

Dzubin, Alex

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CANADIAN WILDLIFE SERVICE

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Distribution of kill of fall migrating white-fronted geese
banded in the Kindersley district of Saskatchewan - 1961 and 1962.

Sydney
Barry

A preliminary report to the Technical Committee of the Central Flyway Council

by

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This report presents data on the distribution of kill of white-fronted geese which migrate through west-central Saskatchewan. It is based on recoveries taken from an IBM listing received on June 15, 1963, from the Bird Banding Laboratory, Patuxent, Maryland.

Introduction

From September 10 to October 10, 1962, a crew made up of Harvey Miller, USBSF&W; George Schildman, Nebraska Game, Forestation & Parks Commission; Lawson Sugden, John Hatfield, Ron Lamont, John Black and Alex Dzubin, Canadian Wildlife Service, banded white-fronts in the degree block 51° N x 109° W. Jack Grieb and Bill Rutherford of the Colorado Department of Game and Fish, and George Wrakestraw of the Wyoming Game and Fish Department, banded white-fronts at Eyre Lake, to the southwest of Kindersley, incidental to banding Canada geese.

Part time help was received from J.B. Gollop, C.W.S.; Bob Caldwell, Bill Hcoey, D.U.; R.C.M.P. Constable, Kerrobert Detachment, and Jim Nelson, Saskatchewan Wildlife Branch.

White-fronts, Snow and Ross geese were banded on Teo Lake, Buffalo Coulee and Cutbank Lake. All lie within a 25 mile radius of Kindersley, Saskatchewan.

Recoveries have been recorded by degree blocks, by states and flyways, and separated into normal and dyed segments. Bernie Loeff, C.W.S. student assistant helped with the analyses.

A total of 195 direct band recoveries taken by hunters have been utilized. The banded sample included 1,404 normal and 716 dyed birds. Since these birds were separated into pre- and in-season bandings and also four age and sex groups few gave over fifty useable recoveries. The conclusions in the summary presented below should, therefore, be used with caution until such time as more recoveries become available. We have not weighted any of the recoveries as far as hunting pressure between countries or flyways is concerned nor have we considered any minor variations in reporting rate. Recoveries in the vicinity of the banding site have all been used.

In comparing 1961 and 1962 bandings, the assumption that we are sampling white-fronts from a migrating population whose origins are the same for the two

years is made. Needless to say it is not necessarily so. Another assumption is that the banded samples distribute themselves at random into the Central Flyway white-front population as a whole and recovery data might therefore be extrapolated to reflect major kill areas and percentage take by areas. Periodic aerial survey data about the Saskatchewan banding site plus preliminary data on dyed bird movements indicates a high weekly turnover of geese. White-fronts are continually moving in and out of the area throughout the banding period. Recoveries of the banded sample may not therefore reflect what is happening to the entire population.

Kindersley Weather and Populations

1961 - September was dry with most cereal crops harvested by the 15th. Frost was regular through the fall and a minor snow storm occurred on September 20th. Drought conditions prevailed generally. About 10-12 district lakes were available for white-fronts in 1961. The first white-fronts arrived by the last week of August with major movements into the area on September 6-7 and 11-12. Numbers of Canadas arrived by the second week of September -- the earliest ever. Peak populations of 12,000 white-fronts occurred during the last week in September. By October 8th this group had dropped to 9,000. Only 4,000 were censused on October 18th. On the 20th snow and cold forced all geese out of the lakes in the area. Canadas were present on the South Saskatchewan River into early November. 1961 was a "typical" year in that white-front populations peaked the last week of September and few remained after October 10th. Production of young was poor with an average of 20 per cent of white-front population being young of the year.

1962 - General rains made the first two weeks of September wet but farmers had most crops harvested by September 30th. Little or no frost occurred until the last week of October. Days were warm and typical bluebird weather prevailed for 1-1/2 months. Only 6-8 lakes were available for the birds but late summer rains kept the levels high. White-fronts were 5-6 days late in arriving with a major movement in on September 11-12. Canada geese did not show up in numbers until after October 25th. Ross geese were late with several thousand enumerated on September 20-23. White-front populations again peaked during the last week of September but remained high through to October 15. Few white-fronts seemed to move out of the area during this period as days were sunny and warm with no major movements of weather through the district. 3,500 were still censused on October 25th. As in 1961 production was again poor with a seasonal average number of young in the white-front population of 24 per cent. A cold snap on October 27-28 forced a few geese southward while another cold spell on November 9, 10 and 11 moved birds out of the shallow lakes. The South Saskatchewan River remained open until December 21. Canada goose populations of about 25,000 (mainly Grieb-type) fed off the river until December 9-10. In all, the 1962 fall was the warmest since 1938, creating suitable conditions for all goose species to remain in Canada from two to five weeks longer than usual.

