THE CALIFORNIA CONDOR: A COOPERATIVE APPROACH TO ENDANGERED SPECIES PRESERVATION

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Abstract. The California condor, a species surviving essentially unchanged since the Pleistocene age, is currently considered an endangered species as less than sixty individuals remain in the wild. Strict habitat and food requirements, low natural breeding potential, destruction of birds, their nests and habitat through various human activities, have all contributed to a large population decline since the late 1800's. Presently the U. S. Forest Service, Bureau of Sport Fisheries and Wildlife, California Department of Fish and Game, and National Audubon Society are cooperating in efforts to save the species from extinction. Programs such as habitat management and protection, annual surveys, supplemental feeding experiments, and extensive information-education efforts are presently being conducted to achieve this goal.

INTRODUCTION AND LIFE HISTORY

The California condor (Gymnogyps californianus) is a vulturine bird of the family Cathartidae. Its wingspan of 9-1/2 feet is greater than that of any other land bird in North America. It is a scavenger with the ability of sustained gliding flight which it utilizes to search vast areas for carrion, the only food upon which it feeds.

Evolved in the Pleistocene age, the condor has apparently lost its niche in the ecosystem through man's continued alteration of its habitat. Now apparently forced to share the niche occupied by the turkey vulture (Cathartes aura), a more prolific and efficient species, the condor maintains an ecologically unstable position.

Although fossil remains of Gymnogyps occur in California, Arizona, New Mexico, Florida, and Mexico, historical records indicate that in recent times it never ranged far from the Pacific Coast. Lewis and Clark observed condors on the Columbia River during their expeidition in 1805-1806. By the mid 1800's, condors had almost disappeared from the northernmost areas but were still common in the southern portions of their range from Monterey County, California, into the Sierra San Pedro Martirs in northern Baja California (Koford, 1953). Their present range includes a 9,000 square mile portion of south-central California and a few birds may still exist in Baja.

Photo by: Dean Carrier

Figure 1. Two California condors

As is often the case with species of such a large size, the reproductive potential is extremely low. Normally, a pair of condors do not reproduce every year and it is probable that an even greater time lapse occurs between nestings. Only one egg is laid at each nesting, both parents sharing in the incubation and raising of the young. A long life span and low natural mortality accompany this low reproductive rate. One individual, in captivity in the National Zoo in Washington, D. C., lived for 45 years. (Koford 1953).

Condors normally nest in caves and potholes found in the sandstone cliffs and outcroppings common to the chaparral covered slopes of the Southern California mountains. They make no attempt to construct a nest but lay their single egg on the bare floor of the cave. Egg breakage is always a danger in such a situation. There are several reports of incubating birds being flushed from a nest, dragging the egg out with them or breaking it in the process of leaving (Koford 1953, and McMillan 1968).

Condors use the sandstone cliffs for roosting as well, but will also use trees and snags with large exposed branches on them. Since a condor cannot grasp small limbs with its relatively weak feet, a fairly large perch is necessary for it to maintain its balance.

Drinking and bathing sites are usually located on the edge of a precipice, such as at the top of a waterfall. This allows the birds to take flight while their plumage is wet. Being carrion feeders, condors bathe regularly to cleanse their plumage of debris from the carcasses they feed upon.

The condor's foraging areas are essentially open grasslands and grass-woodland types where the birds can locate their food through use of their keen eyesight. Since condors may add as much as five pounds to their body weight after gorging on a carcass, an unobstructed runway is often necessary for them to take flight.

