



# The Peregrine Fund

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World Center for Birds of Prey

## THE PEREGRINE FUND'S POSITION ON AMMUNITION USE AND LEAD EXPOSURE OF CONDORS IN ARIZONA

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The Peregrine Fund has been releasing California Condors into the wilds of northern Arizona since 1996 in an effort to establish a self-sustaining population that contributes to national recovery goals for condors. A flock of 50-60 free-ranging individuals now inhabits the area extending from the Grand Canyon to the Zion region of southern Utah. As these scavengers have become more adept at finding and consuming animal remains, the incidence of lead exposure has increased to the point where lead poisoning is now the most frequent cause of death. This is troubling because the naturally slow rate of reproduction in condors renders their populations highly sensitive to even small increases in mortality. Our research has revealed the principal source to be lead from spent bullets and shotgun pellets in the remains of gun-killed animals. Evidence includes (1) associations of lead-exposed condors with deer hunting areas, (2) temporal correlations of high exposure with deer hunting seasons, (3) a radiographic study of rifle bullet fragmentation showing the presence of hundreds of lead particles in whole deer and gut piles, and (4) >15 confirmed cases showing the presence of bullet fragments or shotgun pellets in condor digestive systems. Continued blood testing reveals that the majority of individual condors are exposed each year (90% in 2006), many of which require treatment (70% in 2006); five individuals died of lead poisoning in 2006. Lead exposure is currently so prevalent that the population cannot maintain itself by natural reproduction unless lead incidence in the wild food supply is greatly reduced.

The Arizona Game and Fish Department responded to these findings by first advising hunters about the dangers of lead to wildlife and then offering two free boxes of non-lead ammunition to hunters drawing deer permits in the condor range. The program, now in its third year, has met with considerable success; 60-65% of about 3600 hunters participated in 2005 and 2006, with a corresponding 50% reduction in the incidence of lead-contaminated deer remains. Although encouraging, these rates of hunter participation were insufficient to reduce lead exposure rates among condors. However, we remain optimistic that these rates can be significantly reduced in the future. Hunter reaction to the alternative ammunition has been encouraging. A questionnaire revealed that 93% of hunters who accepted the offer regarded the pure copper expanding bullets as comparable or superior to lead-based bullets, indicating that an eventual abandonment of lead bullets for big game hunting would not reduce the quality of the

hunting experience.<sup>1</sup> Furthermore, several articles in hunting magazines during the past few years regard copper bullets as preferable to lead bullets.

At the time of this writing, the proof of lead poisoning from rifle bullets as a primary factor in condor population survival is just now reaching the scientific community and is far too new to have been disseminated in popular hunting literature. And yet the majority of deer hunters willingly cooperated with the non-lead bullet program in Arizona. We believe this response reflects their concern for conservation and a desire for active participation in wildlife management. To improve participation in the free non-lead ammunition program the Arizona Game and Fish Department is increasing its efforts to inform hunters of the dangers of lead to wildlife and the importance of choosing safer alternatives. The Peregrine Fund is engaging hunters through hunting organizations in Arizona by presenting slideshows and answering questions. In these meetings, once the issues are explained, we usually encounter open acceptance and eagerness to help with the non-lead program. We believe that increasing numbers of hunters, when provided with factual information, will choose non-lead ammunition. This effort is focused on all hunters who use lead bullets, including big game, varmint, and other hunters.

Given the extensive evidence that lead exposure from spent ammunition is harmful to wildlife it now appears obvious that responsible society will end the use of lead for hunting throughout much of the world. Accumulating scientific evidence indicates that lead has even more serious consequences than formerly believed. The majority of rifle-killed animal remains left in the field and consumed by scavengers are now known to contain considerable quantities of lead. In addition to condors, the affected species for which data exist include bald eagles, golden eagles, ravens, mourning doves, upland game birds, and more than 50 other species of birds known to be poisoned by ingesting spent bullet fragments and shotgun pellets found in the environment. Indeed, carcasses contain so much lead that hunters must seriously consider whether human consumers of deer meat are not also at risk. Several investigations have found elevated lead levels in subsistence hunter families, a serious issue considering that even small amounts of lead exposure in developing children may substantially and permanently reduce cognitive ability. No one would knowingly want to so expose their families, but right now investigations into rates and consequences of human ingestion of spent ammunition are still in progress.

The Peregrine Fund will continue its efforts to establish a condor population in Arizona and will work collaboratively with agencies, hunters, and other conservationists to insure that the condor becomes self-sustaining. We trust in the long-standing tradition of hunters to take a proactive role in wildlife conservation and management, and we recognize the beneficial role they already have in helping condors thrive in the wild. We invite other hunters and hunting organizations to join with us in providing factual information to their hunting constituency that best serves the interest of hunters and the wildlife they help conserve and manage.

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<sup>1</sup> One should not assume that copper is nontoxic to condors. However, copper is far less toxic than lead, and more importantly, the pure copper expanding bullets we have tested do not tend to fragment, but generally pass intact through the target animal. Such bullets are therefore essentially harmless to scavengers. Standard hunting bullets have thin copper jackets, and pieces of the latter do tend to remain within carcasses and gut piles. As expected, high levels of copper have been detected in a few dead condors, but copper has not been identified as a lethal agent. An experimental study of a closely-related species, the Turkey Vulture, showed little effect of copper ingestion.