BIRDS

Species Accounts

California brown pelican
(*Pelecanus occidentalis californicus*)

California brown pelican

CA - E (1971); Fully Protected
FED - E (1970)

General Habitat: Marine; Islands, Bays, Coastal Ponds and Sloughs; Piers and Jetties

The California brown pelican is a large, grayish-brown bird with a long, pouched bill. The adult has a white head and dark body, but immature birds are dark with a white belly. The pelicans nest from the Channel Islands of southern California southward along the Baja California coast and in the Gulf of California to coastal southern Mexico. The pelican builds nests of sticks on the ground, typically on islands or offshore rocks. The only breeding population in United States waters is the Southern California Bight (SCB) population, which consists of breeding birds on the Channel Islands and several islands off Baja California: West Anacapa Island, Santa Barbara Island, Isla Coronado Medio, and Isla Coronado Norte. Between breeding seasons, pelicans from other populations join SCB birds in wandering along the west coast of North America as far north as British Columbia.

Disease outbreaks affecting local populations of pelicans have been known as an endangerment factor to the species. However, the scale of mortalities from disease had not been large until more than 1,400 brown pelicans died in an avian botulism outbreak at the Salton Sea (Sea) in August 1996. In 1997, about 150 brown pelicans died as a result of chronic avian botulism incidence at the Sea. The brown pelican does not nest at the Sea, but it does gather there in the post-breeding season. Since brown pelicans from both SCB and Mexico likely move to the Sea after the breeding season, biologists do not know whether any, or how many, SCB pelicans were among the mortalities or the survivors of avian botulism in 1996 and 1997. However, the SCB population is threatened by such outbreaks elsewhere, along with many other phenomena. These include low productivity and colony failure, the dependence for food primarily on the northern anchovy, oil and other spills from ships, the presence of relatively high levels of pesticides in the tissues of some pelicans, human and non-native-mammal disturbance at central California coast post-breeding roosts, physical injury and mortality due to fish hooks and entanglement of birds in abandoned fishing line, and El Niño events that cause pelican forage-fishes to move well offshore and away from pelican nesting islands.

As a result of the disease events in 1996 and 1997, and of earlier incidents dating back to 1987 which involved die-offs of large numbers of aquatic birds, the DFG, USFWS, and USBR conducted a needs-assessment workshop for the Sea in August 1997. In June 1997, USFWS assigned a full-time science coordinator to the Coachella and Imperial valleys of the Sea region. The workshop proceedings were issued in October 1997. One proposed study is to measure the habitat use and population trends in avian populations at the Sea which could include a monitoring program and determine the overall importance of the Sea to birds of the Pacific Flyway.

In mid-1995 the USFWS informally proposed delisting the pelican in its entire range. A draft report on the proposal from the USFWS later noted that the SCB population failed to achieve the specific thresholds for determining when this population could be delisted. Soon afterward the proposal to delist was abandoned.

USFWS contracted for a study in 1996 to test an alternative method of determining the numerical extent of the pelican's annual breeding effort in SCB. An annual survey, which is recommended by the federal Recovery Plan but typically not done, requires repeated visits to the vicinity of each colony by land and by sea to count the numbers of nests and estimate the number of young that fledged. USFWS's contractor hoped to be able to demonstrate that large-format, aerial photography could reduce or eliminate the need for surface trips to nesting colonies. The camera used in 1996 was of insufficient size to capture the detail of a dense nesting colony. For 1997, the DFG pro-

vided funding to evaluate the use of a larger-format camera as a more efficient tool for assessing the number of nests and the number of young fledged per nest. Regrettably, the larger-format cameras, at least with the film used in the evaluation, were judged to be inadequate for counting nests.

Approximately 4,200 pairs built nests on Santa Barbara and West Anacapa islands in 1993, and an estimated 5,800 pairs built nests in 1994. In 1995, no comparable data were collected. For 1996, about 5,300 pairs built nests, with about 880 nest on Santa Barbara Island, and in 1997, about 6,380 pairs built nests, with only about 500 of these on Santa Barbara Island.

In 1999, the DFG became aware of potential impacts to pelican nesting colonies by the market squid fishery. A pelican researcher had found that more than 50 percent of the pelican nests had been abandoned and that chick mortality was relatively high on Anacapa island in 1999, an unusual situation in a non-El Niño year. The researcher noted that the high nest abandonment coincided with a potentially very disruptive disturbance factor close to the breeding colonies. The squid fishery uses extremely bright lights to raise spawning aggregations of squid towards the surface of the water, so that squid can be captured with nets. Lights can be used for periods up to 12 hours (6 PM to 6 AM) while fishing operations are taking place. Satellite data provided by the National Geophysical Data Center allowed tracking of presence or absence of relatively high light levels at various sites in southern California during 1999. Relatively high light levels (proportion positive greater than 30 percent) were evident in the area of Santa Barbara Island in April, May and June 1999 and at Anacapa Island during the months of January through April 1999. In December 1999, in consultation with the USFWS, NPS, and Channel Islands National Marine Sanctuary, the DFG proposed that the FGC adopt a regulation intended to avoid disturbance of pelican colonies by the squid fleet.

The status in 1999 of the California brown pelican: ***Unknown.***

California condor

California condor
(*Gymnogyps californianus)*

CA - E (1971); Fully Protected
FED - E (1967)

General Habitat: Valley and Foothill Grasslands
Chaparral
Various Woodland and Forest Habitats

The California condor is North America's largest land bird; its wingspan exceeds nine feet. Adults are black with a pink-orange head, and there is a white patch under each wing. It is the only living representative of this genus. Historically, condors were widespread in western North America from British Columbia to Baja California. By the early 1980s, they had been restricted to mountain and foothill rangeland and forest habitats in a U-shaped range north from northern Los Angeles County to San Luis Obispo County in the Coast Range and to Tulare County in the western Sierra Nevada. Nesting sites have been mainly on cliffs in the southern part of this range, with foraging areas primarily in the foothills, where the condors feed on carrion, typically cattle and deer.

Captive breeding continues to be successful. In 1997, there were 15 successful breeding pairs at the three breeding facilities: Los Angeles Zoo, San Diego Wild Animal Park, and World Center for Birds of Prey in Boise, Idaho. Of the 32 eggs produced, 22 were fertile, 19 hatched, and 18 chicks were successfully raised. Thirteen chicks were prepared for release in November and December 1997 at two California release sites at Santa Barbara and Monterey counties and one northern Arizona site. Breeding, rearing, and special behavioral training of young birds continue to be employed and improved. There were five deaths in the wild in California and Arizona due to predation, collisions with wires, and unknown causes. Also, several of the California birds were treated in October for lead poisoning and were soon released.

In 1998, 21 pairs of condors at the three breeding facilities produced 25 fertile eggs, and 20 chicks were hatched. Eight of these offspring were released into the north-

ern Arizona population in November; six were released in Monterey County, California, in January 1999; and six were released in Santa Barbara County, California, in March 1999. Also in early 1999, a bird previously released in California but returned to captivity because of behavioral problems was re-released into Arizona, and a 1997-hatched chick was released in Monterey County. Despite early training of birds to avoid humans and power poles, released condors occasionally approach people, and field crews harass the birds and discourage people from attempting to befriend the birds. In California during the year, three wild birds were rescued and treated for lead poisoning and were later returned to the wild. Another bird was found injured from being shot in the leg and it later died in captivity. Two birds were found accidentally drowned in a large, water-filled natural depression in a rock outcropping. In Arizona, two birds were found dead, at least one of which was preyed upon by a coyote.

Twenty breeding pairs of condors produced 19 fertile eggs in 1999, and 16 chicks were produced. Eight of these offspring were released in December 1999 in northern Arizona, and in early 2000, six will be released in Monterey County, California and three will be released in Santa Barbara County, California, including an adult female who was removed from the original wild population in 1986 and produced 14 chicks during her time as a captive breeder. In April, one of the southern California birds joined the birds in the central coast population, the first time such interaction has occurred. Condors are routinely recaptured as needed to replace telemetry equipment. Several birds have had to be returned to captivity because of behavioral problems, chiefly because of their approaching people too often. In March, a condor was shot and killed in Grand Canyon National Park, and the next month the defendant was convicted and sentenced. There were two other condor deaths in southern California.

The total population of condors increased in 1997 from 119 at the first of the year to 132 in December. In December 1997, there were 15 condors in the wild in Arizona, 24 in the wild in California, and 93 in captivity. At the end of 1998, there were 92 condors in captivity and 13 in release pens; and in the wild there were 22 in Arizona, 16 in Santa Barbara County, and 5 in Monterey County. In late December 1999, prior to the next round of releases, the condor population included 158 birds, of which 53 were in the wild and nine will be released in early 2000. All increases in population are from captive breeding. Breeding of wild birds is expected to occur within the next several years, now that the oldest wild birds have reached breeding age.

