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Authors: LOCKE, LOUIS N., SHILLINGER, ROBERT B., and JAREED, TERESA

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## SALMONELLOSIS IN PASSERINE BIRDS IN MARYLAND AND WEST VIRGINIA

LOUIS N. LOCKE, U.S. Bureau of Sport Fisheries and Wildlife, Patuxent Wildlife Research Center, Laurel, Maryland, U.S.A. 20810.

ROBERT B. SHILLINGER and TERESA JAREED, Maryland State Board of Agriculture, Animal Health Laboratory, College Park, Maryland, U.S.A. 20742.

*Abstract:* *Salmonella typhimurium* was responsible for a die-off of evening grosbeaks (*Hesperiphona vespertina*) at Elkins, West Virginia, and was isolated from a pine siskin (*Spinus pinus*) collected at the site of a die-off near Baltimore, Maryland.

Salmonellosis has been receiving increased recognition as a cause of mortality among wild birds, particularly among birds concentrated at backyard bird-feeding stations.<sup>1,2,3,5,6,7</sup> This note reports the first record of the disease among evening grosbeaks and in a pine siskin.

### MATERIALS AND METHODS

Dead birds were autopsied and materials from organs or lesions were inoculated onto 5% sheep agar and incubated overnight at 37.5 C. Isolates were identified as *Salmonella typhimurium* by standard bacteriological techniques including Spicer-Edwards serological techniques. Lesions were fixed in 10% formalin for histological study, and sections were stained with either hematoxylin and eosin, Giemsa, or Gram stains.

### Case 1:

On April 6, 1972, Mrs. J. Wetzel, Elkins, West Virginia, reported finding several dead evening grosbeaks in her yard. Upon investigation, West Virginia game biologists R. Kletzly and J. Rieffenberger found children on the neighboring property conducting a ceremony prior to burying dead grosbeaks, and 14 grosbeaks were recovered. They searched an adjoining 50-foot-wide lot which was bordered by a hemlock hedge and recovered an additional 65 dead grosbeaks. One gros-

beak was found perched in a stuporous condition on a branch of the hemlock hedge; this bird subsequently died without exhibiting tremors or other neurological signs. On April 17, the biologists searched the area again and recovered 16 more dead grosbeaks; all these birds were in various stages of decay, and only a few appeared to have died recently. On April 19, U.S. Game Management Agent O. E. Seelye visited the site and found seven additional grosbeaks, all of which appeared to have been dead for about 10 days. A total of 102 dead grosbeaks were recovered during these investigations.

The Wetzels and the adjoining residents are active bird-watchers and maintain backyard feeding trays for birds. Although many species of seed-eating birds were observed in the area throughout the period of the die-off, only the grosbeaks appeared to be involved.

Autopsy examination of seven grosbeaks revealed that the grosbeaks were in fair to good condition with moderate shrinkage of the pectoral muscles. The adipose tissues usually had undergone serous atrophy. The lungs were usually congested and occasionally hemorrhagic. Only one grosbeak, an adult female, had marked enteritis. Another grosbeak, also an adult female, had flakes of what appeared to be urate crystals deposited on the pericardium. None of the birds exhibited any myocardial hemorrhages, and only one had an ecchymotic hemorrhage on the serosa of the gizzard. Gizzard

contents consisted primarily of sunflower seed particles. The brain of one male grosbeak was congested. Bacteriological cultures were made of the livers of three grosbeaks and from the brain of the male bird, and pure cultures of *Salmonella typhimurium* were isolated from all organs cultured.

#### Case 2:

On April 20, 1972, Captain Robert B. Morris, Maryland State Police, submitted a dead adult female pine siskin which he had caught in moribund condition at his backyard bird-feeding station. He reported that almost daily deaths of individual house sparrows (*Passer domesticus*), goldfinches (*Spinus tristis*) and pine siskins had occurred at his feeding station during April. Sick birds usually appeared weak and depressed, feathers were ruffled, and there was usually a marked diarrhea. A few birds exhibited neurological signs before death — ataxia, weak flight, tumbling over.

The siskin was found to be in good flesh with moderate deposits of fat; lungs, liver, heart, and air sacs appeared normal. However, there was a marked enteritis, but no coccidial forms were found. Bacteriological cultures were made of the heart blood, liver, and small intestinal contents, and pure cultures of *S. typhimurium* were isolated from all three. Although only one bird was submitted for diagnostic studies, it is possible that salmonellosis was responsible for the other observed losses.

There is increasing evidence that a backyard bird-feeding station can serve as a nidus for serious disease outbreaks among wild birds. Outbreaks of salmonellosis have occurred among passerines concentrated around these feeding stations in various parts of the world, as have outbreaks of trichomoniasis in mourning doves.<sup>1</sup> Proper disease management dictates that the role of such feeding stations should be considered in any attempt to control epizootics among wild birds.

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