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NORTH DAKOTA STATE GAME AND FISH DEPARTMENT

PITTMAN-ROBERTSON DIVISION

PROJECT 7-R

AERIAL SURVEY TOWNSHIP AREAS

H. R. Morgan, Game and Fish Commissioner

Submitted by  
Wilford L. Miller  
Field Biologist  
Bismarck, North Dakota  
May, 1954

## AERIAL SURVEY TOWNSHIP AREAS

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Field Biologist  
Pittman-Robertson Division  
May, 1954

### INTRODUCTION

In the year 1946, two townships of 36 square miles each were selected for experimental work in aerial censusing. The primary objective was to devise a technique for obtaining complete counts of upland game birds on limited areas during the winter months.

The aerial survey proved to be very satisfactory when snow conditions are right. All available cover must be well filled with snow, with very few bare spots in fields or other parts of the area. The birds tend to congregate on such bare places where it is very difficult to see them from the plane.

In 1951 a total of 40 townships were laid out as census plots in different parts of the state. In 1952 six new townships were added in the better pheasant areas in the southeastern and southwestern counties. Two townships were also relocated in order to give a more representative coverage to that region.

It is planned to census the townships in the heaviest pheasant areas each year if snow conditions are favorable. Other townships will be covered every two or three years.

### PROCEDURE

The censusing is done as soon as possible after a fresh snowfall, when cover is well filled with snow, and before the wind has caused bare spots in the field.

Using a 125 horsepower Super Cub, the pilot and observer will cover one tier of section while flying in one direction, usually east and west, zig-zagging back and forth to take in all patches of cover or areas that may have game birds. The observer records in the proper section of the map all species of wildlife seen, thus facilitating exact locations if necessary. Type of cover is also recorded.

### RESULTS

Snow conditions for aerial survey work were very poor throughout the winter of 1953-54. As a result only 17 townships were completed. Conditions in the townships in the southeast were not entirely satisfactory so the counts in them may be low. This may also be true of other areas where there had been no previous snow to concentrate the birds.

Results are tabulated for all years during which the work has been done. The data for the experimental townships of Roundtop and Sydney (Nos. 30-31) in Stutsman County are also given separately. Snow conditions were especially poor in these two townships.

AERIAL SURVEY TOWNSHIP AREAS - MARCH - 1954

Area No.	Township	Range	County
1	161	98	Divide
2	161	91	Burke
3	161	85	Renville
4	161	80	Bottineau
5	159	74	Bottineau
6	159	67	Towner
7	160	59	Cavalier
8	160	53	Pembina
9	155	100	Williams
10	153	91	Mountrail
11	153	86	Ward
12	154	80	McHenry
13	153	73	Pierce
14	155	65	Ramsey
15	153	61	Ramsey
16	153	54	Grand Forks
17	147	98	McKenzie
18	144	93	Dunn
19	145	86	Mercer
20	148	80	McLean
21	147	75	Sheridan
22	145	67	Foster
23	146	60	Griggs
24	146	53	Traill
25	139	105	Golden Valley
26*	138	94	Stark
27	140	88	Morton
28	137	83	Morton
29	140	76	Burleigh
30	142	66	Stutsman
31	138	64	Stutsman
32	138	52	Cass
33*	135	102	Slope
34	130	97	Adams
35	134	92	Hettinger
36	133	85	Grant
37	132	75	Emmons
38	130	67	McIntosh
39	130 & 131	62 & 63	Dickey
40	132	52	Richland
41	129 & 130	48 & 49	Richland
42	129	55	Sargent
43	129	61	Dickey
44	129	92	Adams
45	131 & 132	99 & 100	Bowman
46	134	96	Hettinger

\* Changed from 1951

Specials

Russell Area	159	80	McHenry
S. E. Sandhills	134	53	Ransom
S. E. Sandhills	135	50	Richland

AERIAL SURVEY 1954 - MARCH 13 - 16

Township No. 18

Pheasants - 20  
Sharptails - 12

Township No. 19

Pheasants - 56  
Sharptails - 25  
Cottontails - 3

Township No. 25

Pheasants - 77  
Deer - 3  
Antelope - 25  
Coyote - 1  
Short-eared owl - 1

Township No. 26

Pheasants - 179  
Deer - 9

Township No. 27

Pheasants - 6  
Sharptails - 13

Township No. 28

Pheasants - 13  
Sharptails - 14  
Deer - 10  
Crow - 1

Township No. 30

Pinnates - 4  
Sharptails - 41  
Deer - 11  
Red Fox - 2  
Jackrabbits - 1

Township No. 31

Pinnates - 30  
Deer - 6  
Huns - 2  
Jackrabbits - 8  
Hawks - 2  
Crows - 1

Township No. 33

Pheasants - 1  
Mule Deer - 15  
Magpies - 34  
Crows - 1  
Golden Eagles - 2

Township No. 34

Pheasants - 1,111  
Mule deer - 15  
Cottontails - 4  
Red Fox - 1  
Hawks - 4

Township No. 35

Pheasants - 621  
Magpies - 1  
Crows - 2  
Hawks - 7  
Owls - 1

Township No. 36

Pheasants - 184  
Sharptails - 58  
Mule deer - 5  
Jackrabbits - 1  
Magpies - 3  
Crows - 7

Township No. 39

Pheasants - 121  
Sharptails - 1  
Deer - 3  
Red Fox - 4  
Jackrabbits - 3  
Cottontails - 2  
Huns - 2  
Crows - 27  
Horned Owls - 3  
Snowy Owls - 2

Township No. 42

Pheasants - 375  
Huns - 2  
Jackrabbits - 4  
Cottontails - 2  
Hawks - 5  
Crows - 13  
Snowy Owls - 2

