



July 31, 2007

Arizona Game and Fish Commission
2221 West Greenway Road
Phoenix, AZ 85023-4399

Re: Increasing Lead Poisoning of Condors in Arizona

Dear Chairman Golightly and members of the Commission:

The Center for Biological Diversity, Sierra Club, Grand Canyon Wildlands Council, and Arizona Zoological Society request that the Arizona Game and Fish Commission take immediate emergency action to prevent further lead poisonings of California condors in Arizona. We request that the Commission amend the Arizona state hunting regulations to require the use of non-lead ammunition for the taking of big game, small game, and non-game birds and mammals, as well as for all depredation shooting. In light of the escalating poisoning incidents of California condors, to protect other wildlife at risk of lead poisoning such as bald eagles, golden eagles and other scavenging birds, and to protect human health, statewide regulation of lead ammunition is now necessary. We request that the Commission modify the state hunting regulations by the commencement of this year's deer hunting season, to prevent further deaths and poisonings of condors in Arizona.

Since the southwestern condor reintroduction program began in 1996, lead poisoning has been the leading cause of death for reintroduced condors in Arizona. At least 12-14 condors have died of lead poisoning in Arizona, and an increasing and appalling percentage of the wild condor population in the southwest must now periodically receive emergency treatment for lead poisoning to save their lives. Condor experts and the California Condor Recovery Team have concluded that as long as lead ammunition is used in the condor range, recovery of the species is unlikely.

Lead in the form of shotgun pellets and rifle bullet fragments left behind in animal carcasses, as well as animal remains left behind after carcass "dressing" or processing, have been the primary source of lead contamination to condors in Arizona. Radiographs have documented lead pellets and fragments in the digestive tracks of lead-poisoned condors and bullet fragments in rifle-killed deer and coyotes known to have been fed upon by condors. Radiographs of the remains of deer killed with standard lead-based rifle bullets reveal a profusion of metal fragments as the normal condition (Hunt *et al.* in

press). Abrupt increases of blood lead levels in condors have been demonstrated to correspond with increased use of deer-hunting areas on the Kaibab Plateau since 2002. Spikes in blood lead levels are associated with condor visitation there during and just after the 2002-06 deer seasons, and there were significantly higher lead levels among condors visiting the Kaibab Plateau in the weeks prior to testing.

Lead poisoning from lead ammunition is also a significant threat to other wildlife species such as bald and golden eagles in Arizona. Lead ammunition is the primary source of lead deposition in the wild and ingestion of lead from bullet fragments or lead shot in carrion is a significant source of lead exposure for condors and other avian scavengers.

Lead ammunition also poses a human health risk, particularly to hunters who ingest meat from game tainted with lead ammunition fragments (especially young children), and for people who reside near soils and waters contaminated by discarded lead ammunition.

In April of this year the California Condor Recovery Team and the U.S. Fish and Wildlife Service (SCRT 2007) published *A Review of the Second Five Years of the California Condor Reintroduction Program in the Southwest*. The Recovery Team summarized the escalating incidence of lead poisoning of Arizona condors:

During the first five years of the condor release program in Arizona, lead poisoning appeared to constitute an episodic rather than a chronic threat to condor survival. Throughout most of the first reporting period, there was little indication of lead exposure. In the early summer of 2000, however, a series of lead exposures and deaths (and additional suspected deaths) from ingesting lead shotgun pellets occurred. Two years later, in the fall of 2002, increased condor use of the Kaibab Plateau corresponded to elevated levels of lead in blood samples, followed by a similar pattern in subsequent years. The high yearly incidence of lead exposure during this reporting period has necessitated continued blood sampling and treatment...Meanwhile, research has identified condor use of rifle-killed deer and coyotes as the principal pathway of lead to condors in Arizona (Fry *et al.* 2003, Church 2006, Hunt *et al.* 2006, Hunt *et al.* in press). TPF radiographs have illustrated lead pellets and fragments in the digestive tracks of lead-poisoned condors and bullet fragments in rifle-killed deer and coyotes known to have been fed upon by condors. Moreover, TPF radiographs of the remains of deer killed with standard lead-based rifle bullets revealed a profusion of metal fragments as the normal condition. With the aid of GPS-satellite telemetry, TPF found an abrupt increase of blood lead levels corresponding with increased condor use of deer-hunting areas on the Kaibab Plateau in 2002 and thereafter...Spikes in blood lead levels were associated with condor visitation to the Kaibab Plateau during and just after the 2002-2006 deer seasons, and there were significantly higher lead levels among condors visiting the plateau in the weeks prior to testing.

