

# California condor still threatened by human activities

January 20 2012

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A recently released scientific paper authored by San Diego Zoo Institute for Conservation Research scientists shows the leading causes of death of the endangered California condor in the wild are human influenced, with lead poisoning being the primary factor in juvenile and adult birds.

The study documents the deaths of wild California condors at all release sites—California, Arizona and Baja, California, Mexico—from the inception of the reintroduction program in October 1992 through December 2009. The study found that 70 percent (53 out of 76) of [condor](#) mortalities can be attributed to human influences.

For nestlings (birds younger than 6 months of age), 73 percent of known mortalities can be attributed to the consumption of microtrash, such as bottle caps and small pieces of broken glass, plastic and metal. Lead toxicosis, from the ingestion of spent ammunition, was the most important factor in juvenile condor mortality (birds between the age of 6 months and 5 years) and was the only significant cause of death in adults (birds 6 years old and older). Eight of 23 birds that died of [lead poisoning](#) still had metal or lead fragments in their gastrointestinal tract. Condor 422 was in the wild for six months and was exposed to lead four times prior to its death.

"The most important mortality factor for the combined free-ranging populations was lead toxicosis," states the report. "The evidence that the principal source of exposure is lead ammunition is overwhelming and includes the recovery of lead shotgun pellets and bullet fragments from

the upper GI tract where lead is readily absorbed and tissue lead isotope signatures that match lead ammunition and not other sources of lead."

In addition, the paper cites exposures to lead that coincide with deer hunting season, the condor's foraging activity in popular hunting areas, high numbers of lead-bullet fragments in hunter-killed carcasses and lack of other lead sources in condor habitat.

"Although lead toxicosis from spent ammunition still threatens the survival of the California condor, one of our most iconic species, the good news is that solutions are available in the form of nontoxic ammunition," said Bruce Rideout, DVM, PhD, Dipl. ACVP, [San Diego Zoo](#) Institute for Conservation Research director of wildlife disease laboratories. "We can make this a win-win situation if we choose to."

Additional human-influenced deaths included 11 power-line collisions or electrocution. However, no fatal collisions or electrocutions have occurred since 2007, when power-pole aversion training was introduced for condors being prepared for release into the wild. During the study period, four birds died by gunshot and one by arrow. Two birds ingested zinc-core pennies, which led to zinc poisoning.

Parent feeding of microtrash to nestlings was the most important cause of death in this age class. Biologists have been clearing nest caves of trash prior to hatching and periodically throughout the nestling stage to reduce this problem. It has helped, but the cause of this behavior by adult [birds](#) remains open to speculation. One belief is the parents are feeding what they believe to be bone or mollusk-shell fragments—but is actually trash—as a calcium source for the chicks. Others suggest it is a substitute for small stones and sticks that aid digestion. Polished bone fragments are now being provided as a calcium source for adults to feed to nestlings.

Provided by Zoological Society of San Diego

Citation: California condor still threatened by human activities (2012, January 20) retrieved 18 April 2024 from <https://phys.org/news/2012-01-california-condor-threatened-human.html>

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