

SOME OBSERVATIONS OF DISEASES OCCURRING IN SASKATCHEWAN WILDLIFE

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Disease is one feature of the natural history of all wild animal species. The wildlife diagnostic service of the Department of Veterinary Pathology at the University of Saskatchewan receives and examines many wild animal species each year. For example, in 1987, approximately 650 wildlife specimens were examined. These come from government wildlife agencies, particularly Saskatchewan Parks, Recreation and Culture (SPRC), the Canadian Wildlife Service (CWS), the Department of Renewable Resources of the Northwest Territories, and from concerned individuals. These specimens provide a unique and important window on the occurrence and significance of animal diseases in nature in western and northern Canada. This article is written to share some observations about wildlife diseases in Saskatchewan with the Saskatchewan Natural History Society and other *Blue Jay* readers.

Salmonellosis in House Sparrows

During the week before Christmas 1987, dead House Sparrows were noticed around bird feeders in the Town of Dundurn and in the Massey Place area of the City of Saskatoon. Lloyd and Margaret Mitchell and their neighbors in Dundurn became alarmed when sparrows continued to die, and they brought four specimens to the College. On the same day, Mary Obrodovich of Saskatoon brought in several specimens from her neighborhood in Saskatoon. All birds suffered from the same disease: infection with a genus of bacteria known as *Salmonella*. This disease is called "salmonellosis" and it occurs sporadically in House Sparrows and

other passerine birds congregated at feeders in winter. We have seen it in other years in Saskatoon and it has been reported elsewhere in Canada, the United States and Europe.¹⁻³ It is not clear from where the infection comes or why outbreaks occur. However, it is most likely that some individual birds carry the infection in a mild form and act as sources of infection for other birds. Outbreaks are usually reported in the winter months and factors such as crowding around feeders, cold weather and poor body condition probably combine to make birds more susceptible to infection. Outbreaks occur under these circumstances. In addition to House Sparrows, Cardinals, Tree Sparrows, White-throated Sparrows and Dark-eyed Juncos have been involved in winter feeder-associated outbreaks. We do not know how many birds died in the outbreaks at Dundurn and Saskatoon. Somewhere between 50 and 100 had died in the yards of three house lots in Dundurn up to the end of January 1988. Two to four sparrows died each week in the Obrodovich yard in Saskatoon from the week preceding Christmas to 13 February when they were last contacted.

Starving (?) Great Blue Herons

In late August and September of 1987, we received a rather large number of young-of-the-year Great Blue Herons that were either found dead or so weak and emaciated that they died shortly after capture. Eight such herons were received and examined. All were emaciated and had digestive tracts that were empty except for numerous aquatic beetle remains in the

