sparse, emergent vegetation (Cogswell 1977).

**Prediversion Conditions and Changes.** Breeding rails were reported nesting in freshwater wetlands in Long Valley in the early part of this century (Grinnell and Miller 1944). Several yellow rail nests were found near Bridgeport Lake Reservoir, located north of Mono Basin, in the 1930s (Gaines 1988).

Yellow rail populations have declined or the species may have been extirpated from Long Valley since the diversions began (Remsen 1978). The primary reason for these losses, however, is thought to

be the degradation of freshwater wetlands caused by grazing although loss of nesting habitat occurred when Lake Crowley reservoir was filled (Remsen 1978).

**Status at Point of Reference.** Yellow rails are currently considered to be extremely rare transients in Mono Basin and Upper Owens River (Gaines 1988). Surveys conducted in the 1970s failed to locate this species in Long Valley (Remsen 1978); however, Gaines (1988) reported one observation of a yellow rail in a wet meadow at the Mono Lake county park in July 1985. Stream diversions, reductions in spring flows, and grazing reduced the availability of yellow rail habitat in Mono Basin (Gaines and Shuford pers. comms.).

## **Black Tern**

Status: Federal Category 2

Black terns occur at freshwater emergent wetlands during spring and summer in the Central Valley and northeastern plateau area of California. Black terns were formerly common within their range, but numbers in California have been declining primarily due to loss or degradation of wetland habitats (Zeiner et al. 1990a).

**Prediversion Conditions and Changes.** Prediversion status of black terns is unknown, although Grinnell and Miller (1944) report observations of this species at Mono Lake in the early 1920s.

**Status at Point of Reference.** Small numbers of migratory black terns regularly visit Mono Basin (Gaines 1988). Gaines (1988) reported a peak count of 12 birds at Mono Lake in 1976.

The status of black terns on the Owens River Valley is probably similar to Mono Basin. This species has been observed at Lake Crowley reservoir (Gaines 1988). However, because suitable habitat is not present, it is unlikely the species would occur on Upper Owens River.

Because black terns do not nest in the project areas and occur only as migrants through Mono and Upper Owens River Basins (Gaines 1988), it is unlikely the status of this species has been affected by diversions.

## **Long-Eared Owl**

Status: DFG Species of Special Concern

Long-eared owls occur in California as uncommon residents or winter visitors. They require riparian forests or thickets for nesting and roosting and prefer to forage in open habitats where they prey primarily on small rodents and occasionally birds (Zeiner et al. 1990a). Although riparian thickets adjoining meadow foraging grounds are this species' primary nesting habitats in California, long-eared owls also

breed in conifer and broadleaved evergreen forests. Productive foraging areas with suitable nest sites nearby are probably their key elements of habitat selection (Shuford pers. comm.).

Population declines were noted in the 1940s, and the owl may have been extirpated from some portions of its historic range (Remsen 1978). The cause for this species' decline is not fully understood, although loss of low elevation riparian habitats throughout the state may be a major factor (Remsen 1978).

**Prediversion Conditions and Changes.** Long-eared owls are considered uncommon east of the Sierra Nevada; however, their numbers may have been higher in the early part of this century. In Mono Basin, seven pairs were reported to have bred along Walker Creek in 1916 (Grinnell and Storer 1924). Gaines (1988) cites water diversions and conversion of woodlands to pasture as possible causes for this species' current rarity on Walker Creek. Gaines and Mandelbaum (pers. comms.) considered the long-eared owl to have been a rare nesting species on lower Rush Creek prior to diversion and as having been extirpated as a nesting species in this area by 1985. A total of about 200 acres of potential roosting and nesting habitat has been lost in Mono Basin since diversions began (Appendix D).

Prediversion habitat conditions on Upper Owens River for this species are similar to those observed today.

**Status at Point of Reference.** Long-eared owls are an uncommon breeding and rare wintering species on the east side of the Sierra Nevada (Gaines 1988). At Mono Lake, long-eared owls have nested in dense stands of buffaloberry near Simon's Spring (Gaines 1988). Approximately 85 acres of potential nesting and roosting habitat currently exist along diverted tributary streams.

