

California Condor

California Condor (*Gymnogyps californianus*)

Management Status

TNC Heritage Status Rank: G1S1

Federal: Endangered; critical habitat designated September 24, 1976 (41 Federal Register 41914)

State: Endangered

Other: None

General Distribution

Designated Critical Habitat for the California condor encompasses nine separate units from Monterey to Kern, Tulare, and Ventura counties (41 Federal Register 41914).

From 100,000 to 10,000 years ago, California condor ranged widely; with the extinction of the large Pleistocene mammals, the species declined in range and numbers. Condor remains reveal that the species once ranged over much of western North America, and as far east as Florida. Until about 2,000 years ago, the species nested in west Texas, New Mexico, and Arizona (U.S. Fish and Wildlife Service 1984). When European settlers arrived on the Pacific coast of North America in the early 1800s, California condors occurred from British Columbia to Baja California, and also occasionally ranged into the American southwest.

Historically, California condor occurred in the Coast Ranges of California from Santa Clara and San Mateo Counties south to Ventura County, and east to the western slope of the Sierra Nevada and Tehachapi Mountains. It occurred primarily from sea level to 9,000 feet (2,743 meters) and nested at 2,000-6,500 feet (610-1,981 meters) (USDA Forest Service 2001, Zeiner and others 1990). Almost all of the historic nest sites used by California condors are located on the Los Padres, Angeles, and Sequoia National Forests (U.S. Fish and Wildlife Service 2001).

In 1987, after years of steady population declines and local extirpations, the last nine wild condors were captured on the Los Padres National Forest and brought into captivity. Since that time, successful captive breeding programs have been ongoing at the Los Angeles Zoo, the San Diego Wild Animal Park

(Stephenson and Calcarone 1999), and the Peregrine Fund's World Center for Birds of Prey (Boise, Idaho) (U.S. Fish and Wildlife Service 2001).

In January 1992, the first two California condors were reintroduced into the Los Padres National Forest's Sespe Condor Sanctuary (Stephenson and Calcarone 1999). Since 1992, condor releases have occurred at other locations on the Los Padres National Forest. Currently, condors released as part of the ongoing condor reintroduction program in California are found primarily on the Los Padres National Forest and surrounding lands (U.S. Fish and Wildlife Service 2001).

California condor releases in northern Arizona began in December 1996 at the Vermillion Cliffs, with additional releases taking place each year, including one release at Hurricane Cliffs in northern Mojave County. There are approximately 24 condors in the wild in northern Arizona (U.S. Fish and Wildlife Service 2001). Approximately 97 condors remain in captivity at the three breeding facilities (Stephenson and Calcarone 1999).

Distribution in the Planning Area

The current distribution of California condor on National Forest System lands in southern California is considered to be all of the Los Padres National Forest and the western half of the Angeles National Forest (USDA Forest Service 2000), with some individuals occasionally visiting the Sequoia National Forest. Several sightings of condors have been made on the San Bernardino National Forest since 2002 in the front country above San Bernardino, and at Keller Peak Lookout (Loe pers. comm.). Since 1937, two California condor sanctuaries have been established on the Los Padres National Forest (see Conservation Considerations below).

All California condor releases in California as part of the condor reintroduction program have occurred on the Los Padres National Forest. Between 1992 and 1996, California condors were released into the following locations on the Los Padres National Forest: Sespe Condor Sanctuary (Ventura County), Lion Canyon, on Sierra Madre Ridge near the San Rafael Wilderness Area (Santa Barbara County), Castle Crags (San Luis Obispo County), and the Ventana Wilderness south of Monterey Bay (Monterey County). California condors reintroduced as part of the recovery program are found primarily on the Los Padres National Forest and surrounding lands (U.S. Fish and Wildlife Service 2001).

As of February 1999, there were reportedly 28 wild condors in the vicinity of the Los Padres National Forest release sites (Stephenson and Calcarone 1999). As of January 2001, U.S. Fish and Wildlife Service (2001) estimated the population to be 25 California condors in southern and central California. Currently, there are approximately 42 free-ranging condors in central and southern California (Freel pers. comm.).