Township No. 44

Pheasants - 108  
Eagles - 1  
Hawks - 1

Township No. 45

Pheasants - 832  
Jackrabbits - 1  
Cottontails - 1  
Eagles - 2  
Hawks - 3  
Owls - 2

Township No. 46

Pheasants - 173  
Sharptails - 4  
Mule deer - 8  
Magpies - 2  
Hawks - 2

AERIAL SURVEY COMPARISON 1951 - 1952 - 1953 - 1954

Area No.	Pheasants				Grouse				Huns				Deer			
	1951	1952	1953	1954	1951	1952	1953	1954	1951	1952	1953	1954	1951	1952	1953	1954
18	*	*	*	20	-	-	-	12	-	-	-	0	-	-	-	0
19	-	-	-	56	-	-	-	25	-	-	-	0	-	-	-	0
25	-	-	-	77	-	-	-	0	-	-	-	0	-	-	-	3
26	-	-	-	179	-	-	-	0	-	-	-	0	-	-	-	9
27	48	10	-	6	11	30	-	13	35	0	-	0	0	0	-	0
28	-	-	-	13	-	-	-	14	-	-	-	0	-	-	-	10
30	0	0	-	0	107	25	-	45	0	0	-	0	69	69	-	11
31	52	31	-	0	72	0	-	30	68	15	-	2	3	5	-	6
33	-	-	-	1	-	-	-	0	-	-	-	0	-	-	-	15
34	863	1062	-	1111	0	10	-	0	0	0	-	0	0	14	-	15
35	179	520	879	621	0	6	2	0	8	28	7	0	0	0	0	0
36	258	189	194	184	23	62	8	58	0	0	0	0	0	0	0	5
38	7	0	-	-	0	0	-	-	11	0	-	-	0	0	-	-
39	181	230	151	121	0	0	11	1	0	8	0	2	0	5	0	3
40	76	115	29	-	6	0	0	-	0	21	0	-	1	0	0	-
41	-	278	165	-	-	0	0	-	-	5	4	-	-	0	0	-
42	-	162	56	375	-	0	0	0	-	41	8	2	-	0	10	0
43	-	439	502	-	-	0	0	-	-	14	5	-	-	0	0	-
44	-	128	295	108	-	1	6	0	-	10	0	0	-	0	0	0
45	-	-	-	832	-	-	-	0	-	-	-	0	-	-	-	0
46	-	-	-	173	-	-	-	4	-	-	-	0	-	-	-	8

\* Omissions indicate that count was not made that year.

Sydney Township - No. 31

	<u>1946</u>	<u>1948</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>
Pheasants	423	147	82	52	31	Not	0*
Pinnated Grouse	22	18	0	48	0	Taken	30
Sharptailed Grouse	0	23	0	21	0		0
Hungarian Partridge	25	0	57	48	15		2
Red Fox	0	2	1	1	0		0
Coyotes	0	0	0	0	0		0
Jackrabbits	4	4	0	27	83		8
Cottontail Rabbits	0	0	4	0	0		0
Whitetailed Deer	2	0	10	3	5		6
Snowy Owls	0	0	1	2	0		0

Round Top Township - No. 30

	<u>1946</u>	<u>1948</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>
Pheasants	527	7	0	0	0	Not	0
Pinnated Grouse	78	0	6	0	0	Taken	4
Sharptailed Grouse	21	54	71	107	25		41
Hungarian Partridge	0	0	0	0	0		0
Red Fox	0	2	0	1	1		2
Coyotes	1	2	0	0	0		0
Jackrabbits	0	0	1	0	0		1
Cottontail Rabbits	31	0	0	0	0		0
Whitetailed Deer	40	99	101	69	69		11
Snowy Owls	0	0	0	0	0		0

\* Snow conditions poor for aerial censusing

SUMMARY AND CONCLUSIONS

1. The winter of 1953-1954 was unusual for North Dakota due to the lack of snow and cold weather. The exception was the southeastern part of the state where snow conditions were heavy enough to permit pheasant trapping operations.

The heavy snowfall in March in the western part of the state made it possible to census the study townships there. Even though snow conditions were favorable for aerial counting, the birds were not heavily concentrated because of mild weather and lack of snow during the winter months. But since this was the only opportunity for the aerial survey as many townships as possible were checked during the few days having favorable snow cover.

2. In comparing figures for townships censused in previous years, the population is apparently down. However, this is thought to be due to conditions mentioned above rather than to an actual decline in population. Other winter surveys of pheasants have shown a substantial increase in most parts of the state.

3. In township 42 in southeastern North Dakota, where snow conditions were good and winter weather had kept the pheasants in concentrations, the count in 1954 was 375 birds compared with 162 in 1952 and 56 in 1953.
4. Again an analysis of winter pheasant concentration from aerial survey shows that food is important in determining points of concentration. Wood lots providing relatively poor winter cover, but having a feed lot, will usually have many more birds than nearby trees that would furnish good cover but little or no winter food.
5. The aerial survey is not considered accurate for sharptailed and pinnated grouse whose wintering grounds vary widely from year to year depending upon food and cover. The presence of a cornfield will cause a shift in the wintering ground of a flock of grouse more readily than in the case of pheasants so a township having 50 birds one winter may have more the next, although the same concentration may be in an adjacent township.
6. Likewise a comparison of populations of foxes, coyotes and other species may show only trends in unusually high or low populations. In surveying a township for pheasants only the patches of cover are checked as the pilot zig-zags in a course across a tier of sections. As a result, there may be many open areas supporting these animals that are not covered in the aerial count.

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Approved by H. R. Morgan  
H. R. Morgan, Commissioner

Date May 24, 1954

NORTH DAKOTA STATE GAME AND FISH  
DEPARTMENT