Long-eared owls also occur on Upper Owens River and their status is probably similar to Mono Basin (Tillemans pers. comm.). Approximately 4 acres of riparian willow scrub provides potential nesting and roosting habitat for this species on Upper Owens River, which represents a loss of about 12 acres from the prediversion period.

## **Short-Eared Owl**

Status: DFG Species of Special Concern

In California, short-eared owls occur as uncommon residents or winter migrants in suitable grasslands and wetlands (Zeiner et al. 1990a). This species prefers to nest and roost in dense herbaceous vegetation and forages for small mammals, birds, reptiles, and other prey items in open habitats (Zeiner et al. 1990a).

Breeding populations of this species have declined throughout California and have been extirpated from some localities. The major factor attributed to declining nesting populations are conversion of wetland

and grassland habitats for agricultural uses and deterioration of these habitats due to over-grazing (Remsen 1978).

**Prediversion Conditions and Changes.** The prediversion status of this species is unknown; however, Grinnell and Miller (1944) report records of nesting in 1934 at June Lake in Mono Basin and in 1943 at Lake Crowley reservoir. Short-eared owls may have been extirpated as a breeding species on the east slope of the Sierra Nevada (Gaines 1988).

Populations of short-eared owls in Mono Basin are thought by some to have declined significantly (Gaines 1988, Remsen 1978). Potential short-eared owl roosting, nesting, and foraging habitat in Mono Basin (e.g., alkali meadows, dry meadows, wet meadows, and marshlands) has increased by about 4,500 acres since diversions began (Appendix D). The relatively low prey densities of these highly saline wetlands, however, probably reduces their attractiveness to short-eared owls and other raptors.

Short-eared owl populations on Upper Owens River probably have declined as indicated by general declines in this species' populations on the east side of the Sierra Nevada (Gaines 1988). Prediversion habitat conditions on Upper Owens River for this species are similar to those observed today.

**Status at Point of Reference.** Short-eared owls are considered a rare summer visitor and fall transient in Mono Basin and Upper Owens River (Gaines 1988). Gaines (1988) reported only four observations of short-eared owls in Mono Basin between 1976 and 1986. No short-eared owls were observed during 1991 surveys; however, approximately 5,000 acres of potential foraging, nesting, and roosting habitat currently occurs within the basin.

The status of short-eared owls on Upper Owens River is probably similar to Mono Basin (Tillemans pers. comm.). Short-eared owls were not observed during 1991 surveys; however, potential foraging, nesting, and roosting habitat for this species occurs in irrigated pastures of the Upper Owens River.

## **Willow Flycatcher**

Status: State-Listed Endangered, USFS Sensitive Species

Willow flycatchers nest and roost in dense willow thickets and forage over meadows or water bordering willows (Zeiner et al. 1990a). Their numbers and distribution have declined throughout most of California, and most summer resident populations now occur only in the Sierra Nevada (Harris et al. 1988). Population declines have been attributed to loss of willow habitat, brown-headed cowbird nest parasitism, and heavy grazing of willows (Remsen 1978, Harris et al. 1988, Sanders and Flett 1989).

**Prediversion Conditions and Changes.** Grinnell and Storer (1924) reported this species' occurrence in the vicinity of Mono Lake. Although prediversion status of willow flycatchers is unknown, willow flycatchers were probably more common in Mono Basin prior to the diversions (Gaines 1988).

Reduced or discontinued streamflows and spring flows, and channel incision caused by the diversions have reduced the quantity and quality of willow-meadow habitats associated with affected streams. Other factors, such as brown-headed cowbird nest parasitism and hedging of willows by livestock, may also have adversely affected willow flycatchers throughout their range in California (Sanders and Flett 1989). Approximately 92 acres of potential montane meadow habitat has been lost within the basin since diversions began.

The acreage and distribution of willows on Upper Owens River has changed little since augmentation of flows, and populations of willow flycatchers probably have not been affected by the project. However, hedging of willows by livestock and brown-headed cowbird nest parasitism may have reduced the quality of habitat for this species (Sanders and Flett 1989).

**Status at Point of Reference.** The willow flycatcher is a locally rare summer resident in Mono Basin and along Upper Owens River (Gaines 1988).

