ALASKA DEPARTMENT OF FISH AND GAME
JUNEAU, ALASKA

STATE OF ALASKA
William A. Egan, Governor

DEPARTMENT OF FISH AND GAME
James W. Brooks, Commissioner

DIVISION OF GAME
Frank Jones, Director

REPORT OF SURVEY AND INVENTORY ACTIVITIES-WATERFOWL

By
Dan Timm

Volume V
Project Progress Report
Federal Aid in Wildlife Restoration
Project W-17-6, Job Nos. 11 and 22

(Printed October 1974)

MEMORANDUM OF TRANSMITTAL

October 1974

TO: James W. Brooks, Commissioner
Alaska Department of Fish and Game

FROM: Frank Jones, Director
Division of Game

SUBJECT: Annual Report of Waterfowl Survey-Inventory Activities
July 1, 1973 to June 30, 1974

Surveys and inventories include all routine data collections directed toward the determination of annual game harvests. These reports include study results and conclusions and, where applicable, recommended hunting regulation changes.

One significant accomplishment of the waterfowl program this year was to promote a dusky Canada goose management plan. This document represents the first of its kind in the United States.

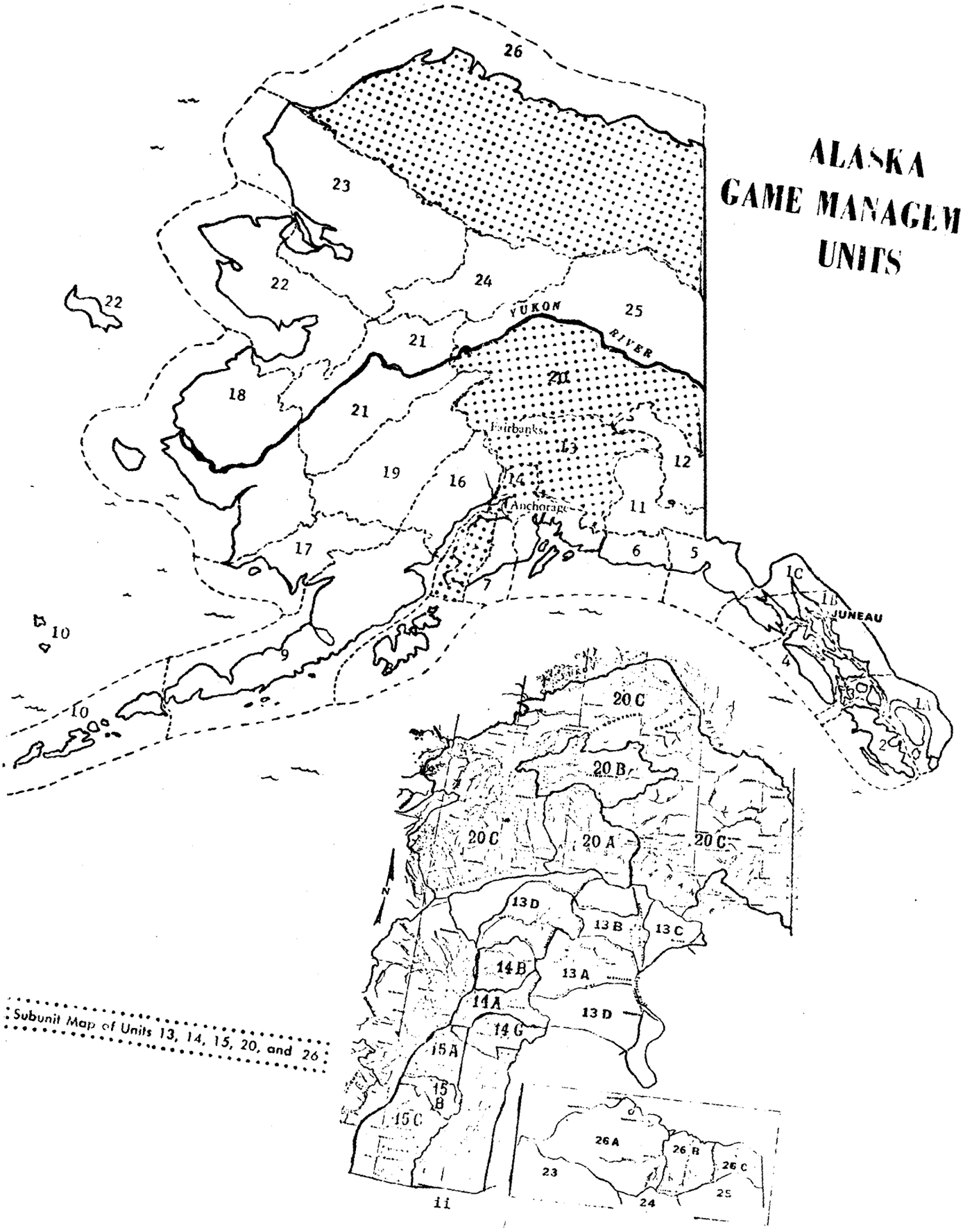
In October 1973 the Waterfowl Coordinator was transferred to Anchorage. This position is now under administrative supervision of the Region II Game Supervisor, but still maintains statewide responsibilities and remains a part of my advisory staff. The GB II position formerly stationed in Anchorage was transferred to Juneau and became the assistant area game biologist.

