U.S. FISH AND WILDLIFE SERVICE – SPOTLIGHT SPECIES ACTION PLAN 2010-2014

Common Name: California condor

Scientific Name: *Gymnogyps californianus*

Lead Region: Pacific Southwest, Region 8

Lead Field Office: Hopper Mountain National Wildlife Refuge Complex, Ventura, CA.

Species Information:

Status: Endangered

Recovery Priority Number: 4C

Recovery Plan: U.S. Fish and Wildlife Service. 1996. California Condor Recovery Plan, Third Edition. Portland, Oregon.

Most Recent 5-year Review: None, however the first 5-year review is currently under development.

Other: There are many publications available on the biology and management of the California Condor. Below is a brief list of some of the primary reports and publications we used in writing this Action Plan.

Koford, C. 1953. The California Condor. National Audubon Society, New York, NY.

Snyder, N. and H. Snyder. 2000. The California Condor: A Saga of Natural History and Conservation. Academic Press, San Diego, CA.

Peregrine Fund, The. 2002. A Review of the First Five Years of the California Condor Reintroduction Program in Northern Arizona. Boise, ID.

Mee, A. and L.S. Hall. eds. 2007. California Condors in the 21st Century. Series in Ornithology No. 2. The Nuttall Ornithological Club, Cambridge, MA, and the American Ornithologists' Union, Washington, D.C.

Ventana Wildlife Society. 2007. Annual Report. A report to the U.S. Fish and Wildlife Service.

California Condor Blue Ribbon Panel. 2008. Status of the California Condor and Efforts to Achieve its Recovery. The American Ornithologists' Union, Washington, D.C. and Audubon California, Sacramento, CA.

Peregrine Fund, The. 2008. California Condor Restoration. A report to the U.S. Fish and Wildlife Service.

Threats:

Major threats to the conservation of California Condors in the wild include: loss of foraging habitat, lead poisoning, disease, as well as depressed reproductive success due to ingestion of trash items by nestlings and organochlorine exposure, namely DDE, by breeding females.

Target:

Our target goal in the next five years is to maintain the status of the California Condor. The California Condor Recovery Plan (1996) outlines five criteria that need to be achieved before reclassifying the species to Threatened: "the maintenance of at least two non-captive populations and one captive population. These populations (1) must each number at least 150 individuals, (2) must each contain at least 15 breeding pairs and (3) be reproductively self-sustaining and have a positive rate of population growth. In addition, the non-captive populations (4) must be spatially disjunct and non-interacting, (5) must contain individuals descended from each of the 14 founders." These criteria cannot be attained in the next five years. Recovery of the California Condor is constrained by its slow reproductive rate, delayed sexual maturity, and age-skewed wild population. Additionally, continued adult and juvenile mortality is expected from anthropogenic and environmental sources including: disease, predation, contaminant (especially lead) exposure, shootings, collisions with man-made structures, and ingestion of trash items.

Measures:

Over the next five years, progress towards recovering the species will be measured through continued captive breeding, increasing wild population sizes, gaining additional wild breeding pairs, improving wild nest success, and reducing contamination threats through research, management, and education.

Measures were selected that provide substantial progress towards species recovery and are expected to be achieved by the end of fiscal year 2014. A population model incorporating the current wild population structure and predicted condor releases, breeding effort, breeding success, and mortality rates of wild birds was used to predict future population size and breeding pair numbers (Table 1). The historic nest success rate in the wild (i.e. 52%; Snyder and Snyder 2000) was selected as the target value for the re-introduced population. Reducing contamination threats will be assessed by implementing appropriate management activities.

1. Maintain captive reproduction rate of no less than 20 chicks per year.

2. Increase the wild population to 280 individuals.

3. Increase yearly active breeding attempts to 35 pairs.

4. Improve annual wild nest success rates to 52%.

5. In California, continue monitoring for lead exposure in free-flying California Condors and surrogate species and lead in the environment using carcass collection concurrent with regulation changes.