HISTORY OF DECLINE

The accelerated decline in the California condor population apparently began sometime in the late 1800's. During this period the collection of specimens for museums, universities and other scientific endeavors was intensive. Both skins and eggs of condors were highly sought after. At least 250 skins and/or skeletons and 60 eggs are presently known in collections (Bureau of Sport Fisheries and Wildlife records). Many more were collected and later lost or destroyed. Harvard University alone has 14 skins and 8 eggs. One collector assisted in shooting 10 condors for scientific purposes in the 1920's (Koford 1953). Occurring simultaneously was the popular hobby of private egg collecting. The California condor was never abundant; its reproduction low; its nests in rather inaccessible locations; consequently, its eggs brought a premium price on the open market. An 1897 Egg Collectors Catalog listed the price of $225. Numerous ranchers and outdoorsmen supplemented their income by egg collecting. In 1905, one egg trader received nine condor eggs from his collectors (McMillan 1968).

Several publications have singled out indiscriminate shooting as the major cause of the condor's decline. In 1965, study for the National Audubon Society, indiscriminate shooting was listed as the "greatest proven loss of condors..." although only three such incidences could actually be verified. Most of this theory was based on the reported attitudes of hunters and ranchers in the condor's range. The majority of reports of shot condors are unfounded. Usually the bird is misidentified or the cause of death merely assumed. Most of the evidence pointing to shooting as a major factor of the condor's decline is circumstantial or hearsay.

Past predator and rodent control practices have added to the unnatural mortality of the condor. Although actual incidences of condors succumbing to poisoned baits and carcasses are not well documented, it must be assumed that poisoning has occurred in the past. Miller, et al (1963) relates the incidence of three condors falling victim to strychnine treated baits near a carcass. Of the three, one died and two flew away in an apparently weakened condition. Borneman (1966) reports a similar incidence in which the poisoned bird was captured, treated, and eventually released. In most instances strychnine was the poison involved. In recent years Compound 1080 (Sodium Flouracetate) has been the

substance used in most predator and rodent control operations. Vulturine birds have an apparent high tolerance to this compound (Ward and Spencer 1947), and no documented condor deaths have occurred due to ingestion of Compound 1080. Five incidences of condors accidentally caught in traps set for predators were listed by Koford (1953).

Another theory on the condor's current situation is that of R. B. Cowles (1958 and 1967), which asserts that fire protection and suppression on the National Forests has allowed much of the condor's range to revert to biologically unproductive stands of dense chaparral. While it is true that if periodically burned, these areas would sustain a much higher wildlife biomass, there is no evidence to show that this would increase the availability of the condor food supply. In fact, two large burns occurred in 1962 and 1967, adjacent to a former key condor use area. Although there has been a significant increase in the deer population, there has been no increase of condor numbers in this area.

Combined with those factors that have directly decimated the condor population is the insidious loss of the natural habitat through agricultural, industrial, recreational, and urban development. The agricultural development of the Sacramento and San Joaquin Valleys began at the turn of the century and presently there is little, if any, foraging areas left on the valley floor. Oil and gas development in the Sespe Creek area began as early as 1887, and has rendered some adjacent nesting areas unavailable for condor use. The rapid urban spread of Los Angeles and Ventura Counties has eliminated foraging areas that once sustained much of the condor population in the Sespe Condor Sanctuary and vicinity. This trend is continuing at an ever increasing rate.

PAST STUDIES AND MANAGEMENT

As early as 1906 a detailed photographic study of the life history of the California condor was undertaken by William L. Finley, a naturalist-photographer. His excellent observations were later used by A. C. Bent (1937) in his ornithological life history series.

The Forest Service's emphasis on protection and management of the condor's habitat began in 1933 with the initiation of a study to determine the status of the species on the Los Padres National Forest. Assistant Forest Supervisor, Cyril Robison, began collecting observations of condors made by Forest personnel. This data has provided important background information which we use today.

From his data he estimated that between 55 and 60 condors were living on the Los Padres National Forest. With support of the National Audubon Society, the Forest Service in 1938, established the Sisquoc Condor Sanctuary. This 1,200 acre sanctuary contains important bathing and roosting areas and is closed to all public entry.