Distribution of 1961 banded white-fronts

(769 banded: 364 normal, 222 dyed, 183 neck-banded)

1. A report of the 88 direct 1961 recoveries was distributed previously. It

showed that of the Kindersley migrating white-fronts, some 42 per cent of the recoveries came from Central Flyway states, 47 per cent from Saskatchewan, 7 per cent from the Mississippi Flyway and 3 per cent from Mexico (Figs. 1, 2, and 2A).

2. Twenty-seven indirect recoveries in 1962 show a shotgun type distribution. Only 2 of the 9 Canadian recoveries are from the same degree block as the banding site (Figs. 1, 2 and 2A).

2A. There are two eastern Saskatchewan recoveries and two mid-Alberta recoveries which indicate a fairly wide dispersal of this population in the year after banding. Eastern Saskatchewan (Quill Lakes and Last Mountain Lake) was the traditional white-front migration route prior to the early 1940's. In recent years associated with drought conditions in western Saskatchewan more and more white-fronts are utilizing the former route.

2B. There are as many (9) Mexican recoveries as there are in Canada, perhaps indicating a shift of this group of birds further south in 1962-63 as contrasted to 1961-62 when only 3 recoveries from Mexico were obtained.

2C. One indirect adult male Alaskan recovery was reported taken during the 1962 hunting season in the Innoko River Valley -- perhaps on the breeding grounds of this group? Recent correspondence with H. Hansen of the USBSF&W in Alaska indicates that an adult male and adult female retrapped and released by the crew at Teo Lake on September 20 and October 2 were banded on the Innoko River, Alaska, in 1954. At least a few live to be 8+ years!!

2D. Four previously banded white-fronts (two neckbanded) were trapped and released. These birds originated on the mouth of the Anderson River, N.W.T., and were banded by Tom Barry in 1962. A fifth recovery of a white-front, a young male, from the Mason River to the east of the Anderson River was made in the Kindersley district. These 2 breeding areas, Innoko River, Alaska, and Anderson River, N.W.T., are therefore definitely tied in with the white-fronts migrating through the Kindersley district. Hansen's Alaskan bandings from the Innoko River, Kinto Lakes, and Selawik areas show a majority of recoveries from the Kindersley-Kerrobot districts of Saskatchewan and also eastern Alberta.

2E. Only 2 Mississippi Flyway recoveries were made, both in Louisiana, Texas which had many (25) of the 1961 direct recoveries only shows 2 indirect recoveries for 1962. This may be due to the warm weather in the northern states and Canada holding this population of white-fronts longer. When these birds did move they continued on through to Mexico.

2F. An immature male white-front banded at Kindersley on September 26, 1961, was recovered in the northeast quarter of California (Pacific Flyway) on January 1, 1963. This recovery plus 2 others, indicates only a small movement into the Pacific Flyway, either on the breeding grounds of Alaska, across Mexico during the wintering period or even tagging along with Ross geese over the mountains (Fig. 2).

Distribution of 1962 banded white-fronts

(2,122 banded: 1,404 normal, 718 dyed)

1. Distribution of 1962 direct recoveries varied somewhat from 1961 directs. A somewhat greater percentage of recoveries came from the degree block of banding: 55 per cent in 1962 vs. 47 per cent in 1961. This increase may have been the result of the open fall holding white-fronts in Saskatchewan longer in 1962 than in 1961. This seems likely for the 1962 daily bag limits were reduced to 3 per day and 6 possession from 5 per day and 10 possession in 1961. For Saskatchewan we should consider an unknown factor of the effects of capture and banding on the increased local vulnerability of white-fronts, a factor inherent in most in-season banding programs.

There was a lower percentage of bands reported from the Central Flyway as a whole with no direct recoveries this year in the Mississippi Flyway. White-fronts either did not stop, were not killed, or moved through during non-hunting periods in the Mississippi Flyway. The total per cent direct recoveries taken in the U.S. (Central and Mississippi Flyways) decreased from 49 per cent in 1961 to 35 per cent in 1962 (Fig. 3).