In Mono Basin, a territorial male was observed near the LADWP diversion on Lee Vining Creek in July 1986 (Natural Diversity Data Base 1991). Gaines and Mandelbaum (pers. comms.) reported in 1985 that willow flycatchers may have been extirpated as a breeding species on lower Rush Creek. One willow flycatcher was observed in riparian willow scrub habitat on upper Parker Creek during the Jones & Stokes field survey, but it was not present in subsequent surveys, suggesting that it did not breed in the area. Approximately 500 acres of potential willow flycatcher habitat occurs within Mono Basin project areas, but these are unoccupied by nesting birds.

Willow flycatchers have been reported to occur in suitable habitat on Upper Owens River (Tillemans pers. comm.), but none were observed during 1991 surveys of this area. Approximately 3.7 acres of potential willow flycatcher habitat was mapped on the Upper Owens River. Willows do not occur on Upper Owens River downstream from the Arcularius Ranch. Because willows on the Upper Owens River have declined by about 12 acres during the diversion period, less habitat is currently available for nesting willow flycatchers and most of the remaining acreage is in poor condition and probably would not support this species. In this area, willows occur as scattered clumps of mature or decadent plants that have been hedged by cattle. Even if this habitat acreage were restored, however, it is unlikely that willow flycatchers would breed there because the presence of livestock would continue to promote nest parasitism of this species by brown-headed cowbirds (Sanders pers. comm.).

## **Bank Swallow**

Status: State-Listed Threatened

Bank swallows occur as uncommon migrants and locally as uncommon summer residents in California (Zeiner et al. 1990a). Inland bank swallow populations nest in cavities excavated in vertical banks or cliffs adjacent to, and formed by, streamcourses (Zeiner et al. 1990a).

Bank swallows have been extirpated from as much as 50% of their former range in California (Humphrey and Garrison 1986). The primary factor related to this species' decline is the loss of nesting banks and cliffs resulting from bank protection and other river control practices in the Central Valley (Remsen 1978); such activities have not occurred in Mono Basin or on Upper Owens River.

**Prediversion Conditions and Changes.** The status of bank swallow populations prior to diversions is unknown in Mono and Upper Owens River Basins due to a lack of historical records (Gaines 1988).

Potential bank swallow nesting habitat may have increased on lower Rush Creek since diversions began. Dropping lake levels coupled with periods of high flows in the late 1960s severely incised lower Rush Creek, creating extensive cliff faces that, depending on the type of substrate exposed, may be suitable for nesting.

**Status at Point of Reference.** Gaines (1988) considered the bank swallow as a rare migrant in Mono Basin; however, an active nesting colony was located near DeChambeau ponds in 1986 (Natural Diversity Data Base 1991). No bank swallows were observed there during 1991 wildlife surveys.

Bank swallows are a rare transient along Upper Owens River; however, Gaines (1988) reported a nesting colony of approximately 2,000 individuals at Lake Crowley reservoir. This colony is still active, but its current size is unknown (Tillemans pers. comm.).

## **Loggerhead Shrike**

Status: Federal Category 2

Loggerhead shrikes occur throughout much of California and are common residents and winter visitors. This species occupies open terrain that supports scattered shrubs, trees, or fence posts for perches (Zeiner et al. 1990a).

**Prediversion Conditions and Changes.** The prediversion status of the loggerhead shrike is unknown; however, Grinnell and Miller (1944) described this species as common east of the Sierra Nevada. Loggerhead shrikes typically occupy open terrain, such as sparse sagebrush scrub and pinion-juniper woodland habitats (Zeiner et al. 1990a); therefore, the species probably has been largely unaffected by stream diversions.

**Status at Point of Reference.** Loggerhead shrikes are an uncommon summer and rare winter species in Mono Basin (Gaines 1988). Loggerhead shrikes were infrequently observed in Great Basin scrub and alkali dry meadow habitats in Mono Basin during the 1991 surveys.

The status of the loggerhead shrike in Upper Owens River Basin is probably similar to Mono Basin although, within the project area, habitats preferred by this species are lacking.