The status in 1999 of the California condor: ***Stable.***

Bald eagle
(*Haliaeetus leucocephalus*)

CA - E (1971); Fully Protected
FED - E (1967); T (1995)

General Habitat: Various Woodland , Forest, Grassland, and Wetland Habitats

The bald eagle is a large, dark brown bird of prey, which, as an adult, has a white head and tail. It occurs widely in North America. The species winters throughout most of California at lakes, reservoirs, river systems, and some rangelands and coastal wetlands. The breeding range is mainly in mountainous habitats near reservoirs, lakes and rivers, mainly in the northern two-thirds of the State, in the Central Coast Range, and on Santa Catalina Island. Large nests are normally built in the upper canopy of large trees, usually conifers. The birds are opportunistic foragers, usually feeding on fish or waterfowl, but they also prey on other small animals and eat carrion.

Bald eagle

The DFG has coordinated annual, statewide breeding surveys since 1973. The breeding population continues its long-term increase in numbers and in range. The number of breeding pairs occupying territories was 124 in 1996, 142 in 1997, 146 in 1998, and potentially more than in previous years based on incomplete results in 1999. Productivity continues to be good, with the number of "young produced per occupied territory of known success" averaging 1.1 in 1996 and 1997. Productivity dropped to 0.97, lower than normal in 1998, but seems to be back at an average of 1.1 young per occupied territory of known success in 1999.

During 1996, 1997, and 1998, 32 new bald eagle breeding territories were reported in California, resulting in a total of 180 territories known to have been occupied at sometime in the 1990s. Significantly, three of these were in the central coast zone, which has expanded from one territory in 1992 to five, owing mainly to the success of the bald eagle release program at the Ventana Wilderness Sanctuary. Other significant new territories included the first successful nesting pair on the California side of Lake Tahoe and, near there, the first occupied territory in Nevada. The breeding range has expanded from portions of eight counties in 1981 to 27 of the California's 58 counties currently.

Pre-harvest timber planning and other local management planning minimize disturbance and other conflicts statewide in eagle nesting areas. Increasing numbers of territories, however, have created increasing difficulties for land and wildlife management organizations in monitoring territory status as regularly and thoroughly as in the past. The bald eagle is included in several HCPs, 2081 agreements, and other planning documents across the State. Examples include the Headwaters HCP/Sustained Yield Plan in Humboldt County and the Lake Mathews HCP in Riverside County.

USFWS coordinated the annual, mid-winter bald eagle survey in 1996 and 1997. At scores of water bodies and upland areas each year, representing a large sample of wintering habitats in the State, hundreds of volunteers participated in the counts. In 1997, 425 observers reported 1,020 bald eagles at 77 survey areas; more than half of the birds were in the Klamath Lakes Basin and at Eagle Lake. These are not complete counts; however, the data provide information on the statewide distribution and ratio of immature to adult bald eagles that breed in and migrate to California for the winter and are present during this mid-winter period.

The USFWS reviewed the regional recovery plans in the nation to assess future the bald eagles status and planning needs. On July 6, 1999, the USFWS officially proposed to remove the bald eagle from the federal list of endangered and threatened wildlife because reclassification goals for recovery of this species have been met and exceeded. Public comments on the proposal will be reviewed by the USFWS and a decision to delist should be reached in 2000.

The Status in 1997 of the bald eagle: *Increasing.*

Swainson's hawk
(Buteoswainsoni)

CA - T (1983)
FED - None

General Habitat: Valley and Foothill Grassland

Swainson's hawk

The Swainson's hawk is a medium-sized hawk with relatively long, pointed wings and a long, square tail. Adult females weigh 28 to 34 ounces and males 25 to 31 ounces. Swainson's hawks breeding in California may spend the winter in Mexico and South America. Central Valley birds appear to winter in Mexico and Columbia and hawks from northeastern California have been satellite-transmitter tracked to Argentina. The diet of the Swainson's hawk is varied with the California vole being the staple in the Central Valley. A variety of bird and insect species are also taken. Over 85 percent of Swainson's hawk territories in the Central Valley are in riparian systems adjacent to suitable foraging habitats. Swainson's hawks often nest peripherally to riparian systems of the valley as well as utilizing lone trees or groves of trees in agricultural fields. Valley oak, Fremont cottonwood, walnut, and large willow with an average height of about 58 feet, and ranging from 41 to 82 feet, are the most commonly used nest trees in the Central Valley. Swainson's hawks require large, open grasslands with abundant prey in association with suitable nest trees. Suitable foraging areas include native grasslands or lightly grazed pastures, alfalfa and other hay crops, and certain grain and row croplands. Unsuitable foraging habitat includes crops such as vineyards, orchards, certain row crops, rice, corn and cotton crops. Suitable nest sites may be found in mature riparian forest, lone trees or groves of oaks, other trees in agricultural fields, and mature roadside trees.

Swainson's hawks were once found throughout lowland California and were absent only from the Sierra Nevada, north Coast Ranges and Klamath Mountains, and portions of the desert regions of the State. Today, Swainson's hawks are restricted to portions of the Central Valley and Great Basin regions where suitable nesting and foraging habitat is still available. Central Valley populations are centered in Sacramento, San Joaquin, and Yolo counties. During historical times (ca. 1900), Swainson's hawks may have maintained a population in excess of 17,000 pairs. Based on a study conducted in 1994, the statewide population is estimated to be approximately 800 pairs. Although more recent surveys have been planned to revise this estimate, there has been inadequate funding available to carry out the research. However, surveys in 1998 and 1999 in the Owens Valley area of the State revealed a larger population (about 20 pairs) than previously documented, centered around alfalfa fields in the area.

The loss of agricultural lands to various residential and commercial developments is a serious threat to Swainson's hawks throughout California. Additional threats are habitat loss due to riverbank protection projects, conversion from agricultural crops that provide abundant foraging opportunities to crops such as vineyards and orchards which provide fewer foraging opportunities, shooting, pesticide poisoning of prey animals and hawks on wintering grounds, competition from other raptors, and human disturbance at nest sites.

An ad-hoc group of researchers called the Swainson's Hawk Technical Advisory Committee (TAC) is currently developing a draft of a recovery plan for the species. The TAC has been active in habitat management planning, symposia sponsorship, and county planning issues within the critical three county range of the species. The TAC is currently active in several telemetry research projects. Despite the lack of a recovery plan, actions that may lead to recovery have been ongoing since the listing in 1983. These include the development of federal HCPs and State 2081 incidental take agreements within the range of the species. Management needs of the Swainson's hawk are fairly well known for the Central Valley breeding population. These include ensuring the availability of suitable nesting and foraging habitat through preservation of riparian systems and groves of and lone mature trees in agricultural fields, and maintenance of compatible (with the Swainson's hawk) agricultural practices in grasslands, pastures and croplands. Compatible agriculture is essential to the maintenance of current Swainson's hawk populations.

Recent die-offs of several thousand Swainson's hawks and other raptors attributed to pesticide use at agricultural fields in Argentina have prompted intense interest and actions on the part of scientists, industry, and governments to alleviate the problem. In partnership with chemical companies and landowners, initial efforts of raptor researchers have resulted in certain chemical compounds known to cause hawk mortality being replaced with what are hoped to be less dangerous substitutes. Monitoring will continue to detect and ensure against further hawk die-offs.

In 1997, six hawks were fitted with satellite transmitters and tracked during their southward migration. The birds were located wintering in a region north of Mexico City, Mexico, and near Bogota, Columbia. No birds from the Central Valley have been tracked further south, although a bird from northern California was tracked to Argentina during the winter of 1996. This study is ongoing and is intended to gather data on migration and wintering habits of the species over the next several years. The significance of the finding that Swainson's hawks winter in Mexico rather than Argentina is that there is little exposure to the kinds of pesticide poisoning suffered by the birds south of the equator. Agricultural operations are different with little or no pesticide application to croplands that the birds frequent in order to find prey. Transmitters were affixed in 1998 and 1999 and results confirm that the Swainson's hawks of the Central Valley migrate to a wintering area (in Mexico) quite different (and perhaps safer) from the majority of the Nation's population of Swainson's hawks.

The DFG is currently developing state-of-the-art GIS products for use in Swainson's hawk recovery planning. Earlier generations of these same GIS tools have been developed at the county level to aid in land use planning tasks and HCP development.

The status in 1999 of Swainson's hawk: ***Declining.***

American peregrine falcon

American peregrine falcon
(*Falco peregrinus anatum*)

CA - E (1971); Fully Protected
FED - E (1970); Delisted (1999)

General Habitat: Wide Range of Habitats

Adult peregrines are slate gray above and light below, and the dark cap of the head extends to the cheeks. The wingspan exceeds three feet. The range includes most of California, except in deserts, during migrations and in winter. The California breeding range, which has been expanding, now includes the Channel Islands, coast of southern and central California, inland north coastal mountains, Klamath and Cascade ranges, and the Sierra Nevada. Nesting sites are typically on ledges of large cliff faces, but some pairs are nesting on city buildings and bridges. Nesting and wintering habitats are varied, including wetlands, woodlands, other forested habitats, cities, agricultural areas and coastal habitats. Peregrine falcons feed on birds that are caught in flight.