6. In Arizona, continue monitoring for lead exposure in free-flying California Condors and lead in the environment using carcass collection concurrent with voluntary lead reduction efforts.

7. In Baja, continue monitoring for lead exposure in free-flying California Condors and lead in the environment using carcass collection concurrent with non-lead ammunition education efforts.

8. Continue chelation therapy treatment for all California Condors with measured blood lead levels higher than 40µg/dL.

9. Complete and publish research reports on topics related to California Condor natural history, ecology, and management to be applied towards adaptive management.

10. Maintain outreach and education programs to provide information on California Condor biology, ecology, and management actions.

11. Maintain outreach and education programs to provide information on non-lead alternative ammunition.

Actions:

The California Condor Recovery Program involves a complex partnership of diverse organizations located over a large geographic area. The program's current structure makes each partner instrumental to future efforts, and continued success will require proper coordination and communication. Actions contained within this Plan are program-wide endeavors with an emphasis on USFWS-directed activities. Previous management of this species has proven that adaptive decision-making is often required due to unforeseen, changing circumstances, and although actions in this Plan are presently regarded as imperative for the next five years, future conditions may lead to updated management strategies.

Currently, captive populations of California Condors are located at seven facilities: the Chapultepec Zoo (Mexico City), Los Angeles Zoo, Oregon Zoo (Portland), San Diego Wild Animal Park, San Diego Zoo, Santa Barbara Zoo, and World Center for Birds of Prey (Boise, ID). California Condors are currently being re-introduced to the wild at five release sites managed by five independent organizations: southern California (USFWS), Big Sur (Ventana Wildlife Society), Pinnacles National Monument (National Park Service), northern Arizona (The Peregrine Fund), and Baja, Mexico (Zoological Society of San Diego). The birds from the three California release sites have interacted in the wild, and future movements and exchanges among these groups are expected. Therefore, they are treated as a single sub-population for the purposes of recovering the species. To date, the Arizona and Baja birds have remained geographically isolated and are treated as independent sub-populations.

Actions are listed under four major categories: Captive Breeding Program, Field Restoration Activities, Data Analysis and Management, and Outreach and Education. These actions correlated to achieving specific Measures (Table 2). Involved partners are listed at the beginning of each category.

1. Captive Breeding Program

The captive breeding program partners include the Zoological Society of San Diego, Los Angeles Zoo, Oregon Zoo, and World Center for Birds of Prey. The anticipated participation of the Chapultepec Zoo as a captive breeding partner would include support by Mexican agencies including the Instituto Nacional de Ecología, the Comisión Nacional de Áreas Naturales Protegidas, the Centro de Investigación Científica y de Educación Superior de Ensenada, and the Dirección General de Zoológicos y Vida Silvestre, among others.

1. Operate existing breeding facilities according to management protocols.

2. Manage the captive flock to optimize productivity, maximize genetic diversity, minimize genetic loss, and maintain genetic balance.

3. Maintain comparable genetic, age, and sex representation in each facility.

4. Offspring and eggs should be exchanged between captive subpopulations to simulate immigration.

5. Establish optimum pairing strategies for the California Condor captive flock.

6. Manage selected California Condors for release into the wild according to management protocols.

7. Maintain studbook for the California Condor population.

8. Conduct a study of captive California Condors to determine the causes and prevention of trash ingestion in breeding condors and their offspring.

2. Field Restoration Activities

Field restoration activities include efforts by the Ventana Wildlife Society, National Park Service, The Peregrine Fund, Zoological Society of San Diego, Los Angeles Zoo, and Santa Barbara Zoo. Mexican partners including the Instituto Nacional de Ecología, the Comisión Nacional de Áreas Naturales Protegidas, the Centro de Investigación Científica y de Educación Superior de Ensenada, and the Dirección General de Zoológicos y Vida Silvestre, and others. Contributions to field management efforts are also made by the US Forest Service and Bureau of Land Management. Field research efforts are also supported by academic institutions with expertise in ecotoxicology and population ecology.