Systematics

California condor is a member of the Cathartidae family (new world vultures). This family includes the

sympatric turkey vulture (*Cathartes aura*) and Andean condor (*Vultur gryphus*), which is closely related to California condor (U.S. Fish and Wildlife Service 1984).

Natural History

Habitat Requirements

California condor nesting sites are typically located in chaparral, conifer forest, or oak woodland communities. Historically, condors nested on bare ground in caves and crevices, behind rock slabs, or on large ledges or potholes on high sandstone cliffs in isolated, extremely steep, rugged areas. Cavities in giant sequoia (*Sequoiadendron giganteum*) have also been used (U.S. Fish and Wildlife Service 2001). The nest site is often surrounded by dense brush.

An evaluation of 72 California condor nest sites found that: (1) entrances were large enough for the adults to fit through; (2) they had a ceiling height of at least 14.8 inches at the egg position; (3) floors were fairly level with some loose surface substrate; (4) the nest space was unconstricted for incubating adults; and (5) there was a nearby landing point. The appearance of many nest sites suggests that they have been long used, perhaps for centuries, whereas other apparently suitable sites in undisturbed areas show no signs of condor use (USDA Forest Service 2001).

Condors often return to traditional sites for perching and resting. Traditional roost sites include cliffs and large trees and snags (roost trees are often conifer snags 40-70 feet tall), often near feeding and nesting areas. Condors may remain at the roost site until midmorning, and generally return in mid- to late afternoon (USDA Forest Service 2001).

Most foraging occurs in open terrain of foothills, grasslands, potreros with chaparral areas, or oak savannah habitats. Historically, foraging also occurred on beaches and large rivers along the Pacific coast (U.S. Fish and Wildlife Service 2001). Water is required for drinking and bathing (Zeiner and others 1990).

Reproduction

California condors typically breed every other year, but can breed annually if they are not caring for dependent young. Because of the long period of parental care, it was formerly assumed that California condor pairs normally nested successfully every year. However, this pattern seems to vary, possibly depending on the time of year that the nestling fledges. If nestlings fledge relatively early (in late summer or early fall), parents may nest again in the following year; however, late fledging probably inhibits nesting in the following year (USDA Forest Service 2001).

California condors become sexually mature beginning at about 5 years of age. Courtship and nest site selection by breeding California condors occur from December through the spring months (see Habitat Requirements above for a description of nesting habitat and nest site characteristics).

California condors usually lay a single egg between late January and early April. The egg is incubated by both parents and hatches after approximately 56 days. Both parents share responsibilities for feeding the nestling. Feeding usually occurs daily for the first 2 months, then gradually diminishes in frequency. Juvenile condors leave the nest at 2-3 months of age, but remain in the vicinity of the nest and under their parents' care for up to a year.

The chick takes its first flight at about 6-7 months of age, but may not become fully independent of its parents until the following year. Parents occasionally continue to feed a fledgling even after it has begun to make longer flights to foraging grounds (USDA Forest Service 2001).

Survival

Specific data on California condor survival are lacking. Although the causes of decline in this species are probably diverse, the decline appears to have resulted more from mortality than from reproductive parameters (U.S. Fish and Wildlife Service 1984).

Several California condors have died in the wild since the beginning of the release program. In California, four captive-raised individuals died after interactions with transmission lines, two drowned in steep-sided natural water courses, one died after consuming ethylene glycol, and one died from malnutrition and dehydration. Fourteen condors have been returned to captivity for behavioral reasons. Three birds died after being brought into captivity because of malnutrition, cancer, and a gunshot wound. Eight other birds have disappeared and are presumed dead (U.S. Fish and Wildlife Service 2001).

Dispersal

Juvenile California condors remain with their parents for up to a year. Yearling and older subadult condors will often follow adults throughout their range and have been documented moving from the Los Padres to the Sequoia National Forest and other outlying areas. Birds have also been documented moving from coastal Santa Barbara county to the Sequoia National Forest in the Sierra Nevada and as far north as Bishop on the east side of the Sierras (Freel pers. comm.).

Migration

The California condor is nonmigratory (U.S. Fish and Wildlife Service 1984).

Daily/Seasonal Activity

See Reproduction above and Diet and Foraging and Territoriality/Home Range below.