Subsequent to the 1993-1995 status report, annual breeding population surveys of peregrines have continued, but no agency funding was available to support a statewide survey in 1996. A DFG-contracted statewide breeding survey was conducted during 1997 by the University of California, Santa Cruz, to assess breeding population size and locations, and to collect information on breeding success. Observers checked nearly 150 known and suspected nesting areas and obtained data indicating that at least 129 sites had at least one adult peregrine present (occupied territory), and at least 111 territories had two courting adults present (active territory). Breeding outcome determined for 78 of the sites indicated that productivity averaged about 1.5 young per pair. In 1998 and 1999 about half of the 193 known territories in the State were adequately monitored by the Santa Cruz Predatory Bird Research Group. Although annual survey data collected since 1993 are not directly comparable to results obtained prior to that year, they indicate that the current breeding population size has not declined, and probably has increased.

Although new breeding territories are being discovered annually, and the statewide population appears to be growing, maintaining data on territories for local protection planning, assessing statewide population trends, and assessing breeding success rates is increasingly difficult. A sampling survey method will be assessed for future population monitoring. Survey protocols will be developed by the California Peregrine Falcon Working Group in conjunction with USFWS post-delisting monitoring guidelines, which are being developed nationally.

Breeding and non-breeding peregrines foraging in some coastal locations has given wildlife administrators new concerns about predation by these falcons on other endangered species of birds, such as California least terns and marbled murrelets. Work is underway by USFWS, USDA Wildlife Services, various military facilities, and DFG to develop methods to preclude or control excessive peregrine predation in such circumstances

In 1995, the USFWS published an intent to propose that the American peregrine falcon be delisted from the Federal list of endangered species, and agency and public comments were received. In 1998 the USFWS published a proposed rule to remove the peregrine falcon for the Federal List of Endangered and Threatened Wildlife, based on continuing data indicating this species was recovered. On August 25, 1999 the USFWS delisted the American peregrine falcon.

The status in 1999 of the American peregrine falcon: *Increasing*.

California black rail

California black rail
(*Laterallus jamaicensis coturniculus*)

CA - T (1971); Fully Protected
FED - None

General Habitat: Marsh and Swamp

This rail is tiny, about the size of a sparrow, and is blackish in color with a small black bill, a back speckled with white, and a nape of deep chestnut brown. It inhabits saltwater, brackish, and freshwater marshes. Historically, California black rail was known from the San Francisco Bay area and the delta of the Sacramento and San Joaquin rivers south along the coast to northern Baja California, in the San Bernardino-Riverside area, at the Salton Sea, and along the lower Colorado River north of Yuma in California and Arizona. Currently, the rail probably is absent as a breeder in coastal Southern California and in the Riverside area. Until 1994, the rail was unknown from the Sacramento Valley except for a winter record at the DFG's Gray Lodge Wildlife Area in Butte County. In 1994, a population of the rail was found at the University of California's Sierra Field Station in Yuba County.

Loss and degradation of its habitat due to water and flood-control projects, land-use changes, agriculture, and livestock grazing threaten the rail.

In 1996 and 1997, the DFG received a federal Partnerships for Wildlife Act grants for a 1997-1999 survey to determine the distribution and breeding status of the rail in the Sacramento Valley and adjacent eastern foothills. During the ensuing study, the contractor found several previously unknown sites occupied by the rail in Butte, Yuba, and Nevada counties. The DFG will receive a final report from the contractor in 2000.

The status in 1999 of the California black rail: *Unknown.*

California clapper rail
(*Rallus longirostris obsoletus*)

CA - E (1971); Fully Protected
FED - E (1970)

General Habitat: Marsh and Swamp

California clapper rail

The California clapper rail is the size of a coot and is slightly larger and grayer than the two southern California subspecies of the clapper rail. The California clapper rail, as is true of all clapper rails, generally is gray-brown above and buffy-cinnamon below. Its cheeks are brownish-gray, and the flanks are barred with black and white. The somewhat orange bill is long and slightly down-curved. The rail is a perennial inhabitant of tidal salt marshes of the greater San Francisco Bay (Bay), although some individuals use brackish marshes during the spring breeding season. It formerly occurred at Humboldt Bay in Humboldt County, Elkhorn Slough in Monterey County, and Morro Bay in San Luis Obispo County.

The rail is threatened by destruction and degradation of its habitat through continued habitat loss, conversion of salt marshes to brackish marshes due to freshwater discharges from sewage treatment plants, invasion of non-native cordgrass, and pollution from urban runoff, industrial discharges, and sewage effluent. The rail itself is subject to predation by the non-native red fox, feral cat, and various native mammals.

In March of 1997, the DFG received a federal Section 6 grant from USFWS to control the non-native red fox in the south bay. To accomplish this project for the period of July 1997 through June 1998, the DFG contracted with the U. S. Department of Agriculture's Wildlife Services.

The federal West Coast Clapper Rail Recovery Team was expected to release a review draft of its Recovery Plan in early 1996. This document was intended to address recovery of both the California clapper rail and the light-footed clapper rail of Southern California, as well as the salt-marsh harvest mouse found around San Francisco Bay. In 1997, the USFWS recovery team was disbanded without a draft recovery plan being released. Currently, the USFWS is preparing a recovery plan for only the San Francisco Bay species, including the rail.

A preliminary indication from the 1997-98 winter high tide counts in the eastern shore of the south bay is that the south bay population may have increased. Based on winter counts from 1996-97, the two agencies estimated that the south bay population is 500-600 birds. The north bay population is estimated to be of a similar size.

The status in 1999 of the California clapper rail: *Unknown.*

Light-footed clapper rail

Light-footed clapper rail

(Rallus longirostris levipes)

CA - E (1971); Fully Protected
FED - E (1970)

General Habitat: Marsh and Swamp
Southern Coastal Salt Marsh

This rail is a brown, coot-sized marsh bird with long legs and bill, a short, upturned tail, and barred flanks. Disjunct populations breed in marsh vegetation of coastal wetlands from Santa Barbara County to San Diego County and northern Baja California. These populations inhabit cordgrass-pickleweed salt marsh year-round, feeding primarily on crabs, snails, and other intertidal invertebrates. The amount of suitable habitat available to this subspecies across its entire range is about one-third of that which existed historically.

Annual statewide surveys have continued under contract with CSU Long Beach, Foundation. From 1993 to 1995, there were up to 300 breeding pairs detected during each of those years. Annual surveys yielded 325 pairs in 1996 and 307 pairs in 1997. The average size of the statewide breeding population during the 1993-1997 period was 296 pairs. This is larger than the 1980-1992 population totals, which fluctuated from 142 to 277 pairs annually and averaged 189 pairs.

In 1998 and 1999 populations numbered 222 pairs and 233 pairs respectively. These were some of the lowest populations counted since 1990, and a significant decline from a peak of 325 pairs counted in 1996. The decline in 1998 was 28 percent below 1997 levels. Decreases were apparent in many of the marshes, but the most important declines took place in the two large populations at Seal Beach National Wildlife Refuge and Upper Newport Bay Ecological Reserve. In 1998 El Niño weather and tidal conditions interfered with surveys, delayed and prolonged the rail breeding season, and may have caused nesting failures and reduced food availability. However, Tijuana River Marsh National Wildlife Refuge, which essentially lost its rail population in the mid 1980s, has rebounded, and in 1999 reached its highest population, 80 pairs. The causes for the declines in the Seal Beach and Newport populations are unknown, and studies are underway to determine whether winter avian predation or other factors are responsible. These three subpopulations accounted for 85 percent of the total number of breeding pairs in California each year from 1997 through 1999. The total population of the subspecies, both in its entire range and in its range in California, represents one of the smallest known populations of any bird subspecies on the west coast of North America.

The number of wetland habitats supporting subpopulations of these clapper rails has not changed appreciably during the past 18 years. Light-footed clapper rails were detected in up to 19 marshlands in the early 1980s, up to 14 in the late 1980s, up to 13 in the early 1990s, and from 14 to 17 in the past five years. Most marshlands continue to have very small breeding populations. The number of marshlands regularly supporting more than 10 pairs of rails in the 1980s was 5, and since 1990, this has declined to three wetlands—Anaheim Bay, Upper Newport Bay, and Tijuana Marsh.

A few pairs of light-footed clapper rails have reoccupied Carpinteria Marsh since the mid-1990s. From 1984 to 1989, this area's major breeding population experienced a drastic decline, and the population was extirpated. This is the northernmost marshland habitat of this species, so the re-occupancy of this marsh is significant.

The increasingly isolated light-footed clapper rail populations have low genetic variability and a low rate of dispersal, except to nearby marshes. Translocating eggs and young clapper rails to aid genetic mixing and to restore declining or extirpated populations in some marshes is being assessed. To provide one source of offspring, a captive breeding program is being developed at the Chula Vista Nature Center, San Diego Bay. The Center will permanently maintain a captive breeding population using unreleaseable birds and birds from Upper Newport Bay, the population with greatest genetic variability. Additionally, the DFG issued a Memorandum of Understanding to USFWS to capture immature light-footed clapper rails for translocation to Carpinteria Marsh, Santa Barbara County, to augment the latter's rail population with appropriate numbers of each gender of rails to balance the sex ratio of the Carpinteria population.