The possible future mandatory conversion from lead shot to steel or iron became a major nationwide issue during this reporting period. A program to evaluate the rate of lead shot ingestion by waterfowl in Alaska is planned for the 1974-75 waterfowl season.

Fears of large wintering waterfowl losses from DVE in the Southern U. S. did not materialize. However, DVE still poses a threat to the continental waterfowl population. Both State and Federal DVE coordinators, who would take appropriate action should an outbreak occur, have been named in Alaska. The probability of such an outbreak in Alaska is low, however.

A table of contents is included in this report to facilitate access to specific information.

ALASKA GAME MANAGEMENT UNITS



Subunit Map of Units 13, 14, 15, 20, and 26

CONTENTS

1973-74 WATERFOWL SEASON REGULATIONS

Open Seasons	Species	LIMITS Daily Bag	LIMITS Possession	Exceptions or Explanations
GAME DUCKS, OLD SQUAW, HARLEQUIN, SCOTERS, EIDERS, MERGANSERS, GEESE AND BRANT:	Game Ducks	6	18	
(a)* Pribilof and Aleutian Islands (except Unimak Island). **Oct. 13 - Jan. 27**	Old Squaw, Harlequin, Scoters, Eiders, and Mergansers	15	30	Singly or in aggregate of all kinds.
(b) Kodiak Island (State Game Management Unit 8). **Sept. 8 - Sept. 30 and Nov. 3 - Jan. 25**	Geese (except Emperor)	6	12	No more than 4 daily or 8 in possession may be Canada geese or sub-species of Canada geese or white-fronted geese.
(c) Remainder of Alaska and Unimak Island **Sept. 1 - Dec. 16**	Emperor Geese	6	12	
	Brant	4	8	
JACKSNIPE: All of Alaska **Sept. 1 - Nov. 4**	Jacksnipe	8	16	
CRANES: All of Alaska **Sept. 1 - Oct. 15**	Cranes	2	4	

*The taking of Canada geese in the Aleutian Islands, except Unimak, is illegal. (To protect the Aleutian Canada goose).

WATERFOWL HARVEST AND HUNTER ACTIVITY

INTRODUCTION

This was the third year of conducting a post-season mail survey of waterfowl hunters in Alaska. This survey, in conjunction with field bag checks and the Fish and Wildlife Service parts collection survey, provides the most accurate estimate of hunter activity and waterfowl harvest by species in Alaska.

The sample size of hunters in the FWS parts collection survey has been significantly increased during the past two hunting seasons. It will again be increased by some 140 hunters during the 1974-75 hunting season. Carney (pers. comm.) believes duck species composition in the harvest data for Alaska is becoming more and more reliable, as measured from the federal mail survey.