Diet and Foraging

California condors are opportunistic scavengers, feeding exclusively on the carcasses of dead animals. Typical foraging behavior includes long-distance reconnaissance flights, lengthy circling flights over a carcass, and hours of waiting at a roost or on the ground near a carcass.

California condors locate food by visual rather than olfactory cues (Stager 1964), and require fairly open areas for feeding, allowing ease in approaching and leaving a carcass. California condors typically feed only 1-3 days per week (U.S. Fish and Wildlife Service 2001).

Seasonal foraging behavior shifts may be the result of climatic cycles or changes in food availability. California condors maintain wide-ranging foraging patterns (i.e., at least 2.8 to 11.6 square miles [7.3-30 square kilometers]) (Zeiner and others 1990) throughout the year, an important strategy for a species that may be subjected to unpredictable food supplies.

Historically, condors probably fed on mule deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), pronghorn antelope (*Antilocarpa americana*), and various marine mammals. More recently, domestic livestock made up the majority of their diet. However, condors have been recently observed feeding on dead elephant seals along the Monterey coast in a few sites generally inaccessible to people, and on a lion-killed elk at Fort Hunter-Liggett adjacent to the Los Padres National Forest (Freel pers. comm.).

Territoriality/Home Range

There is no specific information available about territoriality or home range for California condor. California condors are capable of extended flights (more than 100 miles in a day), and the birds from the Ventana, Lion Canyon, and Sespe release sites in California often intermingle, and then return to their release areas. California condors from northern Arizona have flown more than 200 miles to locations in Colorado and Wyoming, and then returned (U.S. Fish and Wildlife Service 2001).

Predator-Prey Relations

There is very little information available about predation on California condor. However, known predators of California condor include coyote (*Canis latrans*) and golden eagle (*Aquila chrysaetos*) (U.S. Fish and Wildlife Service 2001).

Inter- and Intraspecific Interactions

California condors sometimes roost in groups. Roosts likely serve a social function, as several birds occupying the same roost often leave together (U.S. Fish and Wildlife Service 2001).

Population and Habitat Status and Trends

Historical abundance of California condors is difficult to determine, but all estimates have indicated an

ever-declining population. Koford (1953) estimated a population of about 60 individuals in the late 1930s through the mid-1940s, when the species' range was reduced to a wishbone-shaped area in California that included the coastal mountain ranges of San Luis Obispo, Santa Barbara, and Ventura Counties; a portion of the Transverse Range in Kern and Los Angeles Counties; and the southern Sierra Nevada in Tulare County. In 1967, California condor was included on the first official federal list of endangered species. Subsequently, passage of the Endangered Species Act of 1973 further reinforced protection of the species. In 1982, the population reached a low of 22 individuals (21 in the wild and 1 in captivity) (U.S. Fish and Wildlife Service 2001).

There are 97 condors now living in the wild in California, Arizona, and Baja California, Mexico and 124 in captivity at the Los Angeles Zoo, San Diego Wild Animal Park and the Peregrine Fund's World Center for Birds of Prey in Boise, Idaho. The goal of the California Condor Recovery Plan is to establish two geographically separate populations: one in California and the other in Arizona, each with 150 birds and at least 15 breeding pairs (U.S. Fish and Wildlife Service Press Release 2004).

The first attempts at nesting by birds re-introduced into the wild in southern California occurred in 2002. Of the three nesting attempts, all 3 nestlings died. One likely died from eating microtrash. In 2003, one egg was laid and hatched, but the nestling died. In 2004, 3 pairs of California condors attempted nesting. One condor chick fell and broke its wing, and subsequently died. Another was retrieved from the wild and taken into captivity. However, the last condor chick fledged, the first successful fledging in southern California since the reintroduction of condors to this area.

