

RECENT SASKATCHEWAN BANDING OF THE DOUBLE-CRESTED CORMORANT

by **C. Stuart Houston**, 863 University Drive, Saskatoon

The Double-crested Cormorant, *Phalacrocorax auritus*, has yielded the highest recovery rate of any non-game species banded in Saskatchewan. From 4838 cormorants banded here through 1969, there have been no fewer than 688 recoveries.

The results of all Saskatchewan cormorant banding through 1949 have already been mapped. These are summarized, together with my own banding herewith reported, in Table 1. Since the publication of the articles about Patrick's and Lyon and McArthur's banding, I have had the opportunity to check Xerox copies of the original banding schedules kindly supplied by the U.S. banding office at Patuxent. The present table represents the corrected figures for the numbers of cormorants banded.

The accompanying maps show the recoveries of all remaining Saskatchewan banding, all of it done by the writer since 1953. Perusal of my mapped recoveries (figs. 1-4) shows interesting and unexpected differences in the areas where birds from different lakes have been recovered. Although the samples are not large, the contrast is rather striking. Cormorants from Dore Lake flew south along the Mississippi River valley, while only about one-third of the Last Mountain birds travelled that far east. Cormorants from the other three lakes stayed well

west of the Mississippi except for single Quill Lake and Redberry Lake birds that strayed east into Alabama the following spring, and in the third winter, respectively. It strengthens the hypothesis that Crane Lake cormorants keep further to the south and west when it is noted that five of 17 Crane Lake recoveries were from the Rio Grande valley, including one cormorant caught in a fish net on the Mexican side at Guerrero, Tamaulipas. The 671 recoveries from the other lakes included none at all from the Rio Grande and only one south of it, a Quill Lake bird killed in a fish net at Don Martin dam, Coahuila, Mexico.

On the other hand, the present results are considerably different from those of earlier years, so time also plays a part. The Quill Lake cormorants of the 1930's tended to migrate almost exclusively along the Mississippi, a more easterly route than that taken by later birds. Proportionately more of the Redberry Lake cormorants in the mid-1930's moved along the Mississippi valley than has been the case since 1955. Last Mountain cormorants prior to 1932 migrated predominantly through Missouri-Arkansas-Louisiana, whereas since 1953 their route has been through Kansas - Oklahoma - Texas, one full state width or more than 300 miles to the west. Earlier Illinois reports record

Table 1. Recoveries of Saskatchewan-banded Cormorants.

Bander	Lake	Years Banded	Recov.	% Recov	
R. & A. C. Lloyd	Last Mountain	1923-28	246	43	17.5%
J. A. M. Patrick	Quill (Big, Little)	1930-32	615	81	13.2%
Fred G. Bard	Big Quill	1931-37	489	81	16.6%
Fred G. Bard	Last Mountain	1934-49	1548	282	18.2%
Lyon & McArthur	Redberry	1936-37	153	29	19.0%
C. S. Houston	Last Mountain	1953-56	503	61	12.1%
"	Dore	1956	356	29	8.2%
"	Little Quill	1956-57	119	14	11.8%
"	Crane	1960-61	312	17	5.5%
"	Redberry	1955-69	430	31	7.2%
			4838	688	14.3%



Fig. 1. Recoveries of Double-crested Cormorants banded at Last Mountain Lake (L) by C. Stuart Houston, 1953, 1954, 1955, 1956. Note: squares represent direct recoveries (same year); triangles, January 1 to June 30 of following year; circles, more than one year old.