Waterfowl hunter field bag check data have been summarized in this report by the harvest areas used for data breakdown of the mail questionnaire survey. More specific location data are available in the Anchorage office files.

The 1973 fall flight of waterfowl from Alaska was predicted to be about average, and better than in 1971 and 1972. Although field reports varied, hunter success from most areas appeared to be comparable to that of the 1972-73 season.

PROCEDURES

Mechanics of the Survey and Hunter Reports

A computerized list of all people purchasing a 1973 resident hunting license was used for a sampling base. Although 5,543 survey forms were sent on January 23, 1974, a key punching error resulted in 976 people inadvertently getting two forms. Thus, the actual hunter sample was reduced to 4,567 persons, or 6.8% of resident license buyers. Responses usable for analysis (people who purchased a duck stamp and hunted waterfowl or bought a stamp but didn't hunt) were received from 735 people.

Each form (Fig. 1) was self-contained inside a snap-open envelope. These envelopes eliminated folding of conventional survey forms and stuffing them into envelopes. A postage paid return address was printed on the form's reverse side.

Four weeks were allowed for return and those persons not replying were then sent a reminder form. Forms received more than three weeks after the second mailing were not considered in the analysis.

Because license numbers on each form were also computerized, it was possible to key punch each number appearing on a returned questionnaire. For the second mailing, the computer rejected punched numbers, and printed out reminder survey forms only to those people not returning the first forms.

Fig. 1. Waterfowl hunter survey form used in the 1973 survey.

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

WATERFOWL HUNTER SURVEY
1973-74

DEAR HUNTER:

Your cooperation is needed to better manage Alaska's waterfowl--now and in the future. By accurately answering the questions below concerning your hunting activities in 1973, you can help insure continued liberal bag limits and good hunting for the future. If you can't remember exact numbers, give your best estimate. Complete the form printed below as soon as possible, and drop this card in the mail. No stamp is necessary. Thank you for your cooperation.

1.

PART I (ALL HUNTERS COMPLETE)

2. DID YOU BUY A DUCK STAMP IN 1973?_____YES ☐ NO ☐
3. DID YOU HUNT FOR WATERFOWL DURING THE 1973-74 SEASON? YES ☐ NO ☐

PART II (COMPLETE ONLY IF YOU ANSWERED YES TO EITHER QUESTION ABOVE)

4. HOW MANY DAYS DID YOU HUNT WATERFOWL? ☐

AT WHAT PLACE DID YOU SHOOT MOST OF YOUR DUCKS?

5. _____
(I.E. PILOT POINT, MINTO FLATS, PYBUS BAY, ETC.)

AT WHAT PLACE DID YOU SHOOT MOST OF YOUR GEESE?

6. _____

PART II (CONT.) HOW MANY OF THE FOLLOWING BIRDS DID YOU SHOOT AND RETRIEVE?

GAME DUCKS	☐	7.
NON-GAME DUCKS	☐	8.
CANADA GEESE	☐	9.
SNOW GEESE	☐	10.
WHITE FRONTED (SPECKS) GEESE	☐	11.
BRANT	☐	12.
EMPEROR GEESE	☐	13.
UNKNOWN KIND OF GEESE	☐	14.
CRANE	☐	15.
SNIPE	☐	16.

COMMENTS_____

Field Bag Checks

Random field checks of hunters were made in 5 of the 11 harvest areas. A total of 2,010 ducks were checked by Department of Fish and Game biologists and Fish and Wildlife Service Game Management Agents. Slightly over one-half (53%) of the duck species composition data came from the Cook Inlet harvest area. The bulk of field checks were made during the first week of the waterfowl season.

Analysis of Survey Results

The state was divided into 11 harvest areas to facilitate analysis of survey data (Fig. 2). Because the area of residence for each hunter was known, an accurate estimate of days hunted, birds bagged, etc., could be made in each harvest area. Some idea of hunter movements out of their area of residence could also be obtained by knowing their residence and where they did most of their hunting.