From the beginning of the California condor reintroduction program, it was recognized that the problem of unsustainable high mortality rates as a result of lead poisoning needed to be addressed through an intensive management program of feeding and monitoring until such time as the lead contamination issue could be resolved on a large scale. As the captively-produced, released condors have matured and gained experience in the wild, they have begun to forage on carcasses not provided by field crews. Concurrent with this maturation and between 1997 and 2003, five condor deaths occurred due to acute lead poisoning, and more than two dozen condors were brought into captivity because they displayed signs of lead poisoning or had elevated lead residues in their blood. The current feeding program provides the condors with several "clean" carcasses every three days. In addition, the feeding sites are carefully monitored whenever birds are present to observe behavior and document bird health and condition. Birds are also tracked daily through radio telemetry on an hourly basis during daylight hours. Constant (daily) monitoring enables program biologist to recognize and treat birds that, despite the feeding program, still become poisoned by lead from other scavenged carcasses.

Threats and Conservation Considerations

Factors that led to California condor's century-long decline included illegal collection of adults and their eggs; poisoning by substances used to eradicate livestock predators; poisoning from ingestion of lead fragments of bullets embedded in animal carcasses; other forms of poisoning (DDT, cyanide, strychnine, compound 1080, antifreeze from car radiators); shooting; and collisions with structures such as

transmission lines. In addition, the roads, cities, housing tracts, and weekend mountain retreats of modern civilization have replaced much of the open country condors need to find food. Their slow rate of reproduction and maturation undoubtedly make the California condor population as a whole more vulnerable to these threats (Stephenson and Calcarone 1999, U.S. Fish and Wildlife Service 2001).

Reintroduced California condors have died from lead poisoning (resulting from ingestion of fragments of bullets and shot found in hunter-killed animals); collision with overhead transmission lines; ingesting toxins such as ethylene glycol (a primary ingredient of antifreeze); bullet wounds; predation by coyotes and golden eagles; ingestion of trash (bottle caps, aluminum pull tabs etc.); and unknown causes. The possibility of genetic problems due to the species' perilously low population size in recent years remains a concern.

Potential threats to California condors from resource management activities on National Forest System lands include modification or loss of habitat or habitat components (primarily large trees) and behavioral disturbance to nesting condors caused by vegetation treatment activities. Also, facilities maintenance (including roads), recreation, or other associated activities within occupied habitat could prevent or inhibit nesting or lead to nest failure (USDA Forest Service 2001).

Recovery plans have been written and revised in 1976, 1978, 1984, and 1996. Recovery objectives on National Forest System lands (primarily the Los Padres National Forest) include: (1) establish a self-sustaining wild population, through reintroduction of captive-reared condors, of at least 150 individuals within California that includes at least 15 nesting pairs; (2) identify parcels of Critical and Essential habitat for acquisition, and pursue acquisition of these lands as funds allow; (3) provide for maintenance and protection of nesting, roosting and foraging habitat on National Forest System lands; and (4) cooperate with the U.S. Fish and Wildlife Service and other organizations in conducting annual reintroductions of condors on National Forest System lands (USDA Forest Service 2000).

National Forest System lands in southern California presently support suitable California condor habitats; some areas may be included as potential release sites or foraging areas in the future. Within California, all known historic nesting habitat is on National Forest System lands (Los Padres, Angeles, and Sequoia National Forests), with a majority of foraging habitat located on private lands adjacent to the forests in Santa Barbara, Ventura, Kern, Monterey, San Luis Obispo, and Los Angeles Counties (USDA Forest Service 2000). Presently, sufficient nesting, roosting, and foraging habitat exists in California and the southwestern states to support a large number of California condors, if density-independent mortality factors, including shooting, lead poisoning, and collisions with human-made objects can be controlled.

Currently, condors reintroduced as part of the recovery program are found primarily on the Los Padres National Forest and surrounding lands (U.S. Fish and Wildlife Service 2001). The Los Padres National Forest established the Sisquoc Condor Sanctuary in 1937, encompassing 1,193 acres (483 hectares) in Santa Barbara County, to protect a roost site, bathing pool, and presumed nest site. The Sisquoc Condor Sanctuary is closed to all nonpermitted entry. The Sespe Condor Sanctuary, also on the Los Padres

National Forest in Ventura County, was established in 1947 and expanded in 1951; it encompasses approximately 53,000 acres (21,448 hectares). It is closed to all non-permitted entry with the exception of two narrow travel corridors that allow hikers and horseback riders to pass through the area. Both sanctuaries are included as designated critical habitat. Designated wilderness areas encompass large areas of the Los Padres National Forest, providing broad protection of habitat for the California condor (U.S. Fish and Wildlife Service 2001).