2. Only one recovery was recorded for the Pacific Flyway. An adult female was shot along the Snake River of Southern Idaho.

3. Texas was again the major kill area (after Saskatchewan) with 3/4 of the Texas recoveries coming from west of Houston in the Lissie Prairie-Magle Lake degree blocks 29°N, 95°W and 29°N, 96°W. Texas recoveries were sent in from all degree blocks along the coast from Louisiana to Mexico (Fig. 4).

4. The percentage of recoveries from Mexico almost tripled. Since the number of indirect 1961 recoveries taken in 1962 was also higher than the directs we would suggest that either, there was an increased movement of white-fronts into Mexico during the 1962 fall and winter or that hunting pressure materially increased. Probably more birds were there to be killed or more hunters were out and better hunting conditions prevailed (Figs. 1, 3, 2A, 4A). The January 1963 inventory showed nearly as many (28,000+) white-fronts in Mexico as in the Central Flyway states (30,000+) (letter Robert I. Smith).

We can only speculate as to where white-fronts move into Mexico. The coastal state of Tamaulipas which lies immediately south of Coastal Texas had 4 recoveries. Zacatecas in the interior highlands had 7 while even the states to the north, Chihuahua, Coahuila and Durango, had 1 or 2, perhaps indicating some movement through interior Texas into northern Mexico (Fig. 4A). Eighty per cent of the white-fronts censused on the mid-winter inventory of 1963 were recorded along the east coast with the remainder in the Central Highlands (letter July 10/63 Robert I. Smith, USBSF&W).

Per cent direct recoveries - 1962 and adult:immature ratios

A. Pre-season bandings

1. As only a small sample of 534 white-fronts were banded prior to

September 22, 1962, the opening of the Saskatchewan goose season, little can be said about the recoveries of these birds. The few recoveries suggest that at least for immature birds, red, yellow and green dyeing doubled the reporting rate, although adults did not show this trend (Fig. 5).

B. Pre-season and in-season bandings

1. There was no indication of a higher reporting rate for dyed birds during pre- and in-season bandings (Fig. 6). Figures for 1961 showed a 25 per cent higher rate of reporting. The 1962 data which shows nearly similar recovery rates may indicate a higher local and non-hunting mortality of dyed birds around the banding lakes. Dyeing will not be continued in 1963.

2. The ratio of adults to young in the trapped sample was 1 adult to .58 young while the recoveries showed 1 adult to 1.38 young. In ratio there were 2.4 times more young reported than were found in the free-flying population (Fig. 6). In 1961 this figure ^{was} 2.3 indicating a continued high vulnerability of young.

3. The per cent recovery of adult-appearing white-fronts was just over 6 per cent for both dyed and normal birds (Fig. 7). Immature males showed a higher recovery rate of 13 per cent while immature females were 16 per cent. Whether this high per cent recovery of immature females is real or just due to a small sample remains to be determined. Young females, may however, be the most vulnerable segment of the population. Sufficient sex ratio information from adult birds is not available to verify this.

4. The extreme vulnerability of immatures in Saskatchewan is shown by the ratio of adults to young taken in the province, viz. 1 adult to 1.68 young versus 1 adult to 1.10 young for the rest of the flyway including Mexico (Fig. 7). As central Saskatchewan forms one of the major staging areas for white-fronts (after Alberta's Hay-Zama and Lake Clair-Athabasca Marshes) and also the first area birds are exposed to heavy hunting pressure this initial high vulnerability is to be expected.

Time of recovery - 1962

1. Most of the Saskatchewan recoveries were from the last 10 day period of September and first 10 day period of October (Fig. 8).

2. Texas recoveries were made throughout the November 1-January 13 season. A mid-month peak of recoveries for both November and December occurred.

3. Recoveries from Mexico span the October 21-February 17 period, indicating an early influx of some birds into the south, in spite of the warm autumn in the north.

White-front Migration Route

Based on the pattern of 1961 and 1962 recoveries there is an apparent tendency for birds to move southeastward after leaving Saskatchewan until the

Figure 1: Distribution of recoveries of 1961 banded white-fronts, Winnipeg, Saskatchewan, 31° N x 109° W

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Dakotas are reached. Thereafter the few recoveries indicate a nearly due south movement through Nebraska, Kansas, Oklahoma to coastal Texas. Some movement may occur southward along the coast to Mexico and through interior Texas to the highlands.