Offspring hatched in the Chula Vista facility, together with wild-collected eggs and wild-caught young rails from other southern California wetlands will be translocated in coming years to Carpinteria Marsh and other marshes in an attempt to restore some of the rail breeding populations. In 1999, no reproduction occurred at the Chula Vista Nature Center rail breeding facility. A plan to relocate one male clapper rail from Upper Newport Bay to Carpenteria Marsh in 1999 was abandoned, owing to a lack of local predator control measure that would have been necessary to secure the safety of such a naive bird in unfamiliar habitat.

Recent conservation programs have emphasized the construction, placement and annual maintenance of small, artificial floating rafts in tidal marshes to provide nesting habitat for the rails to compensate for past habitat reduction and modification that eliminated former suitable nesting habitats. Raft design improvements are continuing to be designed and tested. Other ongoing conservation efforts are directed to assessing ever-present threats from exceptionally abundant native predatory birds and non-native carnivores.

The status in 1999 of the light-footed clapper rail: ***Declining.***

Yuma clapper rail
(*Rallus longirostris yumanensis*)

CA - T (1971); Fully Protected
FED - E (1967)

General Habitat: Marsh and Swamp

Yuma clapper rail

This rail closely resembles the other two clapper rail subspecies found in California. It is gray-brown above and buffy-cinnamon below and has brownish-gray cheeks and flanks barred with black and white. Its somewhat orange bill is long and slightly down-curved. The Yuma clapper rail is the most slender and pale of the three subspecies. It generally is a resident of shallow, freshwater marshes containing dense stands of cattails and bulrushes along the lower Colorado River from California and Arizona south into Mexico. The rail also is found at the Salton Sea in Imperial County, California.

This subspecies is threatened by loss and degradation of its habitat through human and human-induced activities. Adverse impacts to rail habitat result from catastrophic flooding, water projects, draining or filling marshes for development or agriculture, invasion of non-native plant species (e.g., tamarisk), and pollution from urban runoff, industrial discharges, and sewage effluent.

The DFG participates in the federal Yuma Clapper Rail Recovery Team, which meets periodically to coordinate research, management, and planning. The need to establish standard annual field survey procedures and to rewrite the 1983 recovery plan for the species were the major discussion topics at the October 1999 meeting of the recovery team.

The status in 1999 of the Yuma clapper rail: ***Unknown.***

Greater sandhill crane
(Grus canadensis tabida)

CA - T (1983); Fully Protected
FED - None

General Habitat: Inland Wetlands

Greater sandhill crane

Greater sandhill cranes are the largest of the six subspecies of sandhill cranes. Average adult males weigh 10.5 pounds while females average 8.4 pounds. Except for these size differences, sexes are similar in appearance. General coloration is pale gray with darker primary feathers. The cheeks, ear coverts, and chin are white, and all but juveniles have bare, reddish foreheads. Fledglings are similar in size to adults but can be distinguished by rust-brown feathers on the nape of the neck. Greater sandhill cranes eat

a variety of foods but are primarily vegetarians. Historically, greater sandhill cranes nested in eastern Siskiyou County and northeastern Shasta County southward to Honey Lake in Lassen County. Presently, greater sandhill cranes nest in Lassen, Modoc, Plumas, Shasta, Sierra, and Siskiyou counties.

In California, sandhill cranes establish territories in wet meadows that are often interspersed with emergent marsh. California birds tend to nest in rather open habitat; however, in certain areas, they nest in association with a dense cover of bulrush and burreed. The last statewide breeding population study in California was conducted in 1988, and the breeding population in this State was estimated to be 276 pairs. Favorable roost sites and an abundance of cereal grain crops characterize the cranes' Central Valley wintering ground. Rice is used extensively by cranes near the Butte Sink area of Butte County, and corn is the principal food source at most other Central Valley wintering areas, particularly in the Sacramento-San Joaquin Delta near Lodi, San Joaquin County. Irrigated pastures are chosen for resting sites throughout the wintering ground. A communal roost site consisting of an open expanse of shallow water is a key feature of wintering habitat. Currently, the estimate for greater sandhill cranes within their Pacific Flyway range is between 5,000 and 6,000 individuals. There are about 25,000 lesser sandhill cranes wintering in California each year. In addition about 6,000 intermediate sandhill cranes (*G. c. rowani*) or Canadians, as they are also called, also mix with the other two subspecies. This latter subspecies is a relatively new arrival in the State and is midway in size between the others and tends to be quite brownish in coloration.

This species continues to experience threats on both wintering and breeding grounds by agricultural and residential conversion of habitat, predation, human disturbance and collisions with power lines.

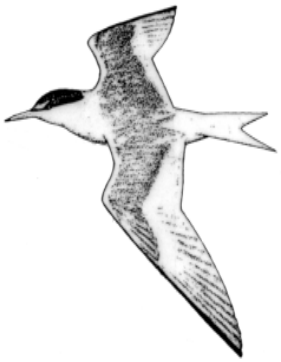
During 1997, the Pacific Flyway Management Plan for the Central Valley population of greater sandhill cranes was revised. Portions of the Flyway Plan are being used in a State recovery strategy for the species in California that is being developed as a result of 1997 amendments to CESA (Article 7, Sections 2105-2116). Through these amendments, the Legislature directed the DFG to develop and implement a recovery strategy pilot program for the greater sandhill crane. A DFG led Recovery Strategy Team consisting of representatives from State and federal agencies, local landowners, environmental groups, and persons with scientific expertise, is developing the recovery strategy. Existing scientific information serves as the basis for the strategy, which will include interim and long-term recovery goals, and a range of alternative management goals and activities. The plan will also include estimates of the time and costs required to meet the goals, and methods of private and public cooperation. The DFG will submit the strategy for approval by the FGC when it is completed in 2001.

The status in 1999 of the greater sandhill crane: *Unknown.*

California least tern
(*Sterna antillarum browni*)

CA - E (1971); Fully Protected
FED - E (1970)

General Habitat: Coastal Dunes
Marsh and Swamp
Coastal Salt Marsh



California least tern

The California least tern is a small tern, about nine inches long with a 20-inch wingspan. It is mostly white and pale gray, and wingtips are black. The head of the adult has a black cap and white forehead, and the yellow beak is black-tipped. This migratory bird winters somewhere in Latin America, but the winter range and habitats are unknown. The nesting range is along the Pacific coast from southern Baja California to San Francisco Bay. Least terns usually arrive in California in April and depart in August. They nest in colonies on bare or sparsely vegetated flat substrates near the coast. Development and recreational use have largely eliminated the natural nesting habitats of this species. Typical nesting sites are now on isolated or specially protected sand beaches or on natural or artificial open areas in remnant coastal wetlands. These sites are typically

near estuaries, bays, or harbors where small fish are abundant.

In 1998, CSU Long Beach Foundation, under contract with the DFG, again coordinated the annual, statewide survey for California least tern. The long-term increase in the number of nesting pairs in the State is continuing. The minimum number of breeders in 1998 was 4,141 pairs compared with 4,017 pairs in 1997, about 3,400 pairs in 1996 and 2,100 to 2,600 pairs between 1992 and 1995. Productivity in 1998 was 0.64-0.68 fledglings per adult pair, which was lower than the 0.8 fledglings in 1997, but about the same as the 1992-96 average.

The number of active breeding sites in California was 38 in 1997 and 39 in 1998. This compares to the 34 to 38 sites used by the birds annually from 1991 to 1996. Nesting sites remain restricted to the same 40 to 50 sites occasionally or regularly used by nesting terns in the same wetland areas and beaches during the past decade. Most of the population increase is accounted for by ongoing, robust growth in nine or 10 of the larger colonies. Most other sites are decreasing or not increasing significantly in the number of birds, and most do not have good breeding success.

Reported production of nestlings in 1998 was 10-20 percent lower than in 1997, partly owing to a lack of data from some major San Diego Bay military-owned sites. About 70 percent of the state's fledglings in 1998 were produced in only eight sites (each producing at least 145 fledglings): Point Mugu, Venice Beach, L.A. Harbor, Huntington Beach S.P., North Beach (Camp Pendleton), Mariner's Point (Mission Bay), and Delta Beach North and NAB Ocean (San Diego Bay). Compared with 1997 results, production of young terns was noticeably lower in 1998 at some of the larger colonies, such as Alameda NAS, Venice Beach, Huntington Beach S.P., North Beach (Camp Pendleton), and Batiquitos Lagoon. Noticeable increases were reported at some of the other larger colonies, such as Point Mugu, Bolsa Chica E.R., Mariner's Point (Mission Bay), NAB Ocean (San Diego Bay), and Tijuana River.

No coordinated annual statewide survey was conducted in 1999, but nearly all sites were independently monitored by land owning agencies and other cooperators. USFWS obtained data on numbers of pairs and fledglings at each site. Preliminary totals indicate that the breeding population declined approximately 10 percent from 1998 to 1999, and 1999 productivity rate (0.2 fledglings per pair) was the lowest it has been in more than 25 years of status monitoring. DFG will collect and evaluate the 1999 field reports from cooperators during 2000 and will assess causes of the 1999 decline in numbers of pairs and productivity. The DFG will continue coordinating breeding season management and monitoring activities.