### **Virginia's Warbler**

Status: DFG Species of Special Concern

Virginia's warblers occur as rare, irregular summer residents or migrants on the east slope of the southern Sierra Nevada (Gaines 1988, Zeiner et al. 1990a). Only a few nesting records for this species, which inhabits open woodland and riparian habitats, have been reported in California (Remsen 1978, Zeiner et al. 1990a).

**Prediversion Conditions and Changes.** Prediversion status of Virginia's warbler populations in Mono Basin and on Upper Owens River is unknown; however, because this species currently occurs only irregularly and in small numbers in California, it is unlikely Virginia's warblers have been significantly affected by the LADWP diversions.

**Status at Point of Reference.** Virginia's warblers have been observed irregularly in Mono Basin. Gaines (1988) reported observations of three singing males in upper Lee Vining Canyon in 1975, and one in 1976 and one in 1985 from Mono Lake.

Observations have not been reported from along Upper Owens River; however, its occurrence is probably irregular and similar to that reported for Mono Basin.

### **Yellow Warbler**

Status: DFG Species of Special Concern

The yellow warbler occurs as a summer resident throughout much of California and it breeds in riparian woodland and shrub habitats (Zeiner et al. 1990a).

The distribution and number of yellow warblers in California have declined significantly in recent decades. The primary factors affecting this decline include losses of riparian habitat and nest parasitism by brown-headed cowbirds (Remsen 1978). Brown-headed cowbird populations have expanded significantly with development of lands for agricultural and livestock production (Gaines 1988, Zeiner et al. 1990a).

**Prediversion Conditions and Changes.** Prediversion status of yellow warblers is largely unknown; however, Grinnell and Storer (1924) reported yellow warblers as a common summer resident in the Mono Lake area.

Within Mono Basin, reduced or discontinued streamflows and spring flows and channel incision have reduced the quantity and quality of riparian woodland and shrub habitats associated with affected streams. Approximately 200 acres of mature cottonwood-willow woodlands habitat has been lost since diversions began (Appendix D). Because riparian habitat was more extensive and cowbirds less common than today, yellow warbler populations were probably larger in Mono Basin prior to the diversions.

Yellow warbler numbers may have declined on Upper Owens River due to increases in brown-headed cowbird populations. However, the acreage and distribution of willow on Upper Owens River is unchanged, and populations of yellow warblers probably have not been affected by augmented streamflows in this area.

**Status at Point of Reference.** Yellow warblers are common summer residents on the east slope of the Sierra Nevada (Gaines 1988).

In Mono Basin, yellow warblers were uncommon to common in riparian woodland and shrub habitats surveyed in 1991. Yellow warblers have been reported nesting in Lee Vining Canyon, Walker Creek, and the Mono Lake County Park (Gaines 1988). Gaines and Mandelbaum (pers. comms.) reported yellow warblers absent as a nesting species on lower Rush Creek in 1985; however, the species was frequently encountered during the 1991 nesting season. No nests were found, but the persistence of territorial males in this area suggested that breeding there was likely. Approximately 290 acres of potential yellow warbler nesting habitat in conifer-broadleaf forest, cottonwood-willow woodland, and riparian willow scrub are present within Mono Basin project areas (Appendix D). However, yellow warbler populations were probably larger in Mono Basin prior to diversions than today because riparian habitats were more extensive and brown-headed cowbirds were less common.

## **Yellow-Breasted Chat**

Status: DFG Species of Special Concern

The yellow-breasted chat was once a fairly common summer resident of riparian woodlands throughout California (Grinnell and Miller 1944).

**Changes from Prediversion Conditions.** Currently, this species is rare or absent from much of its former breeding range in the state, including Mono Basin, due to destruction of riparian habitats, and possibly other factors such as parasitism by brown-headed cowbirds (Remsen 1978).

**Status at Point of Reference.** Yellow-breasted chats were not observed in Mono Basin during the 1991 field surveys (Appendix D) but a singing male was reported near the shrimp plant in 1976 (Winkler pers. comm.). A single individual was also observed in riparian habitat on the Arcularius Ranch in 1991 (Appendix D), suggesting that small numbers probably continue to migrate through the western Great Basin. Currently, only about 4 acres of suitable riparian nesting habitat exist for this species along

the Upper Owens River. The extent of the yellow-breasted chat's preferred cottonwood-willow breeding habitat was reduced by about 200 acres in Mono Basin during the diversion period (Appendix D), which probably had adverse effects on this species.