Pacific Flyway

Utah
California

Spring Migration

Four spring reports of 1962 banded white-fronts were received; three from south-central Nebraska where birds were trapped and released and one from South Dakota.

North Dakota
South Dakota
Nebraska
Kansas

Local Movements of Dyed Geese

1. Dyed birds were observed to move up to 27 miles from the banding lakes. A small interchange of dyed geese occurred between Teo, Buffalo Coulee and Catbank Lakes. Three white-fronts banded on Eyre Lake were retrapped on Teo Lake.

2. Family groups of geese, released individually after dyeing, were able to reform into family groupings within 2-3 days.

3. Dyed white-fronts were recorded on feeding flights up to 16 miles from the banding lakes.

Wisconsin
Missouri

Canada

Redwitz Degree Muck
Saskatchewan
Other Saskatchewan
Alberta

Saskatoon, Sask.
July 29, 1963.

Manitoba
New Brunswick
Quebec
Ontario
Nova Scotia
Newfoundland

Alaska

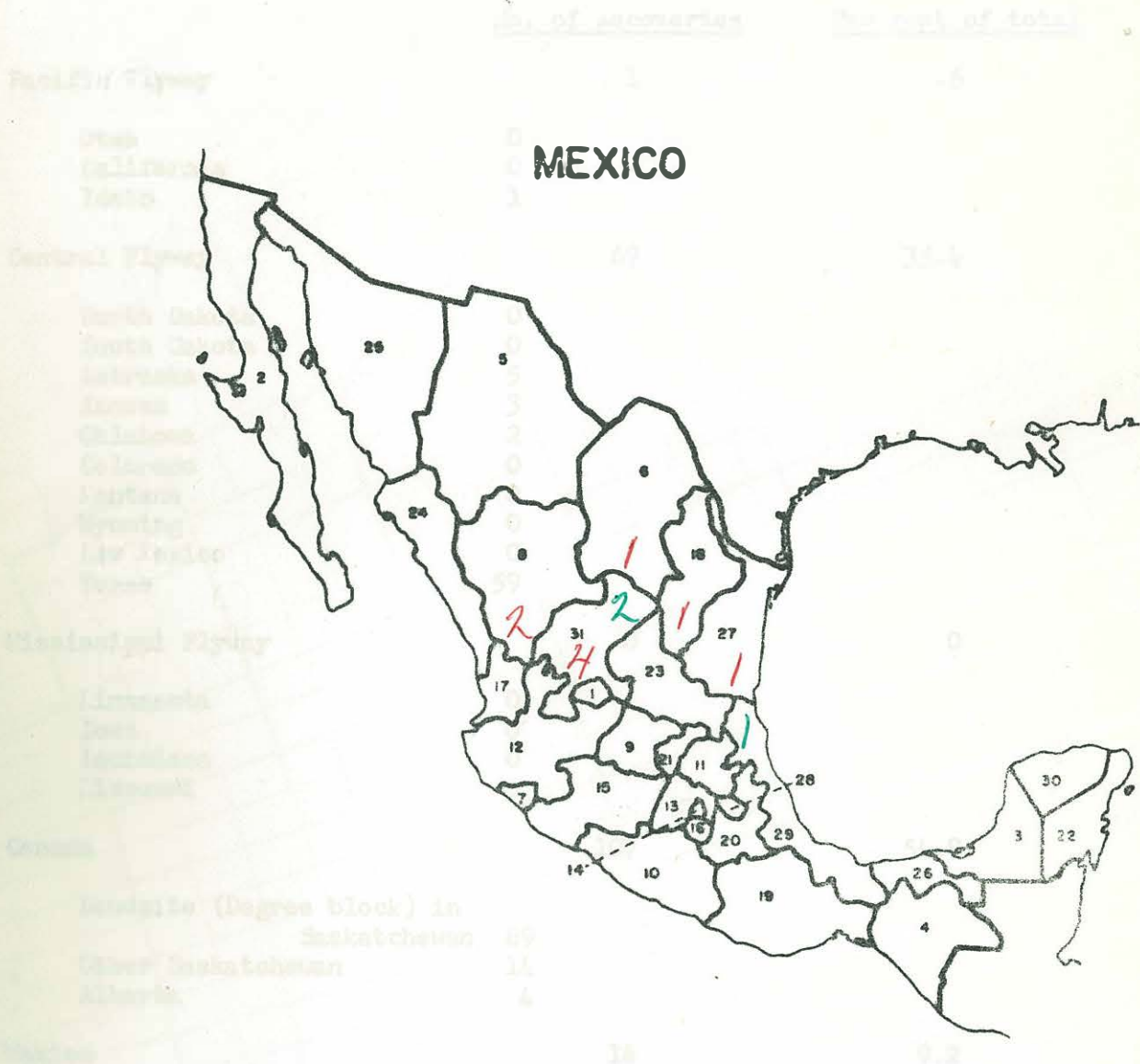
GRAND TOTAL

Number of	Percent	Number of	Percent
1	3.7	1	3.4
2	7.4	2	6.8
3	11.1	3	10.3
4	14.8	4	13.8
5	18.5	5	16.9
6	22.2	6	20.3
7	25.9	7	23.7
8	29.6	8	27.1
9	33.3	9	30.6
10	37.0	10	34.0
11	40.7	11	37.4
12	44.4	12	41.9
13	48.1	13	45.3
14	51.8	14	48.8
15	55.5	15	52.2
16	59.2	16	55.7
17	62.9	17	59.1
18	66.6	18	62.6
19	70.3	19	66.0
20	74.0	20	69.5
21	77.7	21	72.9
22	81.4	22	76.4
23	85.1	23	79.8
24	88.8	24	83.3
25	92.5	25	86.7
26	96.2	26	90.2
27	100.0	27	93.6

Figure 1: Distribution of recoveries of 1961 banded white-fronts, Kindersley, Saskatchewan, 51° N x 109° W

	Number of Indirect 1962 Recoveries	Per cent of Total	Number of Direct 1961 Recoveries	Per cent of Total
Pacific Flyway	1	3.7	1	1.1
Utah	0		1	
California	1		0	
Idaho	0		0	
Central Flyway	5	18.6	37	42.2
North Dakota	0		2	
South Dakota	0		1	
Nebraska	0		5	
Kansas	1		2	
Oklahoma	2		2	
Colorado	0		0	
Montana	0		0	
Wyoming	0		0	