The Arizona condor population has been exposed to lead ammunition fragments and suffered from lead poisonings with increasing frequency since the reintroduction program began. According to the Fish and Wildlife Service (SCRT 2007), in 2002, 23 condors in Arizona had elevated blood lead levels ($>15\mu\text{g}/\text{dl}$, indicating exposure), with 13 condors requiring emergency treatment (chelation) to purge the lead from their systems. In 2003, there were 13 cases of lead exposure requiring 5 chelations. In 2004 there were 35 cases of lead exposure requiring 18 chelations. In 2005 over 50% of all Arizona condors had lead exposure and 23% (18 birds) required chelation treatment; radiographs of four condors showed visible lead fragments or shotgun pellets in their stomachs. In 2006 95% of all Arizona condors (54 birds) had lead exposure and 40 condors (70% of the Arizona population) were chelated; radiographs of four condors showed ammunition fragments consistent with those recovered in past years.

We have appended a bibliography of the scientific literature detailing the nature, degree, and cause of lead poisoning of condors in Arizona to this letter. Most of these reports are available through the web sites of the Peregrine Fund (www.peregrinefund.org), Arizona Game and Fish Department (www.azgfd.gov/condor), and the Center for Biological Diversity. (www.savethecondors.org).

For the past two years the Arizona Game and Fish Department has conducted a very well-received voluntary lead reduction program and hunter education campaign, including free distribution of non-lead ammunition to hunters in the condor range. Through this program, hunters in Arizona reduced the amount of available lead by over 60% in 2005 and 2006. In 2005, 65% of eligible hunters used the free non-lead ammunition on their hunts and in 2006, 60% of hunters used non-lead ammunition. Despite the successes of this program, recent events show that voluntary lead-reduction efforts in Arizona are not enough to remove the lead threat, and that even with a positive response from hunters there are still significant and lethal amounts of lead available to condors. There were 3 condor deaths in Arizona from lead poisoning in 2000, 1 death in 2002, 3 deaths in 2005, and 5 deaths in 2006. It is clear from the 5-year review of the condor recovery program that without further reductions in lead exposure, condors will continue to die of lead poisoning and require frequent and intrusive chelation treatments, and that the condor population will not achieve the recovery goals for the species.

We are requesting that the Commission immediately adopt regulations requiring the use of non-lead ammunition, including bullets and shot, for all hunting within the state of Arizona. Restricting the use of lead shot in the condor range is also essential, as lead shot has been removed from the digestive tracts of seven condors in Arizona (Parish *et al.* in press). Condor ingestion of lead bullet fragments has been associated with the fall hunting season (Hunt *et al.* in press), while condor ingestion of lead shot has been less predictable, and is not associated with a well-defined hunting season. We are also concerned about lead exposure from year-round rifle varmint hunting. We seek these regulations to protect California condors and bald eagles (both designated as Wildlife of Special Concern in Arizona) from the ongoing threat of lead poisoning, and also to safeguard human health.

We request that the Commission establish a public process for certifying lead-free ammunition to be required for all hunting in Arizona. Available alternatives to conventional lead ammunition that do not pose lead or other significant toxicity risks to wildlife, particularly avian scavengers and other raptors, should be certified for use for hunting, subject to conditions that ensure they will not compromise the health of any wildlife species of concern, or adversely affect public health and safety or the environment. “Non-lead” or “lead free” alternatives to conventional lead ammunition could include ammunition types that the Arizona Game and Fish Department finds, on the basis of the best available science, contains lead only in a form that does not cause toxic exposure to wildlife or human handlers of the ammunition. We acknowledge that hunting is a well-established, widely-practiced, and traditional activity in Arizona. The timing and nature of ammunition restrictions and authorizations should be tailored to minimize transition issues and other adverse consequences for the state’s hunters, to the maximum extent consistent with the Commission’s obligation to protect threatened and endangered species.

