

# Lead Contamination of Golden Eagles *Aquila chrysaetos* within the Range of the California Condor *Gymnogyps californianus*

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## INTRODUCTION

Lead toxicosis has been identified as the cause of mortality in three California Condors (*Gymnogyps californianus*) and it has been suggested as a reason for the species' recent decline (Wiemeyer *et al.*, in press). Three of four Condors found dead or near death since 1983 had succumbed to lead poisoning (Janssen *et al.* 1986; Wiemeyer *et al.*, in press). Lead bullet fragments were found in the gastrointestinal tract of 2 of the 3 birds that died of lead poisoning. A possible source of these toxic levels of lead is the carrion on which the birds feed, and which may contain bullets or bullet fragments.

We initiated a study to examine the role of lead in the demise of the California Condor through the use of a locally common species, the Golden Eagle (*Aquila chrysaetos*). Since the Golden Eagle and California Condor exist sympatrically and feed on many of the same carrion resources, we selected this species for comparative research. The more similar Turkey Vulture (*Cathartes aura*) was considered but not used, because it is less common, very localized within the Condor's range, and more migratory.

## METHODS

Golden Eagles were captured using pit traps and cannon nets at locations in southern California regularly frequented by Condors. Blood samples were collected between 9 June 1985 and 15 January 1986 and preserved with 0.5 cc formalin to 10 cc blood (Wiemeyer *et al.* 1984). Samples were placed in vials which had been cleaned with nitric acid, and rinsed with hexane and acetone. Lead analysis was completed at the National Wildlife Health Center (NWHC), Madison, Wisconsin. We followed Redig's (1984) conclusion from results of analyses of blood lead in Bald Eagles (*Haliaeetus leucocephalus*) that levels greater than 2 ppm indicated exposure to environmental lead, eagles with levels greater than 0.6 were clinically affected, and blood lead levels greater than 1 ppm indicated acute lead toxicity.

## RESULTS

We captured a total of 66 Golden Eagles. Sixty-four (97%) of these birds were caught during the hunting season when contact with a lead-contaminated carcass may be most likely. 39% (26) of the eagles sampled had blood lead levels greater than 0.2 ppm indicating exposure to environmental lead, 5% (3) could be considered clinically ill (greater than 0.6 ppm), and one bird showed exposure levels indicative of acute lead toxicosis (greater than 1.0 ppm). The blood lead level for the 66 samples ranged from none detected to 1.27 ppm with an arithmetic mean of 0.23 ppm.

The data suggest that lead is an environmental contaminant in food of scavengers within the Condor range. Future research should focus on Golden Eagles, Turkey Vultures, Common Ravens (*Corvus corax*), and Bald Eagles. Attempts should be made to establish relationships among blood lead levels, time of year and sources of lead.

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