Many human, wildlife, and environmental sources of mortality and disturbance continue to limit breeding site usage and reproductive success. Most colonies are fragmented wild lands now bordered or nearly surrounded by residential, commercial, and recreational areas, and highways. In addition, human activities and human-enhanced populations of scavengers and predators (i.e., crows, ravens, kestrels, other birds of prey, domestic cats, and non-native red foxes) continue to place nesting colonies at risk. Most tern colonies continue to be subjected to at least sporadic, serious predation, and some colonies are under continuous threat of abrupt, and often catastrophic, predation by locally abundant native predators, mainly birds, as well as domestic cats and red foxes. At some sites, the presence of large populations of predators precludes nesting. Human disturbance continues to disrupt some colonies.

Alameda Naval Air Station is one of the largest and most successful breeding colonies in the State, and the only substantive colony in central California. As part of the federal government's disposal of the military bases, the tern colony and surrounding wildlife habitat is being transferred to USFWS for management. Adjacent parts of the base are proposed for a variety of public uses. Area management and reuse plans are now being developed.

The status in 1999 of the California least tern: ***Stable.***

Marbled murrelet

Marbled murrelet
(*Brachyramphus marmoratus marmoratus*)

CA - E (1992)
FED - T (1992)

General Habitat: North and Central Coast Conifer Forests; Predominantly in the Coastal Redwood Zone
Nearshore Marine Environment

The marbled murrelet is a small seabird of the puffin, or alcid family (Alcidae). Murrelets are approximately eight inches in length and weigh about seven ounces. Like most alcids, they are chunky in appearance with a short neck and thick body. Breeding plumage is camouflaged, dark brown-black above with some cinnamon and some white in the shoulder area. The underside is mostly a dark brown and white marbled pattern.

The birds go through a flightless molt in late summer, changing into a winter, or basic plumage, which is mostly blackish gray above and white below. Then, they partially molt again, back into the cryptic breeding plumage beginning in late March.

Their nesting habits remained an ornithological mystery until 1974 when a tree trimmer found a nestling high in an old-growth Douglas fir tree in Big Basin Redwoods State Park, located in the Santa Cruz Mountains of central California. This tree nesting habit is unique among the alcids. Murrelets lay a single egg high in old-growth trees on large horizontal limbs. Most nest sites have been found in large intact stands of old growth forest, but some nest sites have been found in smaller stands of large trees, or in areas where a few old growth trees still exist in a second-growth landscape. Their nesting season runs from late March through mid September.

Murrelets occupy the nearshore environment in the ocean and feed on zooplankton, squid, and fish, primarily Pacific sand lance, northern anchovy, Pacific herring, smelt, and Pacific sardine. Their at sea distribution appears to vary between seasons, and needs more study.

The loss of old-growth forest habitat is believed to be the primary reason for the murrelet's decline. Approximately two million acres of coast redwood old-growth forest existed in California before timber harvest began in the late 1700s. It is estimated that approximately 4 percent of the largest old-growth groves remains today. Most of this remaining habitat is in State and national parks.

Habitat in many park settings receives high visitor use, which can be incompatible with murrelet nest establishment and success. The greatest impact appears to be from the increased artificial food sources associated with human use of park environments, which leads to elevated numbers of two murrelet predators: Steller's jays and common ravens. These opportunistic foragers have been demonstrated to occur in higher numbers when associated with recreational park settings. Inadequate garbage management practices and intentional and unintentional feeding contribute to their elevated population numbers. Ravens can fly long distances and forage in landfills, along beaches, at dairies, and in agricultural areas. They are known to nest and roost in old growth forests. Their numbers have generally increased in the west in recent times. Other murrelet predators include the peregrine falcon, sharp-shinned hawk, red-shouldered hawk, and northern goshawk. Great horned owls, crows, and Cooper's hawks are also suspected predators.

Murrelets are also vulnerable to oil spill impacts; two damaging spills recently occurred near Humboldt Bay. Between these two spills, a total of 34 murrelets were collected. Only four of these 34 were initially recovered alive, however, they subsequently died. These birds represent only the recovered bodies; the number of unrecovered murrelets has not yet been determined. Smaller spills have also likely taken a toll, though the effects of such spills are not intensively monitored. The loss of birds from this type of impact greatly affects population viability. When coupled with habitat loss, the low reproductive rate of the birds, and the long time period required for the development of old growth forests, the recovery problem is compounded.

The *Final USFWS Recovery Plan for the Marbled Murrelet* was completed in September 1997. This document recommends that management plans be written and implemented for each population zone in California. It also recommends annual at sea

surveys to better assess population trend. At sea surveys are also used to assess reproduction. The number of juvenile birds can be compared to the number of adults on the water (by using differences in plumage).

Studies have documented a high nest failure rate in marbled murrelets; only 28 percent of eggs laid have produced fledglings. This observation generally matches the low number of juveniles seen at sea. Based on this information, and using information from other alcids to estimate murrelet breeding age, reproduction, and survival, population modeling has indicated that murrelet populations are declining from 2-4 percent per year, and possibly even higher. Some difficulties are inherent in this process, one of which is the lack of definitive data on murrelet reproduction, survival, and longevity.

In March of 1999 the Pacific Lumber Company Habitat Conservation Plan (HCP) was approved which resulted in acquisition of a large stand of old growth forest known as the Headwaters Reserve. This reserve is now managed primarily by the BLM, with significant involvement from both the DFG, and the USFWS. Currently, negotiations are underway to design a scientifically valid murrelet monitoring program, both inland and at sea, to better understand and document the value of the HCP to murrelets.

In cooperation with State, federal, and private entities, the DFG initiated a radio telemetry study on murrelets in central California in May 1997. The work was continued into 1998, providing an excellent opportunity to document a major El Niño event. Since murrelet nests are so difficult to find, radio telemetry was utilized to help document nest sites. Five nesting attempts were documented in 1997, though they all failed. Only one of these nests endured to the chick stage, the others failed during incubation. However, no nests were initiated by radio marked birds in 1998. The murrelets' at sea distribution was also different, compared to 1997. Five mortalities were also documented in 1998; it appears that a combination of low prey (from the El Niño), and a toxic algae bloom (domoic acid) contributed to these deaths.

Long distance movements were documented both north and south of Año Nuevo Bay, the capture site for these marked birds. A few individuals moved 112 miles south to Point Piedras Blancas and San Simeon, and one bird moved 139 miles north, to an area just south of Point Arena. These types of movements by murrelets are just now becoming known to scientists due to the radio telemetry technology. More studies of this type are envisioned for the future to better understand murrelet biology.

The other recent research on the birds in California includes: at sea surveys to help define population trend and to assess reproduction, inland surveys to find nesting sites in Mendocino and Sonoma counties, and ornithological radar to help find nesting sites. This latter technique is an excellent tool for documenting this fast flying bird which flies inland during the darkness before sunrise, making detection by humans nearly impossible, especially where murrelets exist in low numbers. Radar also has the advantage of actually being able to count the birds, compared to just deriving an index of abundance from inland surveys (where biologists simply document the frequency of murrelet vocalizations). Thus, new technologies are finally helping unravel the secret life of the little "fog lark", and will provide important information to help assure recovery of this unique bird.

The status in 1999 of the marbled murrelet: ***Declining.***

Western yellow-billed cuckoo
(*Coccyzus americanus occidentalis*)

CA - E (1971)
FED - None

General Habitat: Riparian Forest

The cuckoo is a slender brown bird with white underparts. In flight, its wings show rufous or cinnamon color, and its tail shows black with white spots. Although the cuckoo nests in walnut and almond orchards in California, its natural nesting habitat is in cottonwood-tree willow riparian forest. The nest typically is on the horizontal branch of a tree willow in a location hidden from view from the ground or surrounding trees. Historically, the cuckoo was known to breed in all regions of California except the

Western yellow-billed cuckoo

central and northern Sierra Nevada, the Great Basin, and the Colorado Desert. Now, the bird likely is found only along the upper Sacramento Valley portion of the Sacramento River, the Feather River in Sutter County, the south fork of the Kern River in Kern County, and along the Santa Ana, Amargosa, and lower Colorado rivers.

This bird is threatened by loss and degradation of its habitat. Adverse impacts to cuckoo habitat are from clearing of land for urban and suburban development and for agriculture, human disturbance (e.g., illegal camping), fire in riparian habitat, OHVs, livestock trampling and grazing on tree saplings, invasion of non-native plants (e.g., tamarisk and giant reed), flood control projects, pumping of groundwater, and diversion of surface water.

The cuckoo account in the DFG's *The Status of Rare, Threatened, and Endangered Animals and Plants of California: Combined Annual Report for 1993, 1994, and 1995, An Addendum to the 1992 Report* incorrectly stated that 14 pairs of the cuckoo had been found along the south fork of the Kern River in 1995. In fact, the number of pairs was 13. That report also stated that the number of pairs in 1993 and in 1994 was 21 in both years. The revised figure is 19 for each of those two years.