Approximately 3.7 acres of riparian willow scrub habitat occurs on Upper Owens River, mostly upstream from East Portal. Riparian woodland habitats are not present on Upper Owens River, and willows do not occur below the Arcularius Ranch. Observations of territorial male yellow warblers on the Arcularius Ranch in 1991 suggest this species nests there; however, suitable riparian habitat for this species is limited.

## Mammals

Nine special-status species of mammals occur or could occur within the project areas (Table E-1). The Sierra Nevada red fox and California wolverine would not be affected by the diversions or proposed alternatives because preferred habitats are located at elevational zones outside of the affected area (Harris 1991). Sensitive roosting habitats (e.g., caves, rock crevices, and mine tunnels) for the spotted bat and Townsend's big-eared bat would not be affected by the diversions or proposed alternatives (Harris pers. comm.).

### Inyo Shrew

The Inyo shrew is not considered a special-status species throughout its California range; however, within Mono Basin, it is considered to be locally rare (Harris pers. comm.).

The Inyo shrew occurs on the east side of the Sierra Nevada in Mono and Inyo Counties. This species prefers riparian habitats although it may occur in pinon-juniper forest or Great Basin scrub habitats (Zeiner et al. 1990b).

**Changes from Prediversion Conditions.** Effects of diversions on this species are unknown; however, loss of riparian vegetation on Lee Vining and Rush Creeks may have reduced the amount of potential habitat available for Inyo shrews.

**Status at Point of Reference.** The status of this species in Mono and Upper Owens River Basins is unknown; however, it is presumed to be rare (Harris 1982). Zeiner et al. (1990b) excludes Mono Basin from this species' range; however, Harris (1982) reported an occurrence of this shrew near Lee Vining. An occurrence of Inyo shrews at the Mono Lake County Park was also recorded in 1988 (Harris pers. comm.).

## **Pygmy Rabbit**

Status: Federal Category 2, DFG Species of Special Concern

Pygmy rabbits are associated with Great Basin scrub habitats and occur in northeastern California and Mono County (Williams 1986). Preferred habitat for this species includes dense stands of big sagebrush, rabbitbrush, and greasewood (Harris 1991). Big sagebrush is the primary forage for the pygmy rabbit, although grasses and forbs are consumed during some periods of the year (Zeiner et al. 1990b).

The status of pygmy rabbit populations is unknown; however, their distribution is limited and patchy within their geographic range (Williams 1986). A preference for the densest patches of Great Basin scrub within larger stands of sagebrush may account for the spotty distribution of this species (Harris pers. comm.).

**Prediversion Conditions and Changes.** The prediversion status of pygmy rabbit populations is unknown; however, populations probably have not been significantly affected by the diversions in Mono Lake or Owens River Basins (Harris 1991). Upland habitats preferred by this species remained either stable or increased slightly as a result of dewatering.

**Status at Point of Reference.** Pygmy rabbits occur in the Mono Basin project area and the Upper Owens River Basin (Harris 1982, Zeiner et al. 1990b).

Within Mono Basin, pygmy rabbits were observed at several locations. They have been observed in riparian scrub habitats adjacent to Mono Lake; however, riparian scrub is probably not required for this species (Harris 1991).

Pygmy rabbit occurrence in the Upper Owens River Basin is probably similar to that described for Mono Basin (Harris pers. comm.).

## **White-Tailed Hare**

Status: DFG Species of Special Concern

In California, the white-tailed hare is a resident of the east slope of the Sierra Nevada (Zeiner et al. 1990b). This species is associated primarily with upland habitats and feeds on grasses, forbs, and buds, bark, and twigs of shrubs (Zeiner et al. 1990b).

White-tailed hare populations have declined significantly throughout their range. Declines are attributed to changes in the quantity and quality of habitat caused primarily by livestock grazing and to competition with expanding black-tailed hare populations (which may have been triggered by grazing) (Harris 1982, Williams 1986).