Bias factors influencing reported days hunted and ducks bagged were considered to be: 1) a superstition bias resulting from a tendency not to report the number 13; 2) a memory bias resulting in a tendency to report numbers ending in zero, five, and multiples of the daily bag; and 3) a memory bias from the unreliability of those reporting large numbers. Bias corrections for the average number of days hunted were made as suggested by Williams (1953). The reported mean season duck bag was reduced by 15 percent, as suggested by Carney (pers. comm.).

No bias corrections for goose harvest were made. It is believed that most hunters know exactly how many geese they shoot each season. Therefore, reporting rates are even possibly higher for geese than ducks, as geese are usually considered more of a trophy.

Data from the 735 usable waterfowl questionnaires were expanded for total waterfowl hunters on a proportionate basis. Although 16,449 duck stamps were sold in Alaska according to Fish and Wildlife Service data, only 16,261 people were considered to be potential hunters. The FWS annually measures the proportion of stamps purchased for collecting purposes and Schroeder et al. (1974) indicated 228 stamps were purchased in Alaska for this purpose.

RESULTS

Number of Hunters

Because of the number of people in Alaska hunting without a duck stamp and the incidence of hunting outside the legal season limits, the assessment of waterfowl hunter activity and waterfowl harvest is complicated (Timm, 1972).

Although 14 people returned questionnaires that indicated they hunted waterfowl but purchased no duck stamp, these people were not included in the analysis. Data on number of hunters, harvest, etc. in this report are based solely on duck stamp sales and therefore should be considered the sport hunting harvest only.