In 1996, 14 pairs occurred along the south fork of the Kern River; the recorded high was 24 pairs found in 1992. The 12-year mean from 1985, when studies of the cuckoo began at the Kern River, through 1996 is 11 pairs. The DFG has preliminary information for 1997 indicating that, as of late July, only four to five pairs occurred along the river. In 1999 the DFG joined with the USGS to conduct a California-wide survey for the cuckoo. The results for this effort are not available yet.

On February 15, 1997, the National Audubon Society assumed operation of the Kern River Preserve, a TNC property along the South Fork of the Kern River which is important for the cuckoo and other riparian species.

CDPR reported that an employee heard a calling cuckoo at Picacho State Recreation Area, Imperial County, on July 21, 1997. The ecologist related that a contractor for a revegetation effort at Picacho had heard a cuckoo call several times in the previous two weeks from a plot of cottonwoods planted in 1989. These are the first known records of the cuckoo at Picacho in at least 10 years.

The status in 1999 of the western yellow-billed cuckoo: *Unknown*.

Elf owl

Elf owl
(*Micrathene whitneyi*)

CA - E (1980)
FED - None
General Habitat: Desert Riparian

The elf owl is the smallest owl in North America, only five to 5.5 inches long. It is nocturnal, has a short tail, and yellow eyes. Plumage is spotted with buff and white on a gray or brown base. The breast is white with rust or brown streaks. The top of the head has some rust color and white 'eyebrows' are obvious. The male who also assists in the incubation of eggs selects a deserted woodpecker hole as a nest site. A clutch is usually three eggs, laid at two-day intervals. Incubation takes 14 days and young are ready to leave the nest by late June or early July. The elf owl's diet consists almost entirely of large insects, centipedes, and scorpions. Using their superb hearing to locate prey, elf owls usually hunt from a low perch and capture most victims in their talons while flying.

The elf owl is migratory and only spends the breeding season in California. It probably arrives in March and leaves in October. Almost 70 percent of the records of elf owls in California come from April and May. This is the height of the breeding season, and during this period, males are very territorial.

The elf owl is limited to the cottonwood-willow and mesquite riparian zone along the lower Colorado River. Successful nests require larger trees with thick walls next to the cavity to provide the needed insulation from high daytime temperatures. The two primary sites where elf owls have been found are unique stands of large mesquite trees now found nowhere else on the California side of the Colorado River. Since 1978, elf owls have been seen or heard at 12 locations along the Colorado River,

from Picacho State Recreation Area north to nine miles north of Needles. Two sites probably have comprised the major portion of the recent population. One site is 10.5 miles north of Needles and the other, 21.7 miles north of Blythe. A maximum of nine pairs have been estimated at the site north of Needles and two to four pairs at the site north of Blythe. None of the other sites was believed to support more than two pairs at the time that they were located.

Historically, elf owls were recorded at six sites in California. Two of these were near the Colorado River, one about four miles and the other about 16 miles north of Yuma. The other sites were at desert oases west and southwest of Blythe; one was as far from the Colorado River as Joshua Tree National Monument. No elf owls were found at these sites during DFG surveys in 1978 and 1987.

No recent changes have occurred in the impacts to elf owl habitat; the owl is still restricted to the scattered, mature, native riparian forest along the lower Colorado River. However, this habitat type had previously been reduced to less than 4 percent of its original acreage through: 1) changes in the water flow regime of the Colorado River caused by dams, levees, and prolonged controlled flooding; 2) the historical cutting of firewood; 3) clearing for agriculture; 4) loss of mature forest to wildfire; and 5) introduction of the exotic salt cedar.

The number of different sites where elf owls were found grew from an estimated six owls at two sites to an estimated 18 to 25 owls at 10 sites between 1978 and 1987. While none of the new sites appeared to support potentially sustainable populations, it was hoped that some previously young cottonwood-willow riparian forests were maturing to the point where suitable habitat for elf owls was becoming more widespread. However, no elf owls were found during a major survey in 1998 of 51 sites along the Colorado River, and including all of the sites where elf owls had been previously located. Again in 1999, no elf owls were heard during surveys of the major sites where elf owls had been located in 1978 and 1987. The reason for the apparent lack of elf owls in California is unknown. The El Niño weather conditions or the continued change in habitat conditions may have affected the population. Surveys are expected to continue for the next three years to see if these owls return to California.

The status in 1999 of the elf owl: ***Possibly extirpated.***

Great gray owl
(*Strix nebulosa*)

CA - E (1980)
FED - None

General Habitat: Upper Montane Conifer Forest

Great gray owl

Although it does not weigh quite as much as either the great horned or snowy owl, the great gray owl has the longest body and the largest wingspan, five feet, of any species of owl in North America. In addition, great grays have a large head with a large, circular facial disk. Plumage is thick and provides insulation for wintering at high elevations and in northern latitudes. The gray and gray-brown feathers are streaked with light and darker grays. This owl exhibits no regular seasonal migration. However, food availability causes movement to higher elevations after the breeding season and to lower elevations in the winter.

Owls attempting to nest probably return to the same nesting area each year. Nests usually are placed in the broken tops of snags or large conifer trees, 35 feet or more from the ground. Nest trees must be large enough to provide a nest for a 30-inch long owl. Normally, two or three eggs are laid. Incubation lasts about 30 days, nestlings remain in the nest about three weeks, and the flightless young remain in the vicinity of the nest for another three to five weeks. These fledglings then stay in the nesting territory for several more months until they can fend for themselves.

During the breeding season, great gray owls are found in Sierra Nevada mixed conifer and red fir forests. Except for birds dispersing, nearly all great gray owls are found in or near meadows within these forest habitats. Important meadow characteristics include meadow size, the height of grass, the portion of the meadow covered by

nongrass-forb vegetation, and the livestock grazing pressure. Forests surrounding meadows require a high density of large diameter snags for nests and a high canopy closure to provide cover and a cooler sub-canopy microclimate. All 15 of the known breeding sites and 71 percent of the sites with multiple observations come from Mariposa and Tuolumne counties in the Yosemite area. Sites with multiple observations also come from Alpine, Calaveras, Fresno, Plumas, Sierra, and Tulare counties. This pattern indicates that great gray owls are mainly distributed in the scattered meadow-mature forest zone on the west slope of the central Sierra Nevada.

Great gray owls also have been observed in 13 other counties, from the southern Sierra Nevada to Del Norte, Humboldt, Siskiyou, Shasta, and Modoc counties across the northern portion of the State. Owls seen in this part of the State are probably vagrants from populations in Oregon. With few exceptions, those in other Sierran counties are probably individuals wandering from the main population.

There has been no recent change in the impacts to great gray owls. The loss of mature forest habitat for nesting and the degradation of montane meadows by livestock grazing remain the major sources of habitat loss. There are no conservation management plans addressing the great gray owl. The majority of currently known nesting sites are in Yosemite National Park and thus are protected through the natural resource management of the park. USFS monitors sites on or near their lands during planning for timber harvest or other projects.

The status in 1999 of the great gray owl: ***Unknown.***

Gila woodpecker

Gila woodpecker
(*Melanerpes uropygialis*)

CA - E (1988)
FED - None

General Habitat: Riparian Forest

This large woodpecker is grayish-brown on the head, neck, and underparts and is narrowly barred with black and white on the back. In flight, the bird has a conspicuous white patch on the wing at the base of the primaries and conspicuous black and white barring on the central tail feathers. The male has a red crown patch visible only at a short distance. This species is a primary cavity nester (i.e., it excavates its own nest cavities in the trunks of trees). It is a permanent resident of mature cottonwood-tree willow riparian forest and mesquite riparian woodland. The woodpecker formerly was found along the California portion of the lower Colorado River and adjacent Arizona, and was in the cottonwood groves of the Imperial Valley south of the Salton Sea. Today, it is known only at scattered locations along the California side of the Colorado River between Needles and Yuma.

This bird is threatened by loss and degradation of its habitat and by competition with the non-native European starling for nest cavities. Adverse impacts to woodpecker habitat are from water projects, severe flooding due to water releases from dams, clearing of land for urban and suburban development and for agriculture (e.g., row crops), human disturbance (e.g., illegal camping and firewood cutting), fire in riparian habitat, OHVs, livestock trampling and grazing, and invasion of non-native plants (e.g., tamarisk).

There have been no field surveys to determine the status of the gila woodpecker since the FGC listed the species.

The status in 1999 of the Gila woodpecker: ***Unknown.***

Gilded northern flicker
(*Colaptes auratus chrysoides*)

CA - E (1988)
FED - None

General Habitat: Riparian Forest

Gilded northern flicker

This woodpecker has a brown-barred back, white rump, yellow wing and tail linings, brown crown, gray cheeks and throat, and spotted underparts with black crescent bib. The male has a red whisker stripe. The flicker is a primary cavity nester (i.e., it excavates its own nest cavities in the trunks of trees) in mature cottonwood-willow riparian forests along the lower Colorado River. Historically, the species inhabited a saguaro belt near Laguna Dam, the old, low dam above Yuma, in Imperial County, extensive cottonwood-tree willow habitat along the length of the lower Colorado River in both California and adjacent Arizona, and Joshua tree woodland at Cima Dome in San Bernardino County. Today, the bird is found only at several sites on the California side of the Colorado River north of Blythe in Riverside County.