1. Prepare release sites based on protocols resulting from information learned from recent California Condor releases.

2. Release California Condors in accordance with the release plans and established protocols.

3. Monitor free-flying condors with the use of VHF telemetry, GPS transmitter data, and visual identifications.

4. Continue to provide contaminant-free carcasses at feeding sites within the historic range of California Condors and feeding site management at these locations, including the disposal of the remains of proffered carcasses.

5. Develop and implement step-down management plans to protect known and potential roosting and nesting sites on public lands.

6. Review all Federal (e.g. Section 7 consultations, draft HCPs), state, and local agency plans within the condors' range as requested, to ensure the needs of the species are addressed to the extent possible.

7. Implement appropriate Recovery Team management recommendations and strategies to minimize contaminant-related mortality factors.

8. Continue to provide data to researchers on various poisons and contaminants, especially lead, on surrogate species.

9. Monitor contaminant levels in California Condors.

10. Sample potential condor food items within historical range to determine seasonal and geographic contaminant loads.

11. Sample and analyze blood of surrogate sympatric species in the field to determine seasonal and geographic distribution of contaminant loads throughout the historical condor range.

12. Advise planning agencies on location of threatening power lines, wind turbines, and other structures to avoid possible condor mortalities.

13. In southern California, continue with current nest entry protocols (i.e., a minimum of four entries per nest) for at least one more year. In subsequent years, at least one entry per nest will be conducted to administer West Nile Virus inoculations to all wild-hatched California condor chicks. Further entries may still be required if there are threats detected on a nest by nest basis. Continue monitoring and collecting observational data regarding nest selection, incubation, brooding, as well as nestling and fledgling behavior at all accessible California Condor nest locations.

14. Areas identified as sources of trash items will be documented and cleaned up every year or until trash item presence at nests is no longer determined to be affecting California Condor reproductive rates or nest success.

15. Collect data from marine mammal carcasses and California Condor nests to study possible eggshell thinning due to the organochlorine exposure in breeding adults.

3. Data Analysis and Management

Data analysis and management efforts are conducted by all captive breeding and field restoration partner organizations. Multi-organizational, cooperative research and data management efforts will be facilitated by the U.S. Geological Survey. Appropriate ecological and toxicological investigations will be conducted by the University of California - Davis and University of California - Santa Cruz.

1. Create and maintain a California Condor National Database to manage essential California Condor information.

2. Compile a database of isotopic signatures from lead ammunition that will be available to all program partners.

3. Create and publish an on-line database of trash items found at California Condor nests.

4. Continue Condor Research Working Group meetings to coordinate research and data management.

5. Complete and publish a research paper analyzing nest behavior in southern California.

4. Outreach and Education

Outreach and education efforts include all captive breeding and field restoration partner organizations. Additional efforts will be conducted by: Arizona Game and Fish, Utah Department of Natural Resources, California Game and Fish, and the Institute for Wildlife Studies.

1. Distribute educational materials about condor habitat, species identification, and legal protection to interested parties.

2. Provide information of current condor management activities to key governmental land managers in condor range.

3. Provide information on condor habitat needs to key private landowners.

4. When appropriate, update information kiosks available to the public at the Chapultepec Zoo, Los Angeles Zoo, Oregon Zoo, San Diego Wild Animal Park, San Diego Zoo, Santa Barbara Zoo, and World Center for Birds of Prey.

5. Continue exhibiting California Condors at the Chapultepec Zoo, San Diego Wild Animal Park, San Diego Zoo, Santa Barbara Zoo, and World Center for Birds of Prey.

6. In Arizona and Utah, maintain educational outreach with hunters, sportsman's organizations, and outdoor associations regarding non-lead alternative ammunition.

7. In California, continue educational programs for hunters, hunting associations, and interested stake-holders about regulation changes requiring the use of non-lead ammunition in designated Condor Habitat.

