

INGESTED LEAD SHOT IN SASKATCHEWAN DUCKS

by DAVID A. HARVEY*

The lead poisoning problem in waterfowl has increased greatly since the early part of this century. In the United States, it has been estimated that about 4% of the birds in the Mississippi Flyway fall victim to this sickness each year.¹ No previous study has apparently been carried out in Saskatchewan on the lead poisoning problem. A substitute for lead is being sought.² While lead shot is being phased out in the United States, it may be many years before it is banned in Canada. Even after a ban, the tons of lead on the bottoms of potholes, lakes and rivers will take many years to dissolve or sink. Meanwhile, waterfowl will continue to swallow spent shot, mistaking it for grit or seeds.³ Most shot takes about 40 days (depending on the size) to completely dissolve once in the gizzard of a bird.³ The number of shot a bird can ingest before serious effects are noticeable varies with the health of the bird and its diet. Occasionally, one pellet may cause death.¹ Waterfowl affected by lead poisoning show signs of emaciation and weakness. The poisoning also reduces the bird's ability to reproduce even when it does not cause death. Ducks containing ingested lead are usually safe for human consumption due to the small amount of lead involved.

To obtain some information regarding the potential seriousness of the

lead poisoning problem in southern Saskatchewan, a study was undertaken in seven areas. The samples used for analysis were 123 gizzards of ducks, shot between October 15 and December 1, 1973. The gizzards were kept frozen until January 30, 1974 when they were x-rayed at the Kelsey Institute of Applied Arts and Sciences, Saskatoon with the assistance of Mrs. M. Asher. Lead pellets showed in the x-rays as whitish circles up to 3 mm in diameter (dark spots in Fig. 1). The number of pellets observed was recorded and gizzards with pellets were kept frozen.

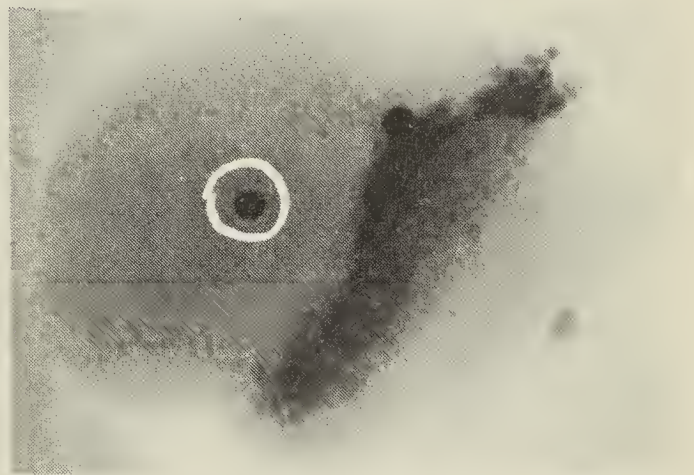


Figure 1 — X-ray of two pellets in a duck gizzard. Circled pellet was ingested, other was shot into the bird in killing it.

Because the ducks were collected by shotgun, some pellets may have entered the gizzards when the duck was shot. To separate these, the gizzards were washed and examined carefully for punctures made by pellets. Such holes were easily located. Pellets which had been shot in could then be

*Wadena, Saskatchewan.