**Prediversion Conditions and Changes.** The prediversion status of white-tailed hares is unknown; however, they probably have not been significantly affected by changes in flow regimes in Mono or Owens River Basins. Upland habitats preferred by this species probably have remained either stable or increased slightly as a result of dewatering; however, dewatering may have resulted in some loss of potential foraging meadows in Mono Basin.

**Status at Point of Reference.** White-tailed hares occur in the Mono Basin project area and the Upper Owens River Basin (Harris 1982; Zeiner et al. 1990b).

On the eastern slope of the Sierra Nevada, this species' summer range extends above 8,000 feet in elevation. White-tailed hares occur in the project area primarily in winter and spring. Among the wetland and riparian habitats inventoried in 1991, meadows are probably the most important for this species (Harris 1991).

White-tailed hares are probably more common in the Upper Owens River Basin than in the Mono Basin (Harris pers. comm.).

## **Mountain Beaver**

Status: Federal Proposed Endangered

In California, the mountain beaver occurs in the Sierra Nevada, as well as the Cascade and Klamath Ranges. This species is associated with dense, moist riparian thickets and feeds on a variety of forbs, shrubs, and twigs (Harris 1991). Mountain beavers occur in Mono Basin, but are not known to occur on Upper Owens River (Zeiner et al. 1990b, Tillemans and Harris pers. comms.).

**Prediversion Conditions and Changes.** The prediversion status of mountain beavers in the project areas is unknown. In Mono Basin, reduced or discontinued streamflows and spring flows and channel incision have reduced the quantity and quality of riparian woodland and scrub habitats associated with affected streams. Approximately 188 acres of potential mountain beaver habitat has been lost in cottonwood-willow habitats (Table 3F-7). Loss of riparian vegetation linking lakeside riparian habitat to suitable habitat at higher elevations may have been a factor in isolating this population (Harris 1991).

The acreage and distribution of potential mountain beaver habitat on Upper Owens River has probably not changed with augmentation of flows.

**Status at Point of Reference.** The status of the population around Mono Lake is unknown; however, mountain beavers at Mono Lake appear to be geographically isolated from other populations. Harris (1991) reported five observations of this species in Mono Basin from 1976 to 1990. These sightings were associated with thickets of willow or mixed scrub habitats adjacent to springs or streams. Approximately 300 acres of potential mountain beaver habitat currently exists in riparian scrub areas of Mono Basin.

Approximately 3.7 acres of potential habitat for this species is located on Upper Owens River, most of which occurs above East Portal.

## **American Badger**

Status: DFG Species of Special Concern

The badger's range extends throughout California, except the extreme northwestern coastal areas (Zeiner et al. 1990b). Badgers occur in a variety of habitats; however, a sufficient food supply, friable soils for burrowing, and relatively open and uncultivated areas appear to be primary requirements (Williams 1986). Badgers are carnivorous, feeding primarily on burrowing rodents.

Badger populations and distribution have declined significantly in California over the last century and the chief causes are thought to be habitat loss due to development of urban and agricultural lands, poisoning of prey populations, and badger control programs (Williams 1986).

**Prediversion Conditions and Changes.** Prediversion status of badger populations in Mono Basin and Upper Owens River is unknown; however, populations probably have not been significantly affected by the diversions.

In Mono Basin, prey populations may have increased in meadows that became drier. Upland habitats preferred by this species probably have remained either stable or increased slightly as a result of dewatering.

**Status at Point of Reference.** Badgers occur in Mono Basin project area and the Upper Owens River Basin (Harris 1982; Zeiner et al. 1990b).

On east slope of the Sierra Nevada, preferred habitat includes perennial grasslands and low canopy stages of sagebrush and bitterbrush (Harris 1991). Badgers occur in Mono Basin from the lakeshore up to 10,000 feet in elevation (Harris 1982). Within the project area, meadows supporting populations of ground squirrels or pocket gophers would provide suitable badger foraging habitat (Harris 1991).

Badgers are common in the Upper Owens River Basin (Tillemans pers. comm.), and habitat preferences are probably similar to that described for Mono Basin.

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