This bird is threatened by loss and degradation of its habitat and by competition with the non-native European starling for nest cavities. Adverse impacts to flicker habitat are from clearing of land for urban and suburban development and for agriculture, human disturbance (e.g., illegal camping), fire in riparian habitat, OHVs, livestock impacts to tree saplings, invasion of non-native plants (e.g., tamarisk and giant reed), flood control projects, pumping of groundwater, and severe flooding due to water releases from dams.

There have been no field surveys to determine the status of the gilded northern flicker since FGC listed the species.

The status in 1999 of the gilded northern flicker: *Unknown*.

Willow Flycatcher
(*Empidonax traillii*)

CA - E (1990)
FED - E (1995: southwestern willow flycatcher: *E. t. extimus*)

General Habitat: Riparian Scrub
Montane Meadow

Willow flycatcher

The willow flycatcher was formerly a common summer resident throughout California. Its breeding range extended wherever extensive willow thickets occurred. The species has now been eliminated as a breeding bird from most of its former range in California. Only small, scattered populations remain in isolated meadows of the Sierra Nevada and along the Kern, Santa Margarita, San Luis Rey, and Santa Ynez rivers in Southern California. The smallest of these consists of about five pairs and the largest about 50 pairs.

Loss and degradation of riparian habitat is the principal reason for the decline of willow flycatcher population and the decrease in geographic range of the species. Impacts of livestock grazing to both the habitat and nests of breeding birds have also been implicated in the decline of the species. Nest parasitism by brown-headed cowbirds has contributed to population reductions.

The USFWS listed a subspecies, the southwestern willow flycatcher with small populations in riparian scrub in Southern California and other western states, as a federal endangered species in 1995. The southwestern form in California is found as a breeding species at the South Fork of the Kern River in Kern County, Santa Ynez River in Santa Barbara County, Santa Margarita and San Luis Rey rivers in San Diego County, and several other locations in Southern California. It also is found in Arizona, Nevada, New Mexico, Utah, and Colorado.

Since 1991, annual surveys conducted by the DFG and other researchers on ungrazed land at Red Lake in Alpine County continue to indicate a moderate population

of willow flycatcher persists at this locality. DFG and USFS developed a survey protocol for use in montane meadow and willow riparian habitats in the northern ranges of the species. Recent population surveys conducted by USFS and CSU have indicated that flycatcher numbers are low in many areas of the Sierra Nevada and that habitat conditions have deteriorated due to the impact of livestock, especially on National Forests. Studies at 20 locations on National Forest lands in the Sierra Nevada during 1997-99 have resulted in documentation of 28, 65, and 56 active nesting territories respectively. In 1997, a population of about 60 pairs was documented in the McCloud river drainage area on the Shasta-Trinity National Forest in Siskiyou County.

Computer modeling has been used to begin investigating habitat suitability that will aid in further population monitoring.

USFS habitat management plans are being developed to survey the entire range of the willow flycatcher before the end of the year 2001. Based on declines documented by researchers working on Sierran National Forests during 1999 where only a small number (28) of formerly active (since 1982) territories were found to have singing male birds (a population index) there have been recent discussions by the Willow Flycatcher Working Group (an ad hoc group of agency biologists, researchers, and land managers) to consider proposing federal listing of the remaining subspecies of willow flycatcher in the Pacific States. Contacts with biologists in Oregon and Washington indicate that the status of the species is either presumed to be not a problem or that it is (mostly) unknown at this time.

To benefit the southwestern subspecies, the DFG obtained federal Section 6 grant funding to continue cowbird-control programs along the South Fork of the Kern River from 1996 through 1999. In 1997 the DFG obtained additional Section 6 grant funding for an investigation of the status of both the southwestern willow flycatcher and the State and federally listed least Bell's vireo at several locations in Southern California.

In 1997 several independent groups were formed to work on various aspects of conservation and recovery of the southwestern willow flycatcher. USFS's Rocky Mountain Research Station in Albuquerque organized a group to develop a conservation plan that includes a complete list of research needs. The COE established a group to offer advice on mitigation for the loss of flycatcher habitat at Lake Isabella, a reservoir on the Kern River. In early 1998, the USFWS established a recovery team for the southwestern willow flycatcher.

The DFG and USFWS jointly conduct an annual meeting of an interest group for the southwestern willow flycatcher. This is an informal gathering of agency biologists, private researchers, consulting biologists, and university scientists who share information and advise the DFG and USFWS on conservation matters relating to the flycatcher.

The status in 1999 of the willow flycatcher: ***Declining (status of the southwestern subspecies is Stable to Declining).***

Bank swallow

Bank swallow
(Riparia riparia)

CA - T (1989)
FED - None

General Habitat: River Banks

The bank swallow is the smallest North American swallow, with a body length of about 4.75 inches. Bank swallows are distinguished from other swallows by their distinct brown breast band contrasting with white underparts. The upper parts are brown. The species nests in colonies and creates nests by burrowing into vertical banks consisting of fine-texture soils. Bank swallows breed in California from April to August and spend the winter months in South America. Currently, bank swallows are locally common only in restricted portions of California where sandy, vertical bluffs or riverbanks are available for the birds to dig their burrows and nest in colonies. Most of California's remaining populations nest along the upper Sacramento River where it still meanders in a somewhat natural manner. In this alluvial plain, the river system provides suitable soil types and erosion needed for prime nesting habitat. It is estimated that the

range of bank swallows in California has been reduced by 50 percent since 1900. Seventy-five percent of the State's population is concentrated on the banks of Central Valley streams, including several colonies on the Sacramento River.

Bank swallows have been extirpated from Southern California. Historically, they occurred principally along the coast. Bank swallows were eliminated from Southern California because virtually every river and natural waterway where it was known to occur was converted to flood control channels. Former coastal colonies have been abandoned by swallows due to increased human disturbance. Remaining, scattered populations exist in portions of Inyo and Mono counties and northern, north coastal, and central coastal regions of the State.

There have been significant changes in the degree and type of endangerment factors for the bank swallow since the 1992. The rip-rapping of natural stream bank associated with bank protection projects is the single most serious, human-caused threat to the long-term survival of the bank swallow in California. It is projected that as much as 50 percent of the remaining population of bank swallows could be lost if all bank protection projects currently proposed are completed. Existing colonies and areas of potential habitat may be lost over the next several years if current planning is implemented. Rip-rap installed by the COE under the Sacramento River Bank Protection Project has already affected almost 150 miles of Sacramento River bank since 1960. Additional rip-rap proposed under this project may result in extensive loss of essential, eroding bank habitat.

Recent survey information indicates a continuing decline in bank swallow populations on the Sacramento River. Based on an average occupancy rate of about 45 percent of all burrows dug into river banks, an estimated population of 13,170 pairs of bank swallows nested in Sacramento River habitats in 1986. In 1997, the breeding population had declined to about 5,770 pairs. This represents a loss of about 61 percent of the population in 12 years. Additionally, the average colony size has declined from 410 burrows to approximately 250 burrows between 1986 and 1997. In 1998 the population reached its lowest level of 4,990 pairs and then rebounded dramatically in 1999 to 8,210 pairs regaining some habitat from which it was extirpated (in 1998) on the lower end of its Sacramento River range. The significance of the apparent turnaround may not be known for a few years if it continues. Factors responsible for the declines from 1986 to the present are not completely understood, but the drought years followed by flooding may have had a major influence along with the loss of several major breeding colonies to bank protection projects. Additionally, the killing of several thousand young swallows in their burrows that occurred from about 1960 to 1985, when the U.S. Fish and Wildlife Service and the DFG prevented the Corps from working on projects during the height of the nesting season, certainly has to have had a negative effect on the population's ability to rebound. The 1999 result may be a beginning of an expanding population boom for the species or just a momentary upswing. Further monitoring will be necessary to determine the true population trend, if any.

Although a State Recovery Plan for the bank swallow was completed and adopted by FGC in 1992, the implementation of the recommendations has not occurred. The Recovery Plan identifies habitat preserves and a return to a natural, meandering riverine ecosystem as the two primary strategies for recovering the bank swallow. A recovery planning team has also been established and has had periodic meetings since 1990. The group discusses bank swallow research and recovery issues, and the group has also cited the return to naturally functioning riparian ecosystems as the best way to preserve, recover, and conserve the many species, including the bank swallow, that are dependent on this unique ecosystem.

The status in 1999 of the bank swallow: ***Declining.***

Arizona Bell's vireo
(*Vireo bellii arizonae*)

CA - E (1988)
FED - None

General Habitat: Riparian Scrub

Arizona Bell's vireo

This small bird is drab gray above and whitish below, with sides and flanks faintly washed with grayish olive-yellow. It has indistinct white spectacles and faint wing bars with the lower bar being more prominent. The vireo is a summer resident in the willow-mesquite thickets along the lower Colorado River. Formerly, this vireo was found along the entire length of the River in California and adjacent Arizona. Now, it is found only at a few sites on the California side of the River near and south of Needles in San Bernardino and Riverside counties and near Laguna Dam in Imperial County.

