

From: _____
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Subject: Lead levels in the blood of California condors - disappointing (but not unexpected) results of Ridley-Tree
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The U. S. Fish and Wildlife Service has presented to the California Fish and Game Commission the results of monitoring lead levels in the blood of California condors in 2010, 2011 and 2012. The report is:

U. S. Fish and Wildlife Service. 2013. California condor blood levels (2010-2012): southern and central California populations. Hopper Mountain National Wildlife Refuge (12 April 2013).

The report, coupled with two earlier papers on blood monitoring in 2008 and 2009, provides more or less raw data on the results of the blood sampling and, as the report states in a number of place, *"should not be interpreted as an evaluation of the Ridley-Tree Condor Preservation Act"* of 2008. The report does not mention any other ongoing or planned investigations that might provide additional information useful in such an evaluation.

In a cover memo to the California Fish and Game Commission, the report preparers summarized their findings to date in a question: *"Why are condors in California continuing to be exposed to lead at similar rates before and after the adoption of the Ridley-Tree Condor Protection Act and the banning of lead ammunition for big game and nongame species in the condor zone?"*

A good question: why do the results from recent years make the situation look just as bad for condors now as was the case before passage and implementation of Ridley-Tree? I think the answer has to be that, however well-intentioned was Ridley-Tree, it did not address the real issue of how condors were acquiring the major share of lead in their systems.

Despite much publicity to the contrary, Ridley-Tree did not ban the use of lead ammunition in the range of the condor. It addressed only the hunting of "big game" (i.e., deer and, to some extent, wild pigs) and coyotes (under some circumstances; the legislation is not clear as to the intent in that case). Fifty years (1930-1980) of condor observation and study - plus another 100 years or so of miscellaneous records - had shown before the drafting of the Ridley-Tree legislation that deer made up a relatively small part of the condors' diet, and that little lead would be available to condors from unretrieved deer kills ("crippling loss") or from "gut piles" (the offal left after field-dressing killed deer). Wild pigs were not a potential source of food during most of the condors' history. Although their populations were expanding in range and greatly increasing in numbers in the latter years of the 20th century, through 1980 pigs were seldom recorded as a condor food source. Coyotes are found throughout the condors' range, and have been fed on opportunistically when available, but they were never more than an incidental source of condor food.

Results to date bear out the historical record that deer hunting would not be a principal source of lead received by condors. In three of the five years of analyzing blood, the percent of samples showing high blood levels is almost identical between the "hunting season" (August-December) and the "non-hunting season" (January-July). In the other two years, the "hunting season" percentages show somewhat (but probably not statistically significantly)

higher levels of lead. If deer carcasses and gut piles were major contributors of the lead found in condor blood, spring and summer lead levels should be much lower than during and shortly after the deer hunting season.

The Ridley-Tree law was drafted by people who had little understanding of condor food habits and foraging behavior. Implementation was not "bad" - it has resulted in a lot less lead being left in the central California environment - but it was likely a waste of five years as far as solving the condors' lead-related problems.

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So, what happens now? The U. S. Fish and Wildlife Service report acknowledged the lack of success of Ridley-Tree to date. In the cover memo transmitting the report to the Fish and Game Commission, the Service noted how expensive and time-consuming is the current program, and how the dangers of lead might actually increase in the future as released condors expand their range and use less and less "safe" food offered by their caretakers. They also acknowledged that there might be other sources of lead contamination. They did not acknowledge any ongoing or planned studies to further investigate the problem, nor do they make any recommendations about the future.

The only obvious response to date has been the passage this year of California Assembly Bill No. 711, that expands on Ridley-Tree by prohibiting *"the use of nonlead ammunition for the taking of all wildlife, including game animals, game birds, nongame birds, and nongame animals, with any firearm."* The new law also expands the lead prohibition to the entire state, not just the "condor counties." I think this is a good law, in that it should significantly decrease the amount of lead accumulating in the California environment. It may help reduce lead levels in condors by further reducing the chances that a condor might get a lethal dose of lead from a jackrabbit or other small mammal but, like Ridley-Tree, maybe not. The law doesn't ban lead ammunition in the State, and doesn't address non-wildlife related uses of lead ammunition, like dispatching sick and injured livestock. For the condor program specifically, it is one more case of applying a "solution" before the source of the problem has been identified.

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Perhaps there is more condor and lead research going on behind the scenes than is evident to me and the general public. I hope so, but my discussions with various of the current "condor people" make me doubt it. The new law won't go into effect until 2015, and won't be fully implemented until July 2019. As has been the case with Ridley-Tree, it will be a number of years after that before the effects of the law on condors or other species will become clearly evident. Rather than wait ten more years to see if the current "solution" is "working," I have two interim suggestions.

1. If not already known (and there is no evidence in the literature that it is known), find out what the current crop of condors is eating. As noted in the cover memo to the 2010-2012 report, *"virtually all condors are equipped with VHF telemetry units,"* and *"some condors are equipped with telemetry units."* With that kind of technology, it would seem to me that feeding habits and foraging patterns should be easily detectable. Considering the amount of money being spent to monitor lead levels without knowing the source of the lead, a study specifically geared to find the source of lead (if the source is in condor food) would seem like a relatively inexpensive investment.

2. In addition to being extremely expensive and staff-intensive, the capturing of all condors and subjecting them to chemical chelation exposes them to considerable stress, potential adverse reactions to the treatment, and the potential for injury. The assumption that a certain level of lead in condor blood is lethal is not a valid one, and it may be that many condors

with moderate lead levels would "clean themselves up" without laboratory help. The current standard used as a "point of no return" is the same used by the Centers for Disease Control and Prevention to recommend chelation in lead-poisoned human children. While the 19th and early 20th century naturalists have been proven wrong in believing that vultures can eat anything without harm (supposedly because of their ability to purge harmful substances), clearly there are elements of the digestive systems of carrion-dependent birds that work quite differently than is typical of most birds or mammals. The CDC standard for a human child is likely meaningless for a condor.

The long-term effects of high lead levels on condors in the wild could be easily tested by setting up a control group among the released birds, those birds not captured and handled as often as the others, and not chelated when lead levels in blood reached the danger (to human children) level. Some condors might die from such an experiment, but more condors are being produced now than can be used in ongoing release programs - and it seems unlikely that new releases in other desirable areas (like Oregon) will be permitted until the "lead issue" is resolved. The potential sacrifice of some condors now could clarify how much we really should be worrying about lead, and might make it possible to have a successful condor reestablishment program without the exorbitant costs of the current ones. (There may be socio-political considerations when planning to potentially allow the death of endangered species, but the Federal endangered species legislation provides for "take" in "experimental" populations.)

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At a 1981 meeting before the California Fish and Game Commission, outspoken environmentalist David Brower pronounced that the best way to save the California condors was not by captive propagation, but by getting rid of Los Angeles. I suppose he (and his audience) knew that he was speaking hyperbolically, and that his intent was to convey his belief that there were still many actions that could be taken to make the California environment more hospitable to the condors. He was both right and wrong; there are many things left to do to "save the world," some of which might have benefited a viable wild condor population (getting rid of L.A. possibly not one of them). None of them would have saved the condors at that particular point in their struggle for survival. Similarly, any restrictions on lead in the California environment seem good to me as part of a "save the world" agenda, but I have strong doubts that anything so far implemented or proposed will "save" the condor. If condors are to survive - and reach some self-sustaining population condition - focus needs to shift back to identifying the specific problems the birds are facing.

Background is included on my website: <http://www.condortales.com/leadpoison.html>

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