New Mexico	0		0	
Texas	2		25	
Mississippi Flyway	2	7.4	6	6.8
Minnesota	0		2	
Iowa	0		2	
Louisiana	2		1	
Missouri	0		1	
Canada	9	33.3	41	46.6
Bandsite Degree Block Saskatchewan	2		39	
Other Saskatchewan	4		2	
Alberta	3		0	
Mexico	9	33.3	3	3.4
Zacatecas	4		2	
Vera Cruz	0		1	
Durango	2		0	
Coahuila	1		0	
Tamaulipas	1		0	
Neuvo Leon	1		0	
Alaska	1	3.7	0	0.0
GRAND TOTAL	27		86	

Figure 21 - Distribution of recoveries (all) of 1962, full banded white-fronts - Kindersley, Agk., recoveries to Feb. 17/63.



State Code

Aguascalientes	1	Morelos	16
Baja California	2	Nayarit	17
Campeche	3	Nuevo Leon	18
Chiapas	4	Oaxaca	19
Chihuahua	5	Puebla	20
Cahuila	6	Queretaro	21
Colima	7	Quintana Roo	22
Durango	8	San Luis Potosi	23
Guerrero	9	Sinaloa	24
Hidalgo	10	Sonora	25
Jalisco	11	Tabasco	26
Mexico	12	Tamaulipas	27
Mexico D.F.	13	Tlaxcala	28
Michoacan	14	Veracruz	29
	15	Yucatan	30
		Zacatecas	31

Figure 21 - Mexico. Distribution of 1961 Kindersley banded white-fronts. Number of recoveries in individual states.

Direct 1961 - January 1962.

Indirect 1962 - January 1963.

Figure 3: Distribution of recoveries (kill) of 1962, fall banded white-fronts - kindersley, Sask., recovered to Feb. 17/63.

	<u>No. of recoveries</u>	<u>Per cent of total</u>
Pacific Flyway	1	.5
Utah	0	
California	0	
Idaho	1	
Central Flyway	69	35.4
North Dakota	0	
South Dakota	0	
Nebraska	5	
Kansas	3	
Oklahoma	2	
Colorado	0	
Montana	0	
Wyoming	0	
New Mexico	0	
Texas	59	
Mississippi Flyway	0	0
Minnesota	0	
Iowa	0	
Louisiana	0	
Missouri	0	
Canada	107	54.9
Bandsite (Degree block) in Saskatchewan	89	
Other Saskatchewan	14	
Alberta	4	
Mexico	18	9.2
Zacatecas	7	
Vera Cruz	2	
Durango	1	
Tamaulipas	4	
Neuvo Leon	0	
Aguascalientes	1	
Coahuila	2	
Chihuahua	1	
Alaska	0	
GRAND TOTAL	195	100.0%

Maps +
 Distribution of 1962 fall-banded
 white-fronts.
 Number of silver recoveries
 per degree block.
 2,122 banded.