Following a detailed study of the life history and status of the California condor by Carl Koford in 1939-1946, the Sespe Condor Sanctuary on the Los Padres National Forest was created. This area encompasses 53,000 acres in the Sespe Creek region of Ventura County and includes a minimum of 27 nest sites and was withdrawn from public use by the Secretary of Agriculture in 1948. In 1951, to add additional protection to the Sanctuary, the Secretary of the Interior withdrew the area from all appropriations under public land laws with the exception that mineral leasing was allowed with certain stipulations. Sixteen sections of this area, which included the major nesting complex, were closed to all surface entry for mineral leasing and any underground oil reserves may only be obtained by directional drilling from outside the boundaries. The remainder of the sanctuary has remained open to oil and gas leasing although no surface entry has been allowed within 1/2 mile of a known condor nest. Presently, there are no producing wells within the sanctuary boundaries.

In a cooperative agreement with the National Audubon Society, the Forest Service assigned a patrolman to guard the sanctuary boundaries, keep observation records of condor activity, and apprehend trespassers. In 1963, the Audubon Society initiated a second study on the status of the California condor under the direction of the late Dr. Alden Miller, Director of the Museum of Vertebrate Zoology at Berkeley, California. The field work carried out by Ian and Eben McMillan revealed an approximate 30% decline in the condor population in the 20 year period since Koford's studies. Current information indicates the decline to be as high as 50-60%. Recommendations were then made to increase protection of the condor and its habitat.

In 1965, the Forest Service recognized the existing Condor Advisory Committee, the membership which currently includes: Douglas R. Leitz, Regional Forester; Ray Arnett, Director of the California Department of Fish and Game; Dr. A. Starker Leopold, Professor of Zoology and Forestry, University of California, Berkeley; John D. Findlay, Regional Director, Bureau of Sport Fisheries and Wildlife, Portland, Oregon; Roland C. Clement, Vice President/Biology, National Audubon Society; and Dr. Robert T. Orr, Associate Director, California Academy of Natural Sciences. The Advisory Committee's function is to review programs and make recommendations for condor welfare protection, preservation, and enhancement.

In 1966, the Bureau of Sport Fisheries and Wildlife's endangered species office assigned a biologist to study the effects the proposed Sespe Creek Water Project would leave on the condor. He was also responsible for determining the current status and annual reproduction of the condor. This study has indicated a continued decline in both reproductive activity and of available habitat. Indications are that condors will not tolerate mechanized activity within their breeding areas. In 1968, the U. S. Forest Service assigned a biologist to work specifically on condor habitat management and preservation and coordinate with other agencies and their studies.

The California Department of Fish and Game created their special Wildlife Investigations Branch in 1968. This branch is concerned with all species not considered game, including all rare and endangered species.

HABITAT MANAGEMENT AND PRESERVATION

Utilizing data provided by past and current studies and recommendations of the Condor Advisory Committee programs to enhance and preserve the California condor and its habitat have been intensified.

Within the condor's range are numerous parcels of patented land. Some of these, if developed, could seriously affect the species' future. Two of these parcels are within the Sespe Condor Sanctuary. Others are located adjacent to nesting areas outside the sanctuary, while others include vast areas of ranch land foraging areas, such as the Tejon Ranch in southern Kern County. To date three parcels have been acquired. One parcel on the Los Padres National Forest is adjacent to the most productive condor nest site within the past five years. Cooperative funds provided by the Forest Service and the Nature Conservancy resulted in the recent purchase of this 160 acre potrero. The acquisition of the patented lands within the Sespe Condor Sanctuary is vital to the continued protection of the condor. However, appraisals are presently in progress so that action can be immediately initiated, should funds become available. On larger parcels of land, most of which are currently producing cattle ranches, efforts are being made to initiate the aid of the landowners in considering the condor and its needs within the framework of their management and development programs.