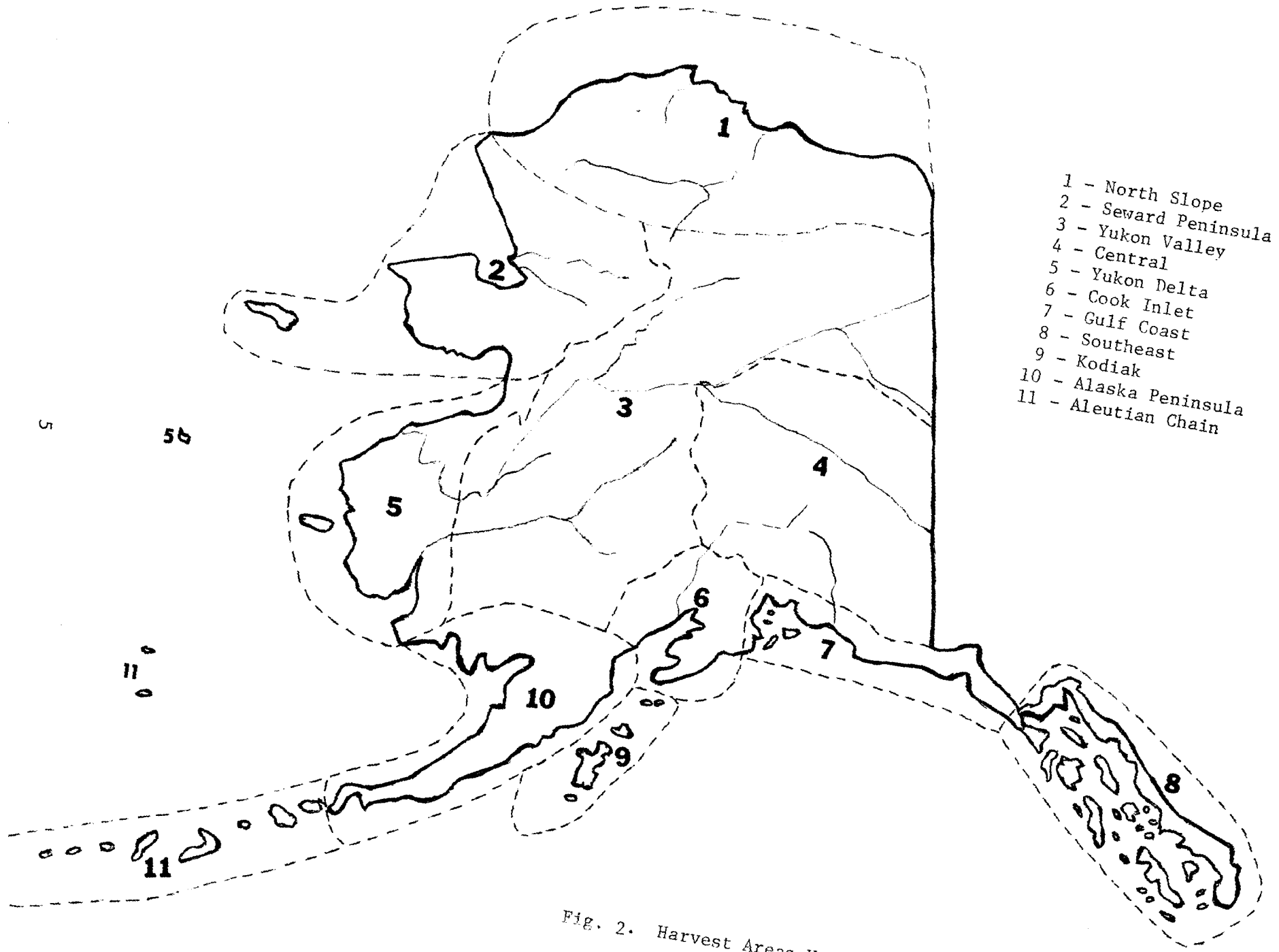


Fig. 2. Harvest Areas Used for Data Analysis.

Of those sampled, 504 people reported that they purchased a stamp and hunted one day or more. The number of stamp purchasers who did not hunt was 231 (69 percent active hunters). A calculated 11,150 people hunted waterfowl one or more days during the 1973-74 season. Table 1 summarizes these data.

Hunting Activity

Hunters reported hunting an average of 5.6 days during the 1973-74 season. After corrections for bias, each active hunter was calculated to have hunted an average of 5.2 days during the season. This projects to a total of 57,868 waterfowl hunter days during the 1973-74 season.

Table 2 presents a summary of hunter activity and success as reported by harvest area. In Table 3 statewide hunter activity and success are broken down into calculated days hunted, birds bagged, etc. by harvest area. Table 4 provides projected hunter days and duck and goose harvests for specific hunting areas in the state on which the most activity and harvest occurred.

Duck Harvest

Magnitude of the Harvest

Hunters reported taking an average of 9.2 ducks this season, compared to 9.9 in 1972. Corrections for bias provide a mean calculated kill of 8.0 ducks per active hunter, compared to 8.4 in 1972. Reported daily success was 1.6 ducks per day, while calculated daily success was 1.5 birds per day.

The projected statewide duck harvest was 89,534 birds, or a 2.3 percent decrease from the 1972 duck harvest. Game ducks represented 95.8 percent (85,774) and nongame ducks 4.2 percent (3,760) of the total bag.

Species Composition of Harvest

From 1960 through the 1971-72 season, field bag checks were intermittently conducted in 6 of the 11 harvest areas. Timm (1972) summarized these data. During the 1973-74 season, field checks were conducted in five of the harvest areas (Table 5). Pintails, mallards, green-winged teal and American wigeons comprised nearly 90 percent of the total ducks checked. Nongame ducks represented only 0.4 percent of the total ducks checked, compared to 4.2 percent nongame ducks reported in the mail questionnaire survey.

As described previously, the FWS significantly increased their hunter sample in the parts collection survey during the 1973-74 season. Because of random hunter sampling of this survey throughout the season, and adequate sample size, it is believed that duck species composition of the harvest estimated by the FWS is the best estimate available for 1973-74 statewide game duck projections. However, it is also believed

Table 1. Summary of Alaska Waterfowl Hunter Mail Questionnaire Survey, 1973-74.