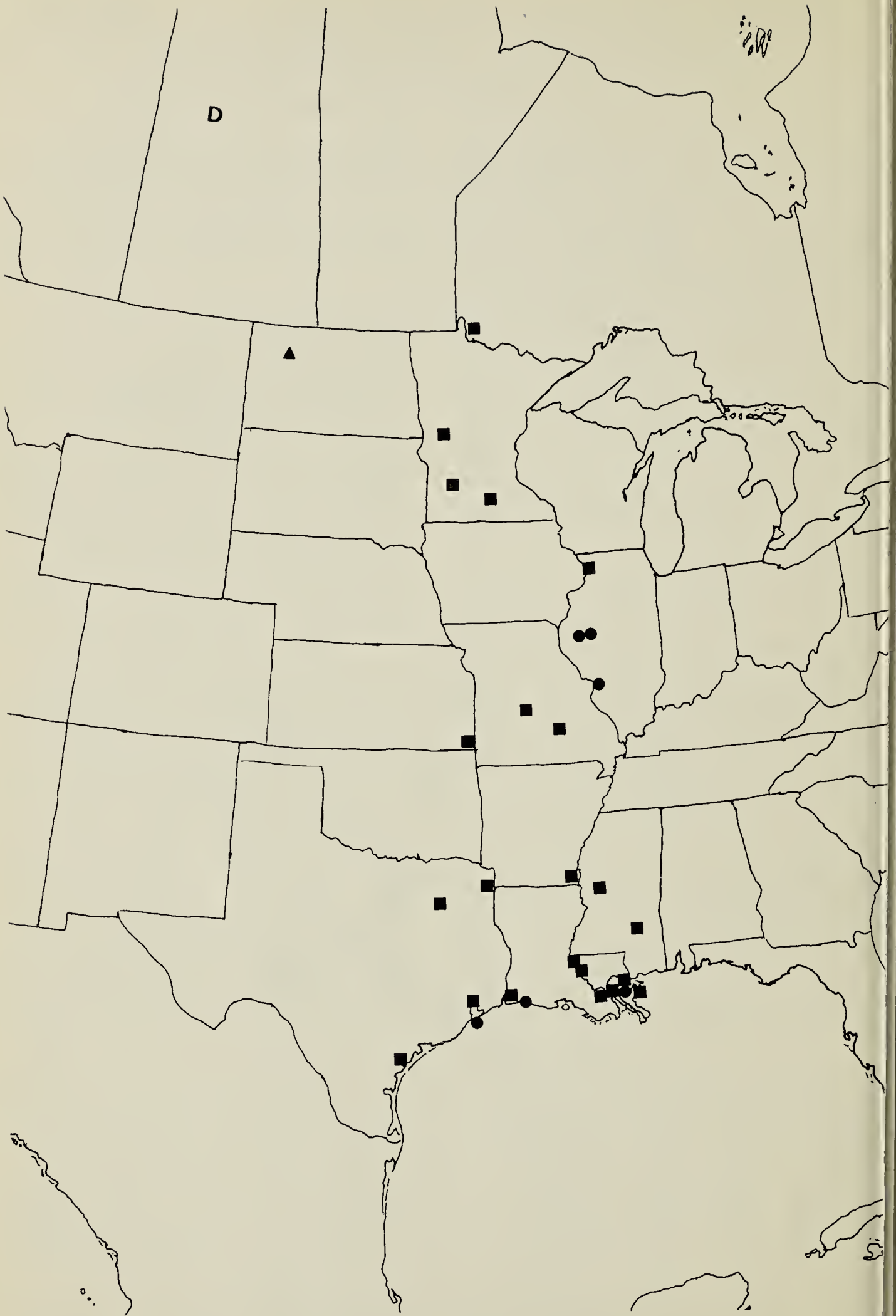


Fig. 2. Recoveries of Double-crested Cormorants banded at Dore Lake (D) by C. Stuart Houston, 1956. Note: squares represent direct recoveries (same year); triangles, January 1 to June 30 of following year; circles, more than one year old.



Fig. 3. Recoveries of Double-crested Cormorants banded at Redberry Lake (R) by C. Stuart Houston, 1955, 1956, 1958, 1961, 1963, 1964, 1965, 1966, 1967, 1968, 1969. Note: squares represent direct recoveries (same year); triangles, January 1 to June 30 of following year; circles, more than one year old.