New data furnished through the studies carried on by the Bureau of Sport Fisheries and Wildlife endangered species office and the U. S. Forest Service indicate that the existing 1/2 mile "no surface entry" buffer zone around nest sites is not adequate. It was found that condors did not nest within at least 1.2 miles of mechanized activity even if it were shielded from the site by topographic barriers (Sibley 1968). The Advisory Committee thus recommended that the Forest Service extend the buffer zone to 1-1/2 miles. In compliance with this, the Secretary of the Interior issued a moratorium on further oil and gas drilling within the Sespe Condor Sanctuary. Following this, the Director of the BLM issued a similar moratorium on several areas within the condor's range. These are to continue until environmental impact studies which are now in progress are completed and the effects of oil development activity on the condor are discerned. In conjunction with the increase of restrictions, a number of trails that passed near nest sites within the Forest have been closed or re-routed.

A recurring problem discussed by the Advisory Committee has been that of aircraft travel over condor nesting areas. Recent studies indicated an increase of this activity, especially low flying military jet aircraft and incidents of loud sonic booms. Meetings

involving the Forest Service, Bureau of Sport Fisheries and Wildlife, and representatives of the various military agencies were conducted in Washington, D. C. in 1971. It was agreed upon to restrict aircraft travel to a 3,000 ft. terrain clearance over four areas within the Los Padres National Forest where condors were known to nest. Recent participation of military advisors at the Condor Advisory Committee meeting has increased their understanding of the situation and resulted in excellent cooperation.

Although shooting has not accounted for any proven condor mortality in the past decade, the use of firearms within or near the sanctuaries is inconsistent with management objectives. The noise levels alone are enough to cause concern and a certain amount of indiscriminate shooting is evident. Therefore, in 1972, upon recommendation of the Condor Advisory Committee, the Los Padres National Forest established a Firearms Closure Area within which the possession of firearms is not allowed. The areas involved have provided little, if any, hunting recreation in the past years due to the steep slopes, dense brush and closure due to high fire danger during the hunting seasons.

Administration

Under the Multiple-Use Management Plan condor use areas are designated as special management units. These units are indicated on a multiple-use map on all Ranger Districts within which they occur. Management objectives stress strict limitation on the use of these areas. In 1971, the Condor Habitat Management Plan was completed. This plan has been distributed to all Forests having condor activity. It provides direction for all land use practices in areas used by condors. The plan is continually revised as new data becomes available. Similarly, the California Department of Fish and Game has developed an Operational Management Plan for the California condor. This plan defines responsibilities and formalizes intra-agency programs for protection and preservation of the species.

Information and Education

From the early 1940's, into the mid 1960's it was unwritten policy to minimize any publicity of the condor's status and problems in an effort to keep the curious public away from important areas. However, the continuing decline of the species made it apparent that the lack of publicity may possibly have had a detrimental effect. Heavy opposition to restrictive land management policies and protective measures indicated an uninformed public could not understand or appreciate the condor and its problems. Therefore, informative measures have been initiated beginning with the National Audubon Society's creation of a Condor Naturalist position in 1965. Agencies involved in condor preservation publish numerous brochures and publications concerning the species. Many magazine articles and newspaper items are published and several popular books have been written on the California condor.

The Los Padres National Forest has developed two public observation sites specifically for viewing condors. These sites are located in areas where there is little chance of disturbance to the birds. One site is on Mt. Pinos, the highest point in the condor's range, at 8,830 ft., and the other is located at Dough Flat on the south edge of the Sespe Condor Sanctuary. These sites provide good vantage points where the public can view condors. Unauthorized trips into the sanctuaries appear to have been effectively minimized through this program.

Cooperative Programs

In addition to the aforementioned programs carried out by the various agencies involved in condor preservation, there are a number of programs which have been initiated and are now in progress on a cooperative basis. The annual California Condor Survey is one such cooperative program. Coordinated by the Condor Technical Committee representing the California Department of Fish and Game, the Bureau of Sport Fisheries and Wildlife, and U. S. Forest Service, and the National Audubon, this survey is held during mid-October when the birds are normally congregated in two definite locations. Observers are stationed at a number of vantage points throughout these areas. All sightings of condors are reported for a 2-day period. These sightings are then analyzed to eliminate duplication of birds. Data provided by the observers includes location, time seen, direction of flight and age of bird. The results indicate only the minimum number of condors that were seen each day.