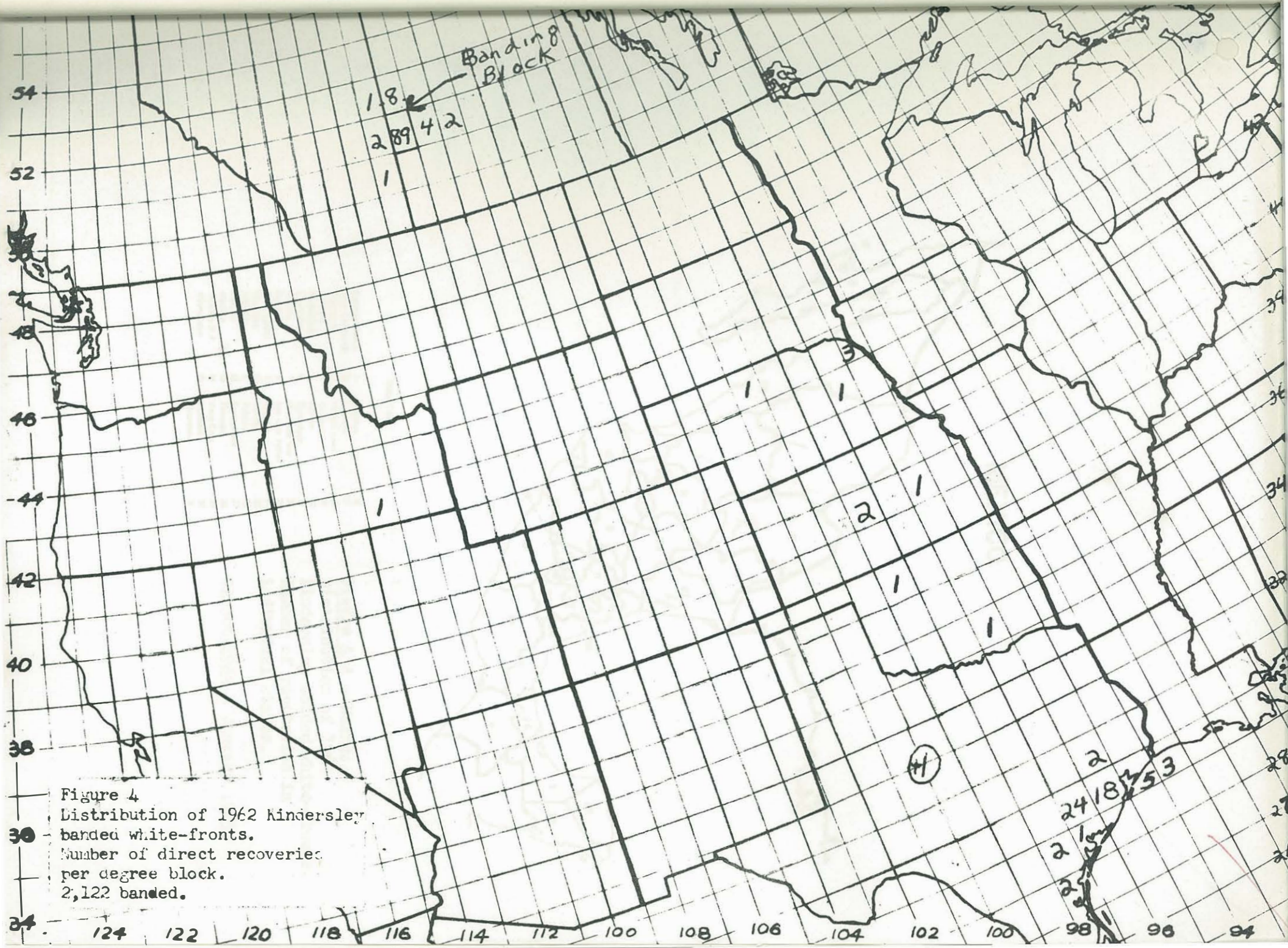


Figure 4
 Distribution of 1962 Kindersley
 banded white-fronts.
 Number of direct recoveries
 per degree block.
 2,122 banded.