This bird is threatened by loss and degradation of its habitat through human and human-induced activities and by nest parasitism of the brown-headed cowbird. Adverse impacts to vireo habitat result from water projects, severe flooding due to water releases from dams, clearing of land for urban and suburban development and for agriculture, human disturbance (e.g., illegal camping), fire in riparian habitat, OHVs, livestock impacts to tree saplings, and invasion of non-native plants (e.g., tamarisk and giant reed).

There have been no field surveys to determine the status of the vireo since FGC listed the species.

The status in 1999 of the Arizona Bell's vireo: *Unknown.*

Least Bell's vireo

Least Bell's vireo
(*Vireo bellii pusillus*)

CA - E (1980)
FED - E (1986)

General Habitat: Riparian Scrub

This subspecies of the Bell's vireo is quite similar in appearance to the Arizona Bell's vireo. The least Bell's vireo is a summer resident of cottonwood-willow forest, oak woodland, shrubby thickets, and dry washes with willow thickets at the edges. The cottonwood-willow habitat is the more commonly used habitat. Formerly, the vireo was known to breed from interior northern California near Red Bluff in Tehama County south through the Sacramento and San Joaquin valleys and Sierra Nevada foothills, and in the coastal ranges from Santa Clara County south to the approximate vicinity of San Fernando in Baja California. The bird also occurred in the Owens and Death valleys in Inyo County and at scattered oases and canyons throughout the Mojave Desert. Currently, its breeding range is in Southern California, with large populations in Riverside and San Diego counties and smaller populations in Santa Barbara, Ventura, and San Diego counties and in northern Baja California.

The vireo is threatened by loss and degradation of its habitat through human and human-induced activities and by nest parasitism of the brown-headed cowbird. Adverse impacts to vireo habitat result from clearing of land for urban and suburban development and for agriculture, water projects, severe flooding due to water releases from dams, military activities (e.g., troop training), fires, OHVs, livestock activities, invasion of non-native plant species, and long-term camping activities.

In early 1994, USFWS designated about 38,000 acres at 10 localities in portions of six counties in Southern California as "critical habitat". A designation of critical habitat results in additional species protection requirements for federal agencies that fund, authorize, or conduct activities within the described areas. For the vireo, critical habitat includes areas along the Santa Ynez River in Santa Barbara County; the Santa Clara River in Ventura and Los Angeles counties; the Santa Ana River in San Bernardino and Riverside counties; and the Santa Margarita, San Luis Rey, San Diego, Sweetwater, and Tijuana rivers and Coyote and Jamul-Dulzura creeks, all in San Diego County.

In 1995, the USFWS drafted a federal recovery plan for the vireo. The DFG received federal Section 6 grant funding from USFWS for control of the brown-headed cowbirds from 1995 through 2000, with the exception of 1998. Additionally in 1997, the DFG obtained a federal Section 6 grant to investigate the status of both the vireo and the State and federally listed southwestern willow flycatcher at several locations in Southern California. Birds of both species were found at previously unknown locations.

In 1997 and 1998, the DFG acquired 3700 acres at Rancho Jamul in San Diego County, which included a conceptual plan for restoring habitat and developing a mitiga-

tion bank on 150 acres, primarily to benefit least Bell's vireo. The active restoration of this habitat has not yet begun, however riparian vegetation is recovering after livestock were removed, and the least Bell's vireo population is responding favorably. DFG will continue to monitor this population and the recovery of the riparian habitat there.

The DFG and USFWS jointly conduct an annual meeting of the least Bell's vireo working group, an informal gathering of agency biologists, private researchers, consulting biologists, and university scientists that share information and advise the DFG and USFWS on conservation matters relating to the vireo. The DFG also participates in several conservation plans that include the least Bell's vireo, including the City of Carlsbad/Fieldstone/La Costa Associates HCP, San Diego MSCP, Coastal/Central Orange County NCCP, Lake Mathews MSHCP, and SDG&E NCCP.

The status in 1999 of the least Bell's vireo: *Stable to Increasing*.

Inyo California towhee
(*Pipilo crissalis eremophilus*)

CA - E (1980)
FED - T (1987)

General Habitat: Riparian Scrub

Inyo California towhee

The towhee is a dull gray-brown bird with a moderately long, dark tail. It is restricted to the proximity of dense riparian vegetation in which it forages and nests. However, the bird also forages on desert hillsides adjacent to the riparian areas. The towhee is an isolated subspecies of the California towhee in the southern Argus Mountains of Inyo County.

Loss and degradation of its habitat through human and human-induced activities threaten this bird. Adverse impacts to towhee habitat result from water projects and flooding, clearing of land for roads and rural development, fires in riparian habitat, grazing by livestock and feral burros, invasion of non-native plant species (e.g., tamarisk and giant reed), and OHVs.

In August 1997, USFWS released a draft recovery plan for the towhee. The document proposes that USFWS consider the towhee for delisting when its population has been sustained for five years at a minimum of 400 individuals. However, a range-wide survey on the towhee's distribution and population size has not taken place since it was federally listed 12 years ago.

The status in 1999 of the Inyo California towhee: *Unknown*.

Belding's savannah sparrow
(*Passerculus sandwichensis beldingi*)

CA - Endangered (1974)
FED - None

General Habitat: Marsh and Swamp

Belding's savannah sparrow

This 5.5 inch-long bird is similar to other subspecies of savannah sparrows but is darker and heavily streaked on the back, breast, and sides. It perennially resides year-round in coastal salt marshes from Goleta Slough in Santa Barbara County to northern Baja California. Nesting occurs primarily in pickleweed habitat at the higher elevations of the salt marshes, above the reach of the highest spring tide. Total population size may be quite variable from year to year. A partial statewide survey was conducted in 1973, and the first statewide survey was made in 1977. Since 1986, statewide surveys have been undertaken at five-year intervals. The latest statewide count was coordinated by USFWS in 1996, and 2,350 breeding pairs were counted, nearly the same as in 1986. In interim years, data on populations also are collected at some wetlands as part of local wildlife management, research, or protection programs.

Since 1973, breeding pairs have been recorded in 31 marshland locations. Breed-

ing pairs were found at 28 marshes in 1977, at 27 marshes in 1986 and 1991, and 26 marshes in 1996. The largest populations in 1996 occurred at Mugu Lagoon (400 pairs), Upper Newport Bay (252 pairs), Tijuana Marsh (250 pairs), and Anaheim Bay (234 pairs). At least 100 pairs each were counted at Bolsa Chica Wetlands, Santa Margarita River Estuary, and Penasquitos Lagoon.

The statewide population is maintaining itself, although fluctuating greatly in total numbers and in local breeding population size annually. The number of habitat sites supporting breeding pairs has slowly declined since the 1970s. Since surveys began, five subpopulations of these sparrows have disappeared. The only new population forming in the 1990s was at Newport Slough, site of a marsh restoration project by the COE at the mouth of the Santa Ana River.

Marshlands with large populations of Belding's savannah sparrow have been supporting these populations long-term at stable or increasing levels, whereas areas with small populations are more subject to serious local declines. Most of the 15 largest populations, those with at least 50 pairs recorded on any survey, have increased or remained relatively stable in population size since the 1970s. However, among the 10 marshlands supporting 20 or fewer pairs each in 1977, Belding's savannah sparrows were not detected in five marshes, and one population had significantly declined. Of the 26 breeding populations detected in 1996, six, or nearly 25 percent, were composed of 20 or fewer pairs.

A 1996 Ph.D. dissertation by K.L. Burnell at the University of California, Santa Barbara, yielded valuable biological information on the relationships among genetic variation, song-dialect variation, and behavioral characteristics in the State's isolated Belding's savannah sparrow populations. This provided significant new information on extent of gene flow and on territoriality of this subspecies. Burnell found that the limitations of male territory establishment and success in attracting mates allowed relatively few males to have the opportunity to reproduce, contributing to genetic differentiation of the subpopulations.

Adverse impacts have included filling, dredging, and development of wetlands, loss of regular tidal connection with the ocean, and inconsistent tidal influence on upper marsh habitat. However, recent habitat protection and enhancement projects, such as those at Batiquitos Lagoon and the mouth of the Santa Ana River, have resulted in improvements in habitat conditions. Ongoing concerns are flooding or other disruptions in the natural drainage of coastal wetlands because of upstream development or flood control, human disturbance, including trampling of marsh vegetation, and impact of exotic predators in marshes, especially domestic cats and non-native red foxes.

The DFG is involved in several conservation planning efforts that include the Belding's savannah sparrow. These include a multiple jurisdiction Multiple Habitat Conservation Plan, the San Diego MSCP, and the SDG&E subregional NCCP.

The status in 1999 of the Belding's savannah sparrow: *Stable to Declining.*