The Commission has the full authority under the Arizona Game and Fish Code (for example sections ARS 17-102, 17-201, 17-231, 17-239, 17-309) and under Arizona Administrative Code (for example sections R12-4-303 and R12-4-304) to implement regulatory measures to remove lead ammunition from the condor range and prevent further lead poisonings of condors in Arizona. We request that the Commission enact an emergency rule to address the lead poisonings.

Condors in Arizona, Nevada, and Utah were reintroduced under Section 10(j) of the Endangered Species Act, as a nonessential, experimental population. However, the designated status of the southwestern condor population as nonessential and experimental under section 10(j) does not preclude regulatory action nor does it relieve the Commission from responsibility to prevent jeopardy to the species. The federal Endangered Species Act prohibits the Commission and the Department from causing the unauthorized “take” of an endangered species. 16 U.S.C. §§ 1532(19), 1538. The death, injury, and harm to federally listed California condors from lead poisoning constitute a prohibited “take” under the Endangered Species Act and its implementing regulations. Under the 10(j) rule published by the Fish and Wildlife Service in 1996, “take” of condors in Arizona (including killing or injuring) is prohibited except where such take is unavoidable and unintentional. Lead poisoning of condors from ammunition is avoidable, since alternative ammunition is available that is not toxic to condors, and the use of non-lead ammunition would not restrict hunting in Arizona. The 10(j) status of Arizona condors does not limit the Commission from substituting non-toxic bullets for toxic lead ammunition. The failure to regulate the use of lead ammunition within the state is inconsistent with laws of the state of Arizona and the United States that protect endangered or threatened wildlife species.

We look forward to working with the Commission, the Department and Arizona hunters to implement reasonable and effective hunting regulations to protect condors.

Sincerely,

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Bibliography

Arizona Condor Review Team. 2002. A review of the first five years of the California condor reintroduction program in northern Arizona.

Cade, T. J., S. A. H. Osborn, W. G. Hunt, and C. P. Woods. 2004. Commentary on released California condors in Arizona. Pages 11-25 *in* Raptors worldwide (R. D. Chancellor and B.U. Meyburg, Eds.), World Working Group on Birds of Prey and Owls, Berlin and MME/Birdlife Hungary, Budapest, Hungary.

D. J. Case and Associates. 2005. Communicating with hunters and ranchers to reduce lead available to California condors. Unpublished report, Wildlife Management Institute, Washington D.C. and U.S. Fish and Wildlife Service, Sacramento, California.

D.J. Case and Associates. 2005a. Communicating with hunters and ranchers to reduce lead available to California condors: implementation phase. Unpublished report, Wildlife Management Institute, Washington D.C. and U.S. Fish and Wildlife Service, Sacramento, California.

D. J. Case and Associates. 2006. Non-lead ammunition program hunter survey. Unpublished report, Arizona Game and Fish Department, Flagstaff, Arizona.

Center for Biological Diversity, Natural Resources Defense Council, Wishtoyo Foundation, Public Employees for Environmental Responsibility, Ventana Wilderness Alliance, Dave Clendenen, and Anthony Prieto. 2004. Petition for Rulemaking to Address Lead Poisoning from Toxic Ammunition in California. Petition to the California Fish and Game Commission submitted December 16, 2004. Available at http://www.biologicaldiversity.org/swcbd/species/condor/Lead_petition.pdf.

Chesley, J., P.N. Reinthal, T. Corley, C. Parish, and J. Ruiz. 2006. Radioisotopic analyzes of potential sources of lead contamination in California condors. Joint Annual Meeting of the Arizona/New Mexico Chapters of the Wildlife Society and the Arizona/New Mexico Chapters of the American Fisheries Society, February 2-4, 2006. Invited Symposium on Applications of Stable and Radiogenic Isotopes in Wildlife and Fisheries.

Church, M. 2006. Sources of lead exposure in California condors. M.S. thesis, University of California, Santa Cruz, California.

Fry, D. M., J. R. and Maurer. 2003. Assessment of lead contamination sources exposing California condors. Unpublished report, California Department of Fish and Game.

Fry, D. M. 2004. Analysis of lead in California condor feathers: determination of exposure and depuration during feather growth. Unpublished report, California Department of Fish and Game.