Figure 1: For each of normal and spot white-fronted leopards, the number of recoveries only Sept. 24 to Oct. 12, 1962, including Chihuahua, Durango, Sonora,



MEXICO

	1962				1963			
Age and Sex	M	F	M	F	M	F	M	F
Number banded	121	43	25	1	75	34	35	35
Number returns	0	7	1	1	6	7	7	10
Per cent return								
Direct 1962-Jan./63	0.0	16.3	4.0	100.0	8.0	20.6	20.0	28.6

	1962				1963			
Age and Sex	M	F	M	F	M	F	M	F
Number banded	660	427	255	43	660	427	255	43
Number returns	32	27	37	43	32	27	37	43
Per cent return								
Direct 1962-Jan./63	4.85	6.32	14.51	100.0	4.85	6.32	14.51	100.0

	1962				1963			
Age and Sex	M	F	M	F	M	F	M	F
Number banded	660	427	255	43	660	427	255	43
Number returns	32	27	37	43	32	27	37	43
Per cent return								
Direct 1962-Jan./63	4.85	6.32	14.51	100.0	4.85	6.32	14.51	100.0

State Code

- Aguascalientes 1
- Baja California 2
- Coahuila 3
- Chihuahua 4
- Colima 5
- Durango 6
- Guanajuato 7
- Hidalgo 8
- Jalisco 9
- Mexico 10
- Michoacan 11
- Morales 12
- Nayarit 13
- Nuevo Leon 14
- Oaxaca 15
- Puebla 16
- Queretaro 17
- San Luis Potosi 18
- Sinaloa 19
- Sonora 20
- Tabasco 21
- Tamaulipas 22
- Tlaxcala 23
- Veracruz 24
- Yucatan 25
- Zacatecas 26

Figure 1 - Mexico. Distribution of 1962 Kindersley banded white-fronts. Number of recoveries in individual states.

Direct 1962 - January 1963.

Figure 5: Per cent of normal and dyed white-fronts recovered. Pre-season bandings only Sept. 14 to 21, 1962, inclusive, Kindersley, Sask.

Age and Sex	NORMAL				DYED			
	AM	AF	IM	IF	AM	AF	IM	IF
Number banded	121	65	29	32	95	104	33	35
Number returns	10	7	3	5	4	7	7	12
Per cent return <u>Direct</u> 1962-Jan./63	8.3	8.2	10.3	15.6	4.2	6.7	21.2	34.3
Per cent returns (All Ad. & Imm.)	8.3		13.1		5.5		27.9	

Figure 6: Per cent of normal and dyed white-fronts recovered. Pre- and during season fall 1962 bandings - Kindersley, Sask., & recoveries to Feb./63.

Age and Sex	NORMAL				DYED			
	AM*	AF*	IM	IF	AM	AF	IM	IF
Number banded	160	427	255	262	229	226	134	129
Number returns	32	27	37	43	10	13	13	20
Per cent return <u>Direct</u> 1962-Jan./63	6.96	6.32	14.51	16.41	4.37	5.75	9.70	15.50
Per cent returns (All Ad. & Imm.)	6.65		15.47		5.05		12.55	

Age Ratios

Trapped Sample

Ad.:Imm.
1342:780
1:58

Recovered Sample

Ad.:Imm.
82:113
1:1.38

Ratio of: (2.4
times more young
recovered than
banded).