Number of licensed hunters: Resident 66,872 (6,658 subsistence)

Number of license buyers sampled: 4,567 (6.8%)

Number and proportion of respondents from survey:* 1st mailing 2667 (59.3%);
2nd mailing 494 (31.8%)
TOTAL 70.8%

Number of returns usable for waterfowl calculations: 735

Projected Number of Hunters:

Duck stamps sold in Alaska: 16,449 (16,261 potential hunters)

Number of active hunters: 11,150 (68.57%)

Calculated statewide harvests:

Ducks: game 85,774; nongame 3760; total 89,534

Geese: Canada 12,970; emperor 2,373; brant 1,564; white-fronted 1,141; snow 349; Total 18,397

Cranes: 602

Snipe: 1,661

Hunter Days: 57,868

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* Estimated rate of deliverable questionnaires only - excludes change of address, insufficient address, etc.

Table 2. Hunter Success and activity as reported by areas: 1973-74 compared to the 1972-73 season.

Harvest Area	Percent Active Hunters	% Change From 1972-73	No. Ducks Per Season	% Change From 1972-73	No. Days Per Season	% Change From 1972-73	No. Ducks per day	% Change From 1972-73	No. Geese Per season
* North Slope	100.0	-	15.0	-	7.0	-	2.1	-	6.0
*Seward Peninsula	77.8	-	19.6	-	9.7	-	2.0	-	2.0
* Yukon Valley	100.0	-	15.3	-	5.5	-	2.8	-	4.2
Central	57.8	-11	9.0	-14	4.5	-18	2.0	+5	0.4
*Yukon Delta	62.5	-	21.8	-	8.8	-	2.5	+14	5.4
Cook Inlet	69.0	-6	8.1	-34	4.9	-14	1.7	-19	0.5
Gulf Coast	87.5	+13	10.6	-24	6.3	-19	1.7	-10	2.0
Southeast	75.7	-6	10.2	+3	6.3	-16	1.6	+23	1.0
Kodiak	63.2	-12	11.1	-37	10.7	+30	1.0	-52	0.6
Alaska Peninsula	50.0	-14	8.7	+18	10.8	+77	0.8	-33	18.5
*Aleutian Chain	100.0	-	5.0	-	3.3	-	1.5	+7	4.3
Statewide	68.57	-6	9.24 8.03**	-6 -4	5.60 5.19**	-5 -4	1.65 1.55**	-3 N.C.	1.65 (+67% from 1972-73)

* Sample size less than 10 hunters.
** Afer correction for bias.

Table 3. Calculated duck, crane and snipe harvest and hunter activity by harvest area, 1973-74.

Harvest Area	HUNTER DAYS No.	HUNTER DAYS % of Total	GAME DUCKS No.	GAME DUCKS % of Total	NONGAME DUCKS No.	NONGAME DUCKS % of Total	CRANE No.	CRANE % of Total	SNIPE No.	SNIPE % of Total
North Slope	116	0.2	257	0.3	-	-	-	-	-	-
Seward Pen.	1,389	2.4	2,659	3.1	-	-	90	14.9	221	13.3
Yukon Valley	637	1.1	1,801	2.1	-	-	-	-	-	-
Central	8,333	14.4	1,5096	17.6	538	14.3	200	33.3	45	2.7
Yukon Delta	926	1.6	2,059	2.4	-	-	22	3.7	-	-
Cook Inlet	24,710	42.7	37,054	43.2	1,286	34.2	200	33.3	754	45.4
Gulf Coast	4,687	8.1	7,291	8.5	75	2.0	22	3.7	332	20.0
Southeast	10,474	18.1	15,182	17.7	650	17.3	22	3.7	88	5.3
Kodiak	2,199	3.8	1,287	1.5	805	21.4		-	-	-
Alaska Pen.	4,224	7.3	2,916	3.4	289	7.7	46	7.4	221	13.3
Aleutian Chain	173	0.3	172	0.2	117	3.1		-	-	-
Statewide	57,868	100.0	85,774	100.0	3,760	100.0	602	100.0	1,661	100.0

Table 4. Location of most hunting activity and greatest duck and goose harvest, 1973-74.