Hunt, G., W. Burnham, C. Parish, K. Burnham, B. Mutch, and J. Lindsay-Oaks. 2006. Bullet fragments in deer remains: implications for lead exposure in avian species. *Wildlife Society Bulletin* 34:168-171.

Hunt, W. G., C. N. Parish, S. G. Farry, T. G. Lord, and R. Sieg. In Press. Movements of introduced California condors in Arizona in relation to lead exposure. *In California Condors in the 21st Century* (A. Mee, L. S. Hall, and J. Grantham, Eds.). Special Publication of the American Ornithologists Union and Nuttall Ornithological Club.

Janssen, D. L., J. E. Oosterhuis, J. L. Allen, M. P. Anderson, D. G. Kelts, and S. N. Wiemeyer. 1986. Lead poisoning in free ranging California condors. *Journal of the American Veterinary Medicine Association* 189:1115-1117.

Meretsky, V.J., N.F.R. Snyder, S.R. Beissinger, D.A. Clendenen, and J.W. Wiley. 2000. Demography of the California condor: implications for reestablishment. *Conservation Biology* 14:957-967.

Parish, C. N., W. R. Heinrich, and W. G. Hunt. In Press. Five years of lead exposure among California condors released in Arizona. *In California Condors in the 21st Century* (A. Mee, L. S. Hall, and J. Grantham, Eds.), Special Publication of the American Ornithologists' Union and Nuttall Ornithological Club.

Pattee, O. H., P. H. Bloom, J. M. Scott, and M. R. Smith. 1990. Lead hazards within the range of the California condor. *Condor* 92:931-937.

Redig, P., N. Artz, R. Byrne, B. Heinrich, F. Gill, J. Grantham, R. Jurek, S. Lamson, B. Palmer, R. Patterson, W. Sanborn, S. Seymour, R. Sieg, and M. Wallace. 2003. A report from the California condor lead exposure reduction steering committee. Unpublished report to the U.S. Fish and Wildlife Service, California Condor Recovery Team.

Responsive Management. 2003. Hunters' knowledge of and attitudes towards threats to California condors. Unpublished report, D.J. Case and Associates, Mishawaka, Indiana.

Responsive Management. 2003a. Utah hunters' knowledge of and attitudes towards threats to California condors. Unpublished report, D.J. Case and Associates, Mishawaka, Indiana.

Snyder, N. F. R., and H. F. Snyder. 1989. Biology and conservation of the California condor. *Current Ornithology* 6:175-267.

Snyder, N. and H. Snyder. 2000. *The California condor: a saga of natural history and conservation*. Academic Press. San Diego, California. 410 pp.

Southwest Condor Review Team (Austin, W., K. Day, S. Franklin, J. Humphrey, W. G. Hunt, C. Parish, R. Sieg, and K. Sullivan). 2007. A Review of the Second Five Years of the California Condor Reintroduction Program in the Southwest. Report prepared for the

California Condor Recovery Team and U.S. Fish and Wildlife Service, April 2007.
Available at
http://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/CA_Condor/2nd_5YR-07_Final.pdf.

Sullivan, K., R. Sieg, and C. Parish. In Press. Arizona's Efforts to Reduce Lead Exposure in California Condors. *In California Condors in the 21st Century* (A. Mee, L. S. Hall, and J. Grantham, Eds.), Special Publication of the American Ornithologists' Union and Nuttall Ornithological Club.

U.S. Fish and Wildlife Service. 1996a. Endangered and threatened wildlife and plants: establishment of a nonessential experimental population of California condors in northern Arizona. Federal Register 61:54044-54060.

U.S. Fish and Wildlife Service. 1996b. California condor recovery plan. Third Edition. Portland, Oregon. 62 pp.

Wiemeyer, S. N., J. M. Scott, M. P. Anderson, P. H. Bloom, and C. J. Stafford. 1988. Environmental contaminants in California condors. *Journal of Wildlife Management* 52:238-247.

Woods, C. P., W. R. Heinrich, C. N. Parish, S. C. Farry, and T. J. Cade. In Press. Survival and reproduction of California condors released in Arizona. *In California Condors in the 21st Century* (A. Mee, L. S. Hall, and J. Grantham, Eds.). Special Publication of the American Ornithologists' Union and Nuttall Ornithological Club.