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Lead poisoning in a Mississippi Sandhill Crane.—Lead poisoning from the ingestion of spent lead shot is well documented in waterfowl (Sanderson and Bellrose 1986) and has been reported in other wetland (Locke et al. 1991, Windingstad et al. 1984) and upland (Hunter and Rosen 1965, Locke and Bagley 1967) avian species. Ingested fishing weights have been implicated in lead poisoning of Trumpeter Swans (*Cygnus buccinator*) (Blus et al. 1989), Common Loons (*Gavia immer*) (Locke et al. 1982, Franson and Cliplef 1992, Pokras and Chafel 1992), Mute Swans (*Cygnus olor*) (Birkhead 1982), and Sandhill Cranes (*Grus canadensis*) (Windingstad et al. 1984). The significance of lead poisoning as a mortality factor in avian species other than waterfowl is probably underestimated (Locke and Friend 1992), and any cause of mortality becomes particularly important in species with small population sizes. We report here the first known case of lead poisoning in a Mississippi Sandhill Crane (*Grus canadensis pulla*), a critically endangered subspecies.

The Mississippi Sandhill Crane exists in the wild only in Jackson County, Mississippi, on the Mississippi Sandhill Crane National Wildlife Refuge (refuge) and adjacent private lands. In 1981, a program was initiated to supplement the free-ranging population by releasing Mississippi Sandhill Cranes on the refuge that were hatched and raised at the Patuxent Wildlife Research Center (Zwank and Derrickson 1981). As of 1 October 1993, 207 captive-reared cranes had been released, and the total wild population was 130 birds. One of the captive-reared cranes was found dead on the refuge on 27 February 1992, about 10 weeks after its release. Necropsy examination at the National Wildlife Health Research Center revealed the carcass to be that of a juvenile female weighing 2940 g. It was in poor flesh with an absence of fat reserves and markedly reduced pectoral musculature. No lesions of infectious disease or trauma were noted. The gall bladder was 2 cm in diameter by 4 cm in length and contained dark green bile. No food was present in the esophagus, proventriculus, or gizzard. The gizzard lining was dark brown and roughened, and within its contents were several small stones and a soft gray metal object. The object was triangular (8 × 8 × 10 mm), nearly flat, and easily deformed by pressure with a sharp instrument (Fig. 1).

Tissues were collected from the crane for laboratory testing using standard techniques in histopathology, microbiology, virology, and parasitology. Duplicate liver samples were homogenized, dried, and ashed in preparation for lead analysis by atomic absorption spectrophotometry according to Locke et al. (1991). The mean recovery rate for standard

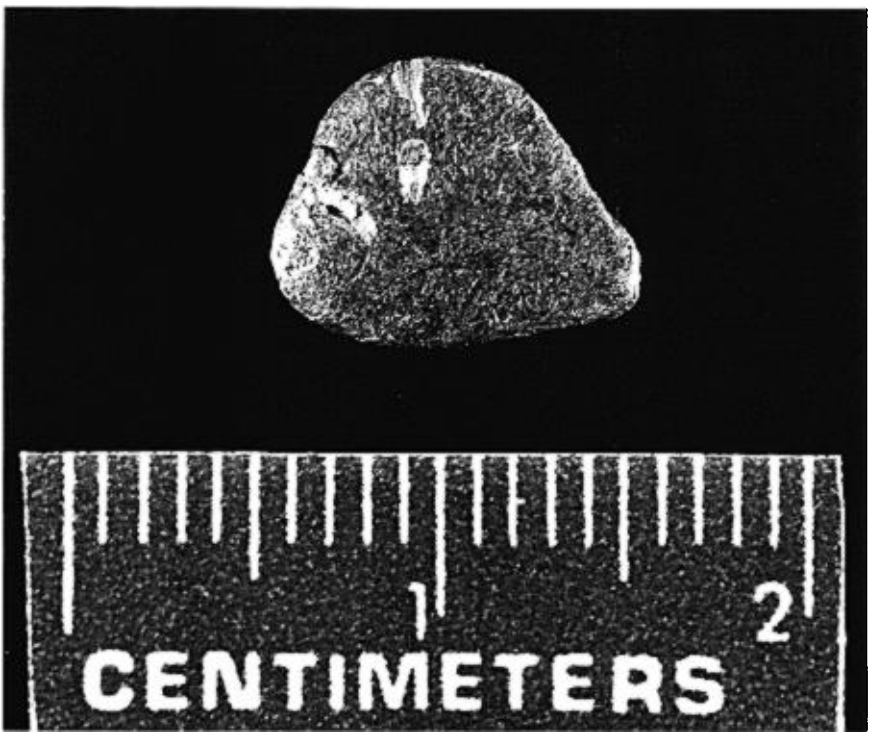

FIG. 1. Soft metallic object found in the gizzard of a Mississippi Sandhill Crane (*Grus canadensis pulla*) that died of lead poisoning. Marks in the upper left quadrant were made by pressure with a pair of shears.

samples spiked with lead was 95%. Liver lead concentrations were 69 and 70 ppm wet weight, well above the 8 ppm wet weight considered consistent with lead intoxication in waterfowl (Friend 1985) and higher than levels previously reported in two lead poisoned Sandhill Cranes (Windingstad et al. 1984). Microscopic examination of tissues revealed hemosiderosis, accumulation of iron-containing pigment, in the liver and spleen. Although not specific for lead poisoning, this finding is consistent with observations in lead poisoned waterfowl (Wobeser 1981). Results of microbiology, parasitology, and virology were negative. A diagnosis of lead poisoning was issued based on gross and microscopic findings, the presence of the metallic object in the gizzard contents, and the high liver lead concentration.

Avian mortality from an acute exposure to metallic lead usually occurs well before 10 weeks have elapsed (Friend 1985, Franson et al. 1986, Pattee et al. 1981, Windingstad et al. 1984). Therefore, we conclude that the Mississippi Sandhill Crane ingested the metallic object, the source and identity of which remain unknown, after its release on the refuge.

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