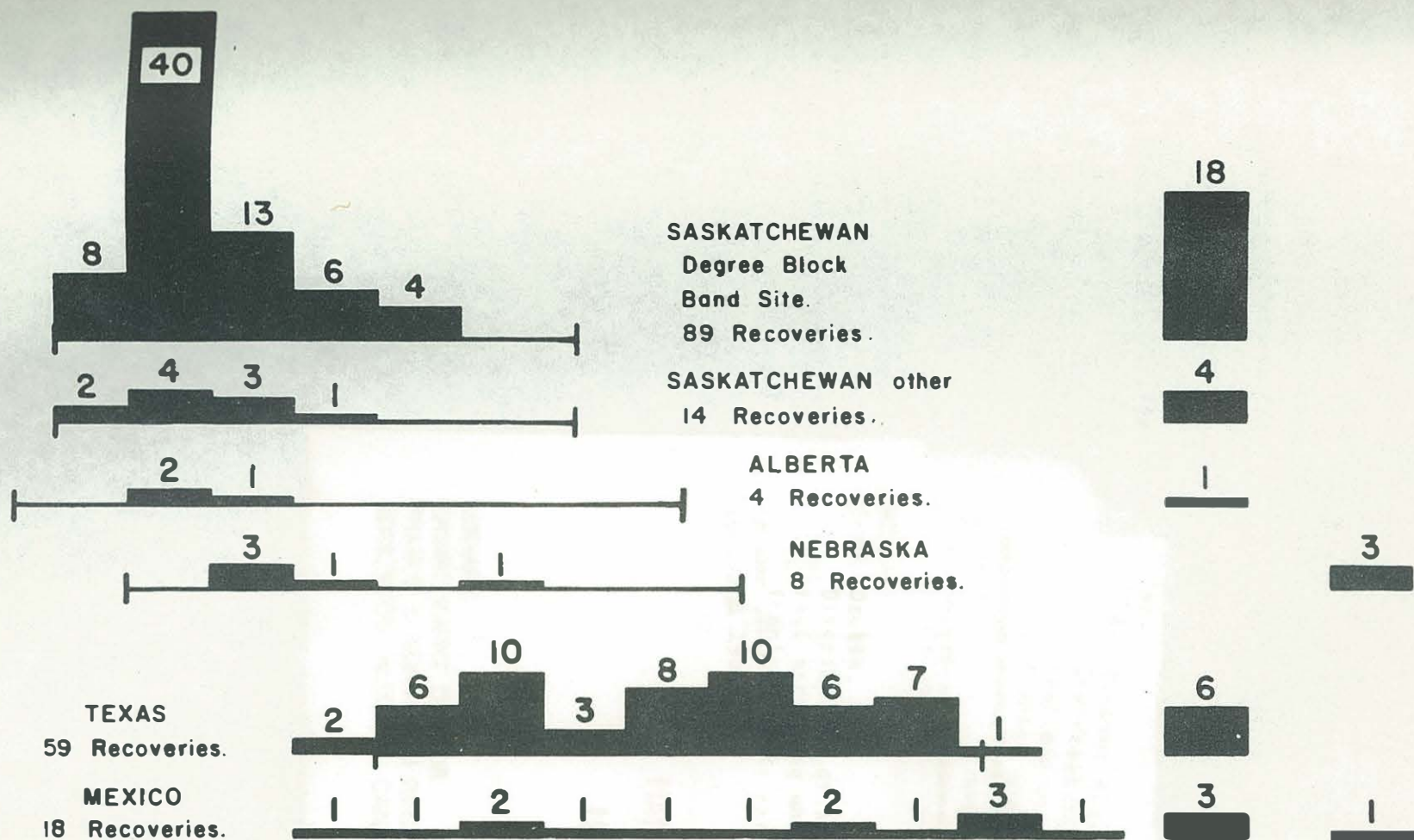
* Adult appearing only and certainly including an unknown number of yearlings.

Figure 7: Comparison of per cent recoveries for Saskatchewan with rest of Central Flyway plus Mexico; Also, ratio of adult to immature for Saskatchewan and non-Saskatchewan recoveries.

	<u>DYED AND NORMAL BIRDS</u>				<u>Ratios</u> Adult:Immature
	<u>AM</u>	<u>AF</u>	<u>IM</u>	<u>IF</u>	
Total number banded	689	653	369	391	1342:780 1:0.68
Number of Canadian* recoveries	19	21	28	39	40:67 1:1.68
Per cent Canadian recoveries	2.76	3.22	7.20	9.97	
Number of recoveries outside Saskatchewan, including Mexico	23	19	22	24	42:46 1:1.10
Per cent other recoveries	3.34	2.91	5.66	6.14	
<hr/> TOTAL RECOVERIES	42	40	50	63	82:113 1:1.38
<hr/> PER CENT	6.10	6.13	12.85	16.11	

*Mostly in banding block - Saskatchewan.

About 1-1/2 times more young white-fronts killed in Saskatchewan than throughout rest of Central Flyway and Mexico.



	1373	1880	2107	2122	Cumulative Total
534	839	507	227	15	Number Banded

11-20	21-30	1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20	21-31	Hunting Season only	February thru April
SEPT.	OCTOBER	NOVEMBER	DECEMBER	JANUARY											

Figure 8 Number of band recoveries per ten day period for six areas showing time of recovery. Kindersley Fall Banded White-Fronts 1962.