

# SPOTTED SANDPIPERS AS POSSIBLE INDICATORS OF MERCURY CONTAMINATION OF RIVERS

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Islands in the North Saskatchewan River above and below Edmonton were investigated during the summer of 1970 for the purpose of finding a suitable species of aquatic or shore bird to serve as an indicator of the mercury contamination of that river. Although Common Goldeneyes, which were among the four most common species observed, would have been preferred as indicators because of their known diet of aquatic invertebrates (Kortright, *The ducks, geese and swans of North America*, Stockpole Co., Harrisburg and Wildl. Mgt. Inst., Washington, 1962), no nests of this species were found. Of all the aquatic and shore birds observed, Spotted Sandpipers (*Actitis macularia*) were most frequently seen and their nests were easily found. Observations made elsewhere in North America have shown that Spotted Sandpipers feed chiefly on aquatic and terrestrial insects and occasionally on small fish (Bent, *Life histories of North American shore birds*, Part I, U.S. Natl. Mus. Bull. 42, New York, 1927), but the proportions of the two groups of insects to one another within their diet appears to be unknown. For that reason 36 specimens were collected along the North Saskatchewan River during the first weeks of July and August, 1970. The project was started during mid-June so no data on food habits are available earlier than that date. Thirty-one of the 36 stomachs analyzed contained food items (Table I). It was interesting to find that terrestrial insects occurred much more frequently than aquatic insects, with weevils constituting the most important food item of the sandpipers' diet. Of the three most frequently occurring insect families, Curculionidae and Hydropsychidae occurred more frequently in July than August, while the Formicidae showed the opposite trend.

Table 1: Percentage occurrence of insect families in stomachs of 31 Spotted Sandpipers collected along the North Saskatchewan River, Alberta, in 1970.

	First week of July	First week of Aug.	July and Aug.
	15	16	31
<b>Coleoptera</b>			
Curculionidae	94	47	71
Haliplidae†	25	40	32
Carabidae‡	31	27	29
Scarabaeidae	13	7	10
Dytiscidae†	13	0	6
Cerambycidae	6	0	3
Tenebrionidae	6	0	3
<b>Hymenoptera</b>			
Formicidae	44	80	61
Vespidae	0	7	3
Ichneumonidae	0	7	3
Teuthrinidae	6	0	3
<b>Trichoptera</b>			
Hydropsychidae*	56	27	42
<b>Hemiptera</b>			
Cicadellidae	25	13	19
Pentatomidae	0	7	3
Lygaeidae	0	7	3
<b>Plecoptera</b>			
Perlidae*	31	0	16
<b>Diptera</b>			
Dolichopodidae‡	6	27	16
Tachinidae‡	6	13	10
Empididae * or ‡	13	0	6
Culicidae	13	0	6
Sciomyzidae*	0	7	3
Stratiomyidae*	0	7	3
Chironomidae*	6	0	3
Sarcophagidae	6	0	3
<b>Odonata</b>			
Libellulidae*	6	13	10
Lestidae*	6	7	6
<b>Orthoptera</b>			
Acrididae	13	7	10

† aquatic adult

\* aquatic larva

‡ shore insect

One egg from each of 33 sandpiper nests was collected on river islands in June and July. Fourteen eggs were from upstream of Edmonton, between Huggett and Devon, and 19 eggs were collected downstream from Edmonton between Vinca Bridge and Duvernay. The eggs were analyzed for residues of mercury in order to determine whether they could be used as indicators of mercury contamination sources located at Edmonton and/or downstream from that city. The mean and 95 per cent confidence interval of mercury residue levels in the 14 sandpiper eggs collected upstream from Edmonton were  $0.09 \pm 0.03$  ppm, as compared to  $0.28 \pm 0.06$  ppm in the 19 sandpiper

eggs collected downstream from the city. The difference between those levels is statistically significant and suggests a source of mercury contamination at and/or downstream of Edmonton. As the sandpiper's diet consists of both terrestrial and aquatic insects, the source of mercury pollution could not be further identified.

Although the Spotted Sandpiper does not appear to be a suitable indicator of mercury contamination of the North Saskatchewan River, we obtained a little more knowledge of its food habits and its occurrence along the river. The authors thank Mr. I. Kavanagh for his assistance with the identification of insects.

## RECENT BIRD NOTES OF INTEREST FOR CHURCHILL, MANITOBA

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Shortly after the publication of any local annotated list of birds a number of unusual birds are sure to appear in that locality. The following records include seven species not previously reported for Churchill, three of which are first records for Manitoba. Nearly all were obtained at Churchill at the time the recently published *Birds of the Churchill region, Manitoba* (Jehl and Smith, 1970) was in the hands of the printer. Judging by these additions, the Churchill region still offers ornithological surprises.

The senior author, who was at Churchill studying birds from May 5 to July 23, 1970, looks upon Churchill as the Point Pelee of the north. Birders who have spent any time at Point Pelee National Park on Lake Ontario will appreciate this remark, for the Point Pelee area attracts swarms of migrant birds in both spring and fall. Churchill is now a Mecca for birders who wish to see a lot of birds that are difficult to find anywhere in southern Canada. It also offers a chance to see birds that are rare on the continent.

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### SPECIES LIST

Harlequin Duck *Histrionicus histrionicus*

A male in breeding plumage was observed by Pittaway and I. Newton on the Churchill River at Cape Mer July 11, 1970. The bird was studied closely for half an hour with binoculars and a Bausch and Lomb 15 x zoom-telescope, at times as close as 200 feet. It was observed swimming in flight, and sitting on exposed rocks. It was last seen by Pittaway on July 14.

This is the first record for Churchill. As pointed out by Manning (1961):