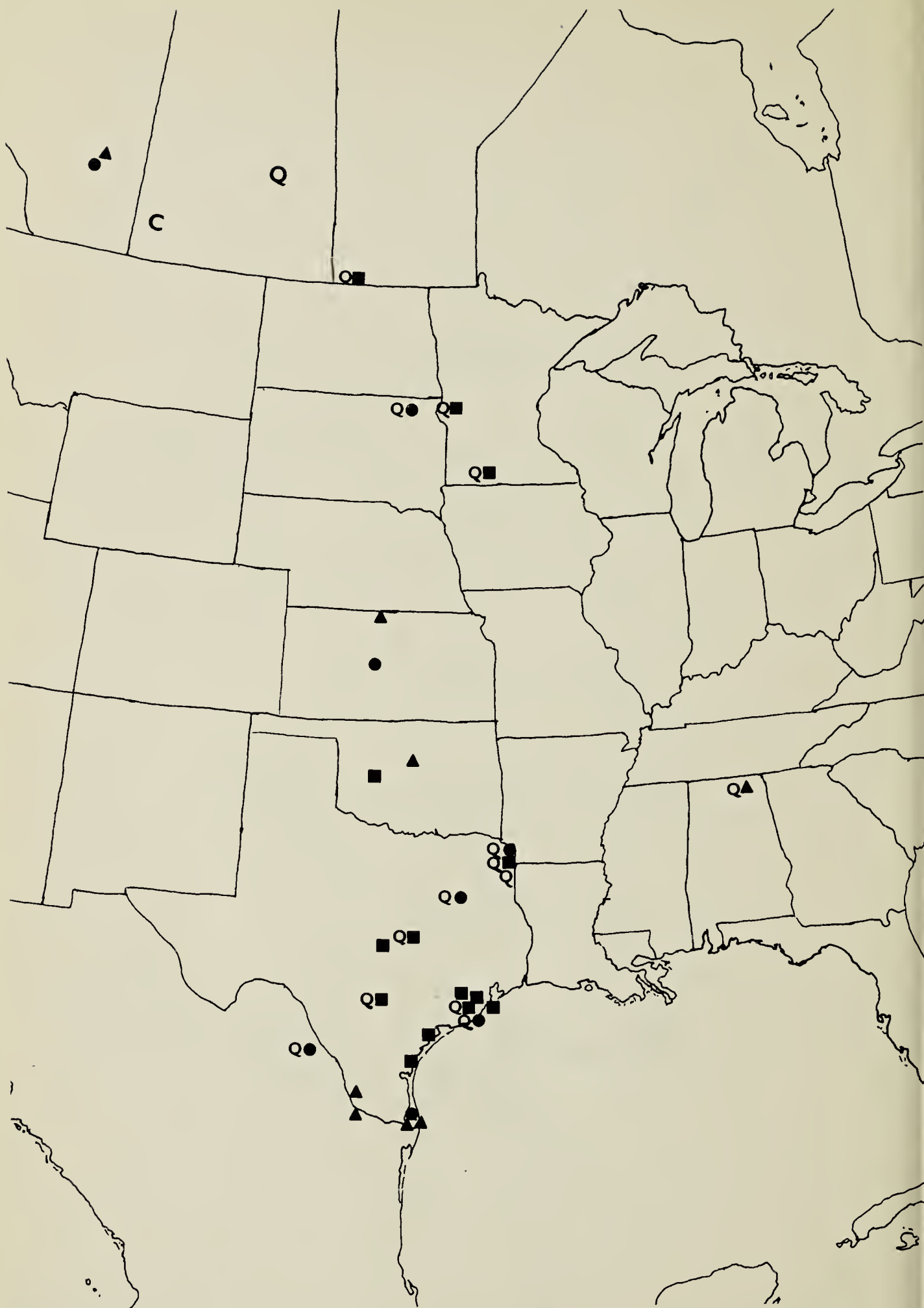


Fig. 4. Recoveries of Double-crested Cormorants banded at Crane Lake (C) by C. Stuart Houston, 1960, 1961 and at Little Quill Lake, 1956, 1957. Note: squares represent direct recoveries (same year); triangles, January 1 to June 30 of following year; circles, more than one year old. Unmarked squares, triangles and circles indicate Crane Lake birds, whereas a small Q to the left of one of these symbols indicates a Quill Lake bird.

familiar with the species, having seen more cormorant recoveries from all these Saskatchewan lakes than they do today, thereby substantiating the rapid decline in the numbers of cormorants visiting the Illinois valley after 1950 (Mills, Starrett and Bellrose, 1966).

It is therefore likely that the differences among the four maps reproduced here may be due not only to a difference in the lake of origin, but to changes with time; my banding at lakes from which cormorants moved east to the Mississippi was before 1957, and the Crane and Redberry Lakes banding largely since then.

The gradual decline in the percentage of recoveries over the years seems due partially to decreased shooting pressures on this "non-game species." For birds banded before 1830, the percentage of recovered birds reported as "shot" was 80% (70/87), whereas for those banded since 1960 it has been only 27% (12/33). From the maps, one sees that a smaller proportion are now killed in their southward passage, while a relatively larger percentage are recovered on their wintering

grounds in Texas. Since band recoveries result only from an interaction between birds and humans, it may be that as cormorants now migrate further west through areas of lesser human population density, they are less likely to be shot or found dead. The problem is further aggravated by an apparent increase in public apathy resulting in fewer bands being reported.

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BARROW'S GOLDENEYE IN MANITOBA

by **David R. M. Hatch**, Oak Lake, Manitoba

Manitoba is situated midway between the two major breeding areas in North America of Barrow's Goldeneye (*Bucephala islandica*), yet there have been only a few sight records of the species in this province and no specimens have been confirmed as collected in Manitoba. To help substantiate the occurrence of this species in Manitoba, all available records are presented in this article.

According to Godfrey (1966:71), Barrow's Goldeneye breeds "in widely separated areas: from southern Alaska and southern Yukon south to eastern Washington and California . . . also in Labrador, southwestern Greenland, and Iceland", but no reference is made to its presence in Manitoba. The A.O.U. *Check-list* (1957) also omits

reference to its occurrence in Manitoba. In a review of Barrow's Goldeneye in Saskatchewan, Nero (1965:127) indicated that the species may have been overlooked on the eastern prairies. Two "possible records" of Barrow's Goldeneye in Saskatchewan were cited. Both were of adult males: one observed on April 6, 1956, at Morse by John M. Nelson and one shot on October 12, 1964, on Pasqua Lake in the Qu'Appelle River system by Jamie Young. There is no correlation of these reports with the Manitoba records.

Godfrey did not accept the records (pers. corres. to R. W. Nero, April 14, 1967) ascribed to R. H. Hunter by Seton (1886:328) and Thompson (1891:483). Hunter's records from