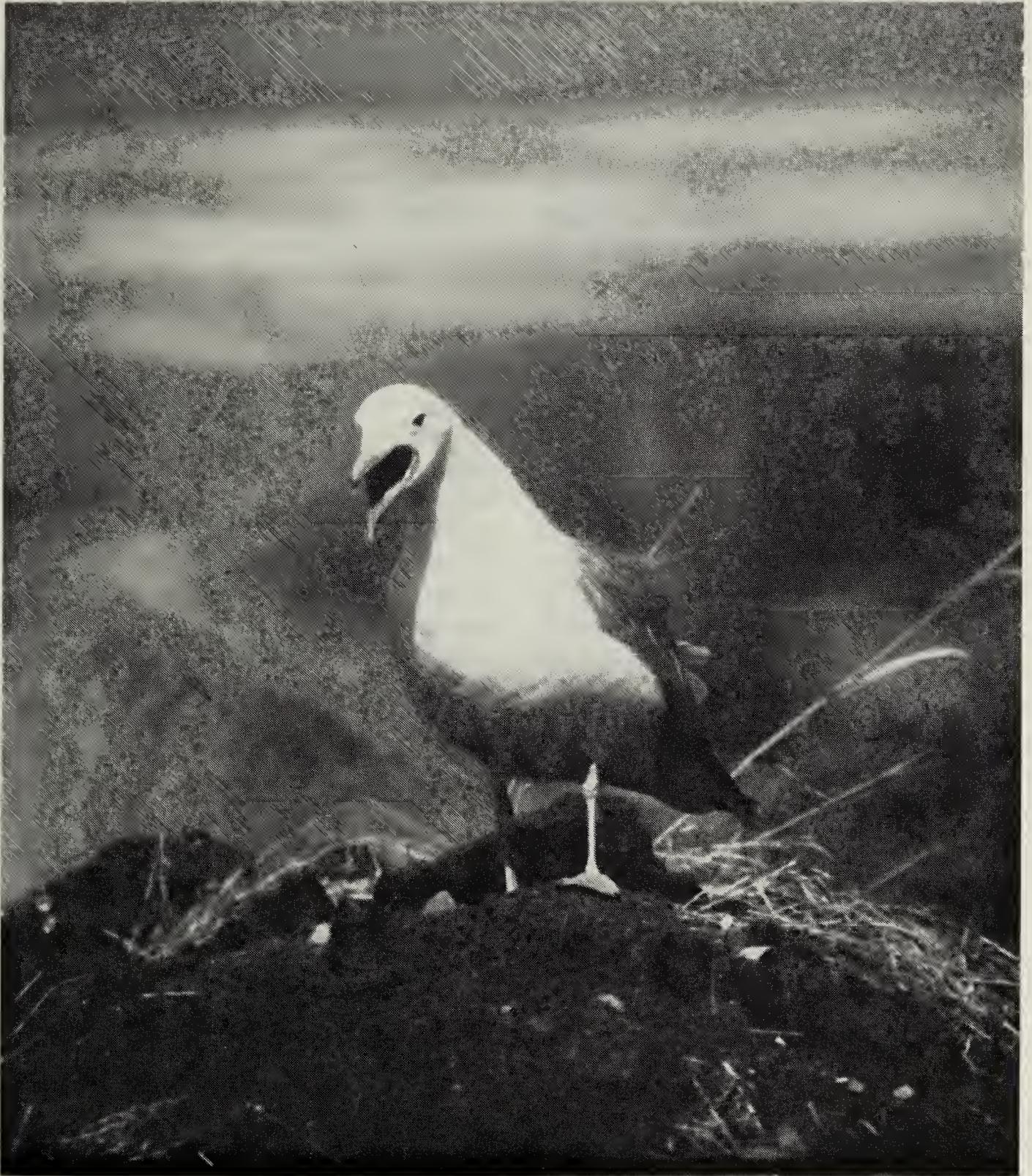


Great Blue Heron at Waskesiu Lake

Juhachi Asai

gizzards. There were no other signs of disease. In a few cases, tissue levels of mercury and lead were measured, but no toxic levels were found. In addition to these dead herons, the Wild Bird Ward of our

Veterinary Teaching Hospital received several weak and emaciated young herons that were revived with feeding and released. It was assumed that all these birds were individuals that have failed to learn



California Gull

Ken Lumbis

to forage for themselves and had starved after being abandoned by their parents at the end of the normal rearing season. The only evidence for this was apparent starvation in young of the year at a time that generally corresponded to the end of the rearing season. Young buteo hawks and owls appear in a similar condition in the early fall. Other possible explanations would be welcomed in correspondence on this matter.

Pesticide Poisoning in Herring and California Gulls

Two die-offs of gulls due to pesticide poisoning occurred in the late spring and early summer of 1986. The first was in Prince Albert. On 12-14 May, gulls of both species were found in convulsions or dead at the municipal landfill and also were reported from urban locations. The estimated total mortality was 60 birds. Four birds were examined here, two of each

species, submitted by SPRC. All were adults in good body condition and there were no visible abnormalities. Poisoning was suspected and assistance sought with chemical analyses from the Animal Pathology Laboratory of Agriculture Canada in Saskatoon (the veterinary college does not have the necessary equipment or budget to perform these tests). The result was a diagnosis of poisoning by an organophosphate pesticide known by the trade name Dasanit and by the chemical name fensulfothion. It is used during seeding and is available only for use in commercial market gardens. The source of the chemical in this incident was not determined. The second poisoning incident occurred on the outskirts of Moose Jaw on 20 June. California Gulls were found in convulsions in a field that had been sprayed within the previous few hours with the carbamate pesticide Furadan (carbofuran) to combat grasshoppers. Estimated total mortality was 45 birds. SPRC submitted 5 gulls from this die-off for examination. All were in good body con-

dition and there were no visible abnormalities. All had gullets and stomachs filled with grasshoppers. Once again, Agriculture Canada confirmed toxic levels of carbofuran in the grasshoppers taken from the gullets of the dead birds.