Estimated annual costs of the actions:

Estimated annual expenditures for each action are given for fiscal year 2009. Future expenses will need to be adjusted for yearly cost-of-living increases and other inflationary factors.

Actions		Expenditures		
		Federal	**Partners**	**Total**
Captive Breeding Program	1.1 – 1.6	$200,000	$1,834.000	$2,034,000
	1.7		$50,000	$50,000
	1.8		$200,000	$200,000
	Sub-total	***$200,000***	***$2,084,000***	***$2,284,000***
Field Restoration Activities	2.1-2.4	$657,000	$300,000	
	2.5-2.6	$50,000		
	2.7-2.11	$500,000	$244,000	
	2.12-2.14	$50,000	$25,000	
	2.15		$50,000	
	Sub-total	***$1,257,000***	***$619,000***	***$1,876,000***
Data Analysis and Management	3.1-3.3	$50,000	$30,000	
	3.4	$60,000	$50,000	
	3.5	$10,000	$10,000	
	Sub-total	***$120,000***	***$90,000***	***$210,000***
Outreach and Education	4.1-4.3	$65,000		
	4.4		$60,000	
	4.5		$120,000	
	4.6-4.7	$60,000	$60,000	
	Sub-total	***$120,000***	***$240,000***	**$360,000**
All Actions	**Total**	**$1,697,000**	**$3,033,000**	**$4,730,000**

Additional Funding Analysis:

Additional funding would benefit research and management efforts for California Condors in the wild. Biological factors currently limit California Condors' near-term population growth rate and size, but additional funds for improved data collection would lead to reduced mortality and increased reproductive success.

- GPS transmitters could be placed on all free-flying California Condors to monitor, analyze, and predict the birds' movements, feeding behavior, breeding activity, trash collection, and contaminant exposure. (USFWS, $500,000, one-time expenditure; USFWS, $60,000, annually)

- Video cameras could be placed at wild California Condor nests to record subtle behavioral data. Such data may improve information regarding feeding and nesting ecology and lead to improved management efforts and decreased mortality. (USFWS, $150,000, one-time expenditure)

- Hopper Mountain NWR Complex could hire additional permanent and temporary staff to maintain a more consistent management and field crew team. (USFWS, $250,000, annually)

- Funding for the establishment and management of a native, wild ungulate population (e.g. pronghorn) on Bitter Creek NWR would allow for an accessible, sustainable, and natural food source for California Condors in the surrounding area. (USFWS, $1,000,000, one-time expenditure; USFWS, $25,000, annually)

Appendix

Table 1. Annual breeding pairs and population size of California Condors in California, Arizona, and Baja, predicted for years 2009 to 2014. A model based on current population demographics, estimated captive-reared bird release rates, as well as predicted breeding efforts, breeding success, and mortalities of wild birds was used for the analysis.

		2009	2010	2011	2012	2013	2014
Breeding Pairs	**California**	9	10	12	14	16	17
	Arizona	7	10	13	14	15	15
	Baja	1	2	2	3	3	3
	Total	17	22	27	31	34	35
Population Size	**California**	94	102	110	119	128	138
	Arizona	86	92	100	107	115	122
	Baja	17	17	17	18	19	20
	Total	197	211	227	244	262	280

Table 2. A list of the Measures along with the corresponding Actions intended to achieve these objectives.

Measure	Actions
1	1.1 – 1.7
2	2.1 – 2.8
3	1.5, 2.13 – 2.15
4	1.8, 2.13 – 2.15
5	2.9, 3.2
6	2.9
7	2.9
8	2.9
9	2.9 – 2.11, 2.13, 2.15, 3.1 – 3.5
10	2.12, 4.1 – 4.5
11	4.6 – 4.7

FIELD OFFICE APPROVAL

Lead Field Supervisor, Fish and Wildlife Service

Approve _____ **Date** 8/26/09

REGIONAL OFFICE CONCURRENCE

Assistant Regional Director, Ecological Services, Fish and Wildlife Services

_____ **Date** 8/27/09