During the mid-1980s, the U.S. Fish and Wildlife Service acquired the 2,400-acre (971-hectare) Hopper Mountain National Wildlife Refuge as a buffer for the Sespe Condor Sanctuary, and the 14,000-acre (5,666-hectare) Hudson Ranch (now Bitter Creek National Wildlife Refuge), an important foraging area for California condors in the southern San Joaquin Valley. The protection of these areas was based on the documented use of nesting, roosting, and foraging habitat by multiple generations of wild condors. These areas contain the most important habitat components essential to the survival of California condors in the wild. Released California condors are expected to be drawn to these areas. Approximately 250,000 acres (101,172 hectares) of designated critical habitat occurs on National Forest System lands; five of the nine separate units of critical habitat are located on the Los Padres National Forest (U.S. Fish and Wildlife Service 2001).

The existing wild condor population is monitored daily throughout the year by U.S. Fish and Wildlife Service, USDA Forest Service, and Ventana Wilderness Society personnel. All projects occurring within the known range of California condor are evaluated in Biological Assessments prior to approval of any activities. Formal consultation with the U.S. Fish and Wildlife Service is conducted when "may affect" situations occur.

Keys to the success of the California condor recovery program include successful breeding in the wild and maintenance of an ample uncontaminated food supply. The first successful nesting of released California condors occurred in 2001, and three additional successful nesting attempts occurred in 2002. Currently, supplemental food is hauled in for free-ranging birds. It remains to be seen if the natural supply of large carrion is sufficient to support a stable condor population (Stephenson and Calcarone 1999).

The following is a list of conservation practices that should be considered for this species:

- Protect suitable nesting cliffs from human disturbance.
- Educate hunters regarding the importance of controlling lead in carcasses.
- Cooperate with other state and federal agencies as well as NGOs in recovery of the condor.
- Educate the public and other agencies on the benefits of using environmentally safer antifreeze.
- Continue to retrofit transmission and other towers/poles on the four southern California forests to make them raptor safe.
- Educate the public regarding the hazards to condors and other species associated with trash.
- Manage suitable habitat to produce healthy deer, bighorn sheep and elk herds.

Evaluation of Current Situation and Threats on National Forest System Lands

The California condor is an endangered species and will be consulted on whenever a project has potential to affect the species or its habitat. Viability is a definite concern due to the extremely small population and vulnerability to many factors on National Forest System lands and other lands. Greatest among these are shooting, lead contamination, collision with overhead transmission lines and towers, trash, and general human disturbance. Viability is dependent upon intensive management of population and habitat on federal, state and private lands along with an intensive re-introduction program that is well established.

Measures implemented to reduce risks to the California condor include the following: (1) Recent conversion from ethylene glycol to propylene glycol antifreeze has been conducted on all four southern California national forests to help preclude antifreeze as a source of potential effect. Educational information on lead and antifreeze issues is also being produced to help improve public awareness (USDA Forest Service 2000). (2) All communication sites and powerlines in high use areas are being retrofitted with raptor guards to help minimize the potential for electrocution. Additionally, negative conditioning is being used prior to release to train California condors to avoid transmission lines (Stephenson and Calcarone 1999). (3) Fire suppression guidelines and emergency field procedures have been prepared to help protect the California condor. (4) Historic and new nest sites that become occupied by nesting condors will have a seasonal 1.5-mile (2.4-kilometer) buffer from roads or other high noise-producing activities, and a 0.5-mile (0.8-kilometer) buffer from nonmotorized trails or general forest uses. Other special protective measures are also incorporated into fire suppression and recreation activities around occupied sites (USDA Forest Service 2000).