Pesticide poisoning has been identified by this lab only once before in Saskatchewan, that case being a die-off of Lapland Longspurs that fed on carbofuran granules in a newly treated field in the spring of 1984. A possible case of poisoning of Cedar Waxwings with malathion is awaiting chemical analysis. It is not known whether these recognized incidents of wild bird mortality due to pesticides represent the "tip of the iceberg" or the "iceberg" itself. Most such mortality likely goes unrecognized and unrecorded.²

Sudden Death in Wild Geese During Fall Migration

Each fall since 1983 there has been recognized a severe disease in wild geese at



Figure 1. 170 geese from Mildren Lake, Saskatchewan that died of necrotizing enteritis in October 1987.

a few locations in Saskatchewan and Manitoba. The first occurrence was at Antelope Lake, near Cabri, Saskatchewan and killed an estimated 800 birds including Canada, Lesser Snow, White-fronted and Ross' geese. Other outbreaks occurred at Soda and Potts Lakes near Yorkton (at least 350 geese of four species) and at Whitewater Lake in sw Manitoba (number of dead not counted, probably over 1000, mostly Lesser Snow and Canada geese). On 5 October 1987, the lab received 16 dead Lesser Snow and White-fronted geese which SPRC personnel had found on Mildren Lake near Dinsmore, Saskatchewan. On 7 October, the CWS did a complete pick-up of carcasses at this lake and submitted 170 geese to us for examination and disposal (Fig. 1). The disease also occurred for the second time on Antelope Lake in 1987 (120-150 dead geese counted on 19 October); one diseased goose was received from Galloway Bay on the South Saskatchewan River north of Antelope Lake. The disease that killed these geese is called "necrotizing enteritis" because it causes death of tissue (necrosis) in the intestines. It is not known what causes this disease, but it resembles very closely a disease in poultry and in domestic mammals caused by toxins produced by the bacterium *Clostridium perfringens* when this organism becomes over-abundant within the intestinal tract. In domestic animals, and also in humans, the disease usually occurs following some abrupt change in diet. We can suppose that wild geese arriving in Saskatchewan in the fall from the arctic sedge meadows, where they have spent the summer, do indeed experience a sudden change in diet as they begin to feed on cereal grains. However, the disease seems to occur at certain locations and not at others. The disease affects geese of all species that use the same body of water for roosting. Thus, the cause may be a complicated one involving several factors that act together to result in conditions that favour overgrowth of the toxin-producing bacterium.

This appears to be a new disease of wild geese that now occurs regularly and thus it merits serious investigation as to cause and possible control.⁴

These four examples of disease occurrences each involved a number of birds and each serves as an example of a different kind of disease. Most specimens received are individual animals found dead in the wild. Over time, these individual cases provide a great deal of information about diseases in wildlife. Most disease occurrences probably go undetected; they are either not recognized by people, or the dead and dying are quickly removed by scavengers and no evidence remains. For example, the first outbreak of necrotizing enteritis in geese on Antelope Lake was not recognized until February of the following year when personnel of Ducks Unlimited Canada visited the lake to place nesting structures for geese. At that time, they noted large numbers of dead geese frozen into the ice. Over 800 dead geese had been present on the lake since the previous November. All naturalists, be they amateur or professional, can play active roles in helping to detect wildlife diseases by bringing disease occurrences to the attention of local wildlife agencies or the University Department of Veterinary Pathology.

¹ FICHTEL, C.C. 1978. A *Salmonella* outbreak in wild songbirds. N. Am. Bird Bander 3:146-148.

² LEIGHTON, F.A., G.A. WOBESER and H.G. WHITNEY 1987. Cross-Canada Disease Report: Pesticide poisoning in gulls. Can. Vet. J. 28:108-109.

³ WOBESER, G.A. and M.C. FINLAYSON 1969. *Salmonella typhimurium* infection in House Sparrows. Archives Environ. Health. 19:882-884.

⁴ WOBESER, G.A. and D.J. RAINNIE 1987. Epizootic necrotic enteritis in wild geese. J. Wildl. Disease 23:376-385.