From 1965, through 1972, the numbers of individual birds seen have been 38, 51, 46, 52, 53, 28, and 36 birds respectively. The variation in numbers is more an indication of weather conditions and condor distribution at the time of the survey than of any major fluctuation in the population.

A second cooperative program currently in progress is an experimental feeding study. Carcasses, normally road-killed deer, are provided on a weekly basis at a location within the Sespe Condor Sanctuary. This site is located near the main nesting complex. The study was initiated after observance of a nest site in San Luis Obispo County where successful nesting apparently occurred for four consecutive years. Actions of the birds and knowledge of territorial behavior of the condor and other raptorial species led to the belief that the annual nesting involved the same pair each year. It was theorized that the apparent abundance of a natural food supply on the ranch lands nearby allowed the nestling to develop more rapidly, becoming independent of its parents prior to the beginning of the annual breeding period. Therefore, the parent birds were able to court and breed annually. The placement of the carcasses was not meant to supply the entire food requirements of the birds, only to supplement the diminishing natural food supply in the vicinity of the sanctuary. Early indications are that the program has retained birds in the sanctuary during the summer and that at least one successful nesting per year has occurred there for the past three years. The nestlings from these successful nests have appeared at the carcass at an early age, much earlier than would normally be expected. By the time the next breeding season occurs the nestlings appear to be on their own and the adults have been observed courting and copulating. If this program proves to be successful, plans for expanding it would then be put into effect.

CONCLUSION

As stated in Framework For the Future, the policy of the Forest Service is: "Promote high quality wildlife and fish habitat to ensure a desired mixture of types and numbers for public benefit. Give special emphasis to the protection of rare and endangered species of native animals, fish, and birds." On the National Forests in California the impact of land managmment decisions on the condor must be determined. However, we are not alone in this regard.

The effort necessary to ensure survival of the condor must be publicly accepted. The cooperative efforts of the California Department of Fish and Game, Bureau of Sport Fisheries and Wildlife, the National Audubon Society and the U. S. Forest Service have changed seemingly impossible problems into workable realities.

It should now have become apparent to all of us that the feeling of "esprite de corps" as it pertains to our respective agencies has, and is, rapidly declining. For what reason has this formerly essential "professional patriotism" fallen by the wayside? Perhaps the answer can be found in the fact that it takes 4 hours to fly to Europe; in the knowledge that the chemical wastes off California's agricultural lands are found over 4,000 miles away in the uninhabited poles; in the footprints of man in the lunar dust. No longer can we exist as individuals, as separate and self-sustaining agencies each doing their own thing, anymore than the condor can survive if confined to its sanctuary. The world is too small, the problems too large for us to try to solve them alone. It is only through combined, coordinated and cooperative efforts of all involved that our goals might be realized; that any species, be it currently considered endangered or not, is to continue to thrive. The task at hand is to hold onto what we have, to protect, stabilize, and hopefully, improve upon existing conditions. There will be adequate time in the future to sit down and mete out the credit, the praises, and the admiration.

It's time, well past time, to discard the old facades that we've worn so many years; to rise above the jealousies and petty bickerings as to just who can study what, control what, manage what. It hardly matters to an oil soaked western grebe just what agency the person washing him is representing; nor does a clapper rail seek the identity of those who provided the funds to purchase, and thus preserve, his salt marsh home; and a California condor hardly takes note of the shoulder patches of the men who carried in the carcass which he consumed yesterday. To them all that matters is that it was done. Should we as biologists, ecologists, naturalists...as professionals, require more?

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