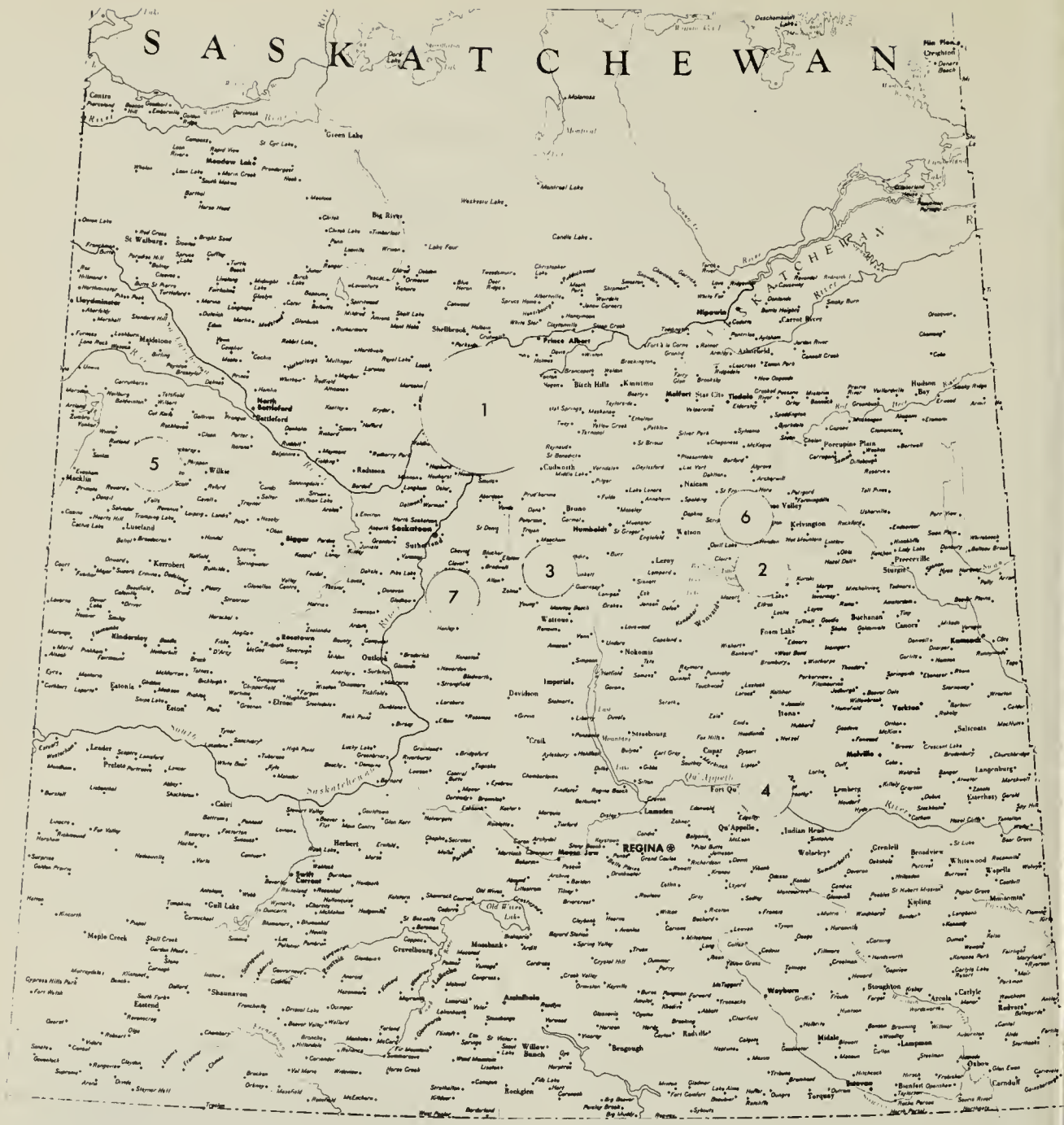


Fig. 2. Locations of ducks collected for ingested lead shot study: 1. Duck Lake (24-mile radius); 2. Wadena (10-mile radius); 3. Viscount; 4. Fort Qu'Appelle; 5. Unity; 6. Fosston; and 7. Dundurn.

found by dissecting the gizzard along the line of entry. Ingested pellets were often more difficult to locate because they were mixed with grit and partially digested vegetation and because ingested pellets were sometimes partially dissolved.

The seven collection areas are shown in Figure 2. Three gizzards were unidentified as to origin. Each area had a radius of 10 miles except for the Duck Lake area where the radius was 24 miles. The larger area

was an amalgamation of two small collection areas, each with small sample sizes. The areas established in the study are: (1) Duck Lake; (2) Wadena, (3) Viscount, (4) Fort Qu'Appelle, (5) Unity, (6) Fosston and (7) Dundurn. The 15 Duck Lake gizzards were collected from C. Worth, Hague and Tway. The 9 samples collected from the Fosston area originated from Ponass Lake (5 miles west of Fosston) and Hendri. The 49 Dundurn gizzards came from Indi Lake.

Table 1. Comparison of observed and ingested lead pellets in Saskatchewan ducks. (Observed/ingested in one gizzard.)

Area	Mallard	Pintail	Wigeon	Total	
6. Fosston	1/0, 2/1, 1/1	1/1	1/1	—	6/4
6. Hendon	1/0	—	—	—	1/0
6. Ponass Lake	1/0, 2/2, 1/1, 2/1	—	—	—	6/4
7. Indi Lake	1/0, 1/1, 1/1	—	—	1/1	4/3

Area	Mallard	Pintail	Wigeon	Canvasback	Total
TOTAL	14/8	1/1	1/1	1/1	17/11
No. gizzards	11	1	1	1	14

The total number of gizzards was 123. Table 1 shows ingested lead pellets in the 10 ducks. Eleven pellets were observed in the 10 gizzards. Of these, 9 had been ingested in 9 gizzards. Only one gizzard (10%) was found with two ingested pellets.