In 2003, the Los Padres National Forest, Ventana Wilderness Society, and the Los Padres Forest Association tried an incentive program to reduce lead in the environment. These organizations formed a cooperative partnership to establish a rebate program for hunters who used reduced-lead bullets. Publicity for this program was developed, and articles appeared in major newspapers, such as the Los Angeles Times. Radio interviews publicizing the program were aired on several radio stations. Hunter response appeared favorable, and there were a few hunters who reported that they had already tried switching to the lower-lead bullets because they believed in responsible hunting practices. In 2004, the hunting season in the D13 zone was curtailed because of major fires during the hunting season. There were seven rebate requests. Due to the favorable publicity that was generated and the initial response from hunters, it is apparent that this effort has potential to reduce the amount of lead in the environment, though substantial work remains to achieve desired conditions for California condor habitat.

Some California condors have died as a result of collisions with power lines. As a result of wildland fire in the Piru watershed, Southern California Edison has retrofitted some of the power lines on the Sespe Oil Fields, and this effort indirectly benefits California condors.

Because 'flyways' are an important habitat component for California condors and are where the risk of death is high due to collisions with man-made objects, recent conservation work has focused on

gathering information regarding the location and use of these flyways. These 'high use flyways' are being determined based on historic observations of frequent use (ocular, radio and aircraft tracking from the wild population of the 1980s), recent observations of release birds, and through radio and satellite telemetry. Satellite tracking allows for both real time and elapsed time movement monitoring that can be used to locate birds, and to identify areas being used by the birds for nesting, roosting, and foraging. This work is helping the Forests and cooperators set priorities for bringing utility lines and communication sites up to raptor safe standards.

Another problem for condors and their young has been the ingestion of small pieces of garbage (bottle caps, glass etc.) by the adults, which are fed to the nestlings. The nestlings are not able to pass the garbage and mortality has occurred in nests on the Forest. The Angeles National Forest and Los Padres National Forest have been working to reduce this potential threat using volunteers and fire crews to clean up problem areas.

Environmental education efforts completed since 2002 for the California condor include the development and use of a multi-media display. This display has been used at the Pacific Grove Museum of Natural History in Pacific Grove, California and has been seen by thousands of museum visitors.

Habitat improvement work completed for the California condor (Freed pers. comm.) includes:

- Removal of micro-trash on at least 16 occasions, 13 on the Los Padres National Forest and 3 on the Angeles National Forest.
- After the Piru Fire approximately 400 utility poles were replaced relating to 5 miles of distribution lines, fitted with anti-perching devices and anti-collision (flight diverters) devices. Some of the poles belonged to local oil companies, and others were property of southern California Edison.
- Installation of raptor guards and anti-perching devices has been completed within 5 miles of the Sespe Condor Refuge.
- Raptor guards and anti-perching devices are being used at communication sites to protect birds on the Santa Clara Divide Road on the Angeles National Forest.

Based on the above analysis, this species has been assigned the following threat category:

5. Uncommon in the Plan area with substantial threats to persistence or distribution from Forest Service activities.

Viability Outcome for National Forest System Lands

Predicted Outcomes by Alternative

1	2	3	4	4a	5	6
B	B	B	B	B	C	B

Since this species and its key habitat are so intensively managed, there would be little difference between Alternative 1-4a and 6. However, the magnitude of human disturbance and vehicle use and special use accommodation under Alternative 5 may be sufficient to influence the viability outcome for the condor. With potentially much greater motorized vehicle use, it will be much more difficult to manage human disturbance and shooting. The chances of lead in carcasses fed on by condors will be much more widespread. The emphasis in 4a on managing dispersed use to maintain the natural setting will benefit the condor.

The California condor is listed under the Endangered Species Act of 1973, as amended, as endangered, which assures that any new project proposed in or near its habitat will undergo considerable analysis and be subject to consultation with the U.S. Fish and Wildlife Service at the site-specific level.

Viability Outcome for All Lands

Predicted Outcomes by Alternative

1	2	3	4	4a	5	6
C	C	C	C	C	D	C

Shooting, lead poisoning, and collisions with human-made objects are major threats on private lands as well as national forest lands. Private land development for housing and agriculture will reduce the amount of suitable habitat. The sum total off effects from on and beyond National Forest System lands is likely to result in a declining habitat base and increased human disturbance. The increased likelihood of shooting, lead contamination, conflicts with special use facilities and human disturbance in Alternative 5 is substantial enough to affect the viability outcome for the condor.

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