Condors with greater independence have higher lead levels

December 5 2014

Lead poisoning remains a major threat that is preventing recovery of naturally sustaining populations of condors in the wild, according to UC Davis researcher Terra Kelly. Credit: Terra Kelly/UC Davis photo

As California condors return from the brink of extinction, the threat of lead poisoning persists, particularly for older, more independent condors,

according to a study led by the University of California, Davis.

Researchers evaluated blood lead levels in wild condors over the past 15 years where the condor, the largest flying bird in North America, has been re-introduced to its previous range from Southern California to the Central Coast.

The study, published this month in the journal *Conservation Biology*, found that 62 to 91 percent of condors sampled in a given year in California between 1997 and 2011 had elevated levels of lead in their blood. This was despite the regular provision of food at release sites, given to help transition young birds to the wild. The supplemental food has reduced foraging by the population on natural food sources that may be contaminated with lead ammunition.

The investigators found that older condors are more likely to be exposed to higher levels of lead—especially those birds that are gaining independence from food provision and flying farther from sites where the supplemental food is available to them.

"Condors benefit from carcasses left behind by hunters and ranchers," said principal investigator Christine Johnson, a professor at the UC Davis School of Veterinary Medicine. "However, these benefits are only realized if nonlead ammunition is used.

Researchers also compared patterns of blood lead levels before and after a 2008 ban on using lead ammunition for most hunting activities in the state's condor range. They found that while blood lead levels were lower at times in certain places, overall blood lead levels were not reduced in the population between 2009 and 2011. Condors exhibited greater independence during the post-ban period, which resulted in greater risk of lead exposure.

"Until we can ensure natural food sources are free from lead ammunition for the population, lead poisoning will threaten recovery of naturally sustaining populations of condors in the wild," said lead author Terra Kelly, an epidemiologist at the Wildlife Health Center in the UC Davis School of Veterinary Medicine.

California condors, perhaps best known for their nearly 10-foot wingspan, are an endangered species. In the 1980s, there were just 21 of them in the wild. Through captive breeding and reintroduction, there are now more than 100 California condors flying in the wild statewide.

"Hunters and ranchers have a long-standing tradition of taking a proactive role in wildlife conservation and management," said Johnson. "Hunters and ranchers who use nonlead ammunition have made an invaluable contribution to the health of scavenging wildlife by providing critically important food sources for scavengers."

The study was conducted in collaboration with the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, National Park Service, Ventana Wildlife Society, and U.S. Geological Survey.

Previous studies conducted over the past few decades have highlighted lead-based ammunition as the main source of lead poisoning in condors. Lead bullets shatter upon impact into an animal. Condors that feed on remains from that carcass ingest the tiny lead fragments and become poisoned. Because condors scavenge communally, a single contaminated carcass can poison several condors.

In 2013, California Gov. Jerry Brown signed more comprehensive legislation that expands the previous ban statewide. The expanded law, to be phased in by 2019, requires nonlead ammunition for the take of any wildlife for any purpose. More information about the regulations and nonlead ammunition can be found at the following websites:

- California Department of Fish and Wildlife: Fishing and Hunting Regulations
- California Department of Fish and Wildlife: Nonlead Ammunition
- Hunting with Non-lead

More information: "Spatiotemporal Patterns and Risk Factors for Lead Exposure in Endangered California Condors during 15 Years of Reintroduction." *Conservation Biology* DOI: 10.1111/cobi.12342

Provided by UC Davis