Ingested shot was found in gizzards from only two of the eight study areas. Of 39 gizzards from the Fosston area, seven contained ingested pellets — 18% of that sample. Of 49 gizzards from Indi Lake, 3 (6%) contained ingested pellets (Table 1). Eight percent of all gizzards had ingested shot.

The 106 Mallard gizzards made up 87% of the sample. There were four gizzards from Lesser Scaup, three from American Wigeon, two from Shovelers and one each from Pintail, Redhead, Canvasback, Gadwall and Blue-winged Teal. Of the ducks containing ingested shot, 70% were Mallards.

The information shows that the frequency of birds with ingested shot is higher in the more easterly study area. This may be due to heavier hunting pressure in the Fosston area. Another factor may be a difference in bottom types of the lakes. A soft bottom will allow spent shot to sink out of the reach of feeding ducks whereas pellets in wetlands with firm bottoms may take longer to sink.

Of 106 Mallards collected, 6.6% contained ingested lead. This is more significant than with the other species because of the large sample. One Wigeon out of three contained ingested shot and the only Canvasback and Pintail collected had ingested shot.

It is interesting to note that 8.1% of all ducks contained ingested lead. A similar survey done in the United States on a much larger scale showed that 6.7% contained ingested shot.¹ That study included 20 species of waterfowl of which Mallards were most susceptible to lead poisoning because of their food habits.¹

One pellet was found in 90% of the infected gizzards. This is enough number 6 shot to kill up to 12% of adult male Mallards but less of other age and sex groups. Two number 6 shot caused 44% of mortality among adult male Mallards.¹

The above results indicate that less than 1% of the duck population in Saskatchewan may die from ingested pellets. So, although lead poisoning is present in Saskatchewan ducks, it appears not to be a major cause of mortality. A similar study should be carried out in more heavily hunted areas of the province with a much larger sample size. These study areas should include Kindersley, Last

Mountain Lake and the Quill Lakes. With hunting pressure constantly increasing and if lead shot continues to be used, the mortality of Saskatchewan ducks due to lead poisoning can only increase. Monitoring this mortality factor is inexpensive and should be initiated on a large scale. Further studies may aid in preventing this cause of waterfowl mortality from becoming more serious.

¹BELLROSE, F. C., Jr. 1964. *Spent shot and lead poisoning*. Waterfowl Tomorrow. United States Gov't. Printing Office, Washington, 479-485.

²FLANEGAN, GENE. 1970. *Lead poisoning problem solved?* Ducks Unlimited Quarterly 33(1), Chicago, 16 p.

³KIMBALL, W. H., and Z. A. MUNIR. 1971. *The corrosion of lead shot in a simulated waterfowl gizzard*, Jour. Wildl. Mgmt. 35: 360-365

⁴TENNYSON, JON. 1971. *The quest for a solution*. Ducks Unlimited Quarterly 34(2), Chicago, p.

⁵TRAINER, D. O., and R. A. HUNT. 1965. *Lead poisoning of waterfowl in Wisconsin*, Jour. Wildl. Mgmt. 29: 95-103.



THE COMMON DANDELION

by MARIE BARTON*

“Oh, dandelion, yellow as gold,
What do you do all day?”

So read my prescribed grade-three reader in my early years. My pre-school granddaughter with the imagination of a poet shouts, “Oh, look at those dandelions sitting on the clothesline!” I look and see a row of eye-catching goldfinches, eaters of dandelion seeds. They eat the flowers, too. A color food?

Children still make chains from the hollow, milky stalks of these flowers that bloom from May to September. They tell fortunes by blowing the cluster of white-plumed, beaked seeds from their platform until all have

taken to the air. When the disks of the composite gleam with its packed golden ray florets, the wild bee gathers the pollen for bee bread and the nectar for honey.

“If only they bloomed at Christmas,” sighs my retired, Swedish neighbor in the suburbs. He loves these ‘u starts’ in his lawn less than do the children, the goldfinches and the bees. But he has lived enough years to remember back to the homestead days. Then he helped his grandfather carry water from the well to a carefully fenced, cultivated patch of the precious vegetables that he calls in his mother tongue by the name of *dent-de-lion*, meaning lion’s tooth —

*42 Echo Bay,
Winnipeg, Manitoba
R2J 2A3