Calculated duck harvest and hunter days					Calculated goose harvest		
	Hunter Days		Ducks				
Location	No.	% of state total	No.	% of state total	Location	No. Geese	% of state total
Susitna Flats	7,060	12.2	16,385	18.3	Pilot Point	4857	26.4
Palmer-Hay Flats	4,861	8.4	7,879	8.8	Cold Bay	4066	22.1
Copper R. Delta	3,819	6.6	6,357	7.1	Copper R. Delta	1343	7.3
Minto Flats	2,836	4.9	6,984	7.8	Chickaloon Flats	1122	6.1
Pilot Point	2,778	4.8	2,059	2.3	Susitna Flats	1030	5.6
Mendenhall Wetlands	2,720	4.7	2,238	2.5	Minto Flats	754	4.1
Chickaloon Flats	1,562	2.7	2,149	2.4	Yakutat Area	405	2.2
Stikine R. Delta	1,389	2.4	3,223	3.6	Palmer-Hay Flats	257	1.4
Eagle R. Flats	1,273	2.2	806	0.9	Kachemak Bay	184	1.0
Goose Bay	984	1.7	2,238	2.5	Stikine R. Delta	184	1.0
Potter Marsh	810	1.4	985	1.1	Chilkat River	92	0.5
Kachemak Bay	752	1.3	1,074	1.2	Mendenhall	74	0.4
Eielson AFB	752	1.2	1,074	1.2	Rocky Pass	37	0.2
Chilkat River	752	1.2	895	1.0	Trading Bay	37	0.2
Portage Flats	463	0.8	627	0.7	Salchaket Slough	37	0.2
Cold Bay	405	0.7	358	0.4			
Yakutat Area	289	0.5	627	0.7			
Redoubt Bay	289	0.5	627	0.7			
Salchaket Slough	231	0.4	358	0.4			
Rocky Pass & Duncan Canal(each)	174	0.3	448&716	0.5& 0.8			
Subtotal	34,373	59.4	51,107	64.9		78.7	14,479
Statewide	57,868	100.0	89,534	100.0		100.0	18,397

Table 5. Duck species composition in the harvest as determined by random field bag checks - Yukon Valley, Central, Gulf Coast and Southeast harvest areas, 1973-74.

Species	Area and Percent Species Composition					
	Yukon Valley	Central	Cook Inlet	Gulf Coast	Southeast	All Areas
Pintail	53.4	23.6	38.2	44.2	43.2	38.6
Mallard	24.5	16.1	11.5	25.2	15.9	15.3
Am. Widgeon	2.2	16.9	19.5	9.3	24.4	17.9
G-W Teal	2.2	17.8	22.3	9.6	13.0	17.8
Shoveler	8.9	14.0	6.5	9.9	1.3	7.2
Gadwall	-	-	0.4	0.3	-	0.2
Scaup	2.2	2.9	0.7	0.6	0.3	1.0
Goldeneye	2.2	1.7	0.3	-	0.3	0.4
Bufflehead	4.4	3.3	0.4	-	-	0.7
Canvasback	-	2.5	-	-	-	0.3
B-W teal	-	1.2	-	0.3	-	0.2
Merganser	-	-	0.2	0.3	-	o.1
Harlequin	-	-	-	0.3	-	0.1
H. Merganser	-	-	-	-	1.6	0.2
	100.0	100.0	100.0	100.0	100.0	100.0

Total Game Ducks = 99.6%
Total nongame ducks = 0.4%

Sample Size	45	242	1075	333	315	2010

that hunters somewhat bias this survey by tending not to send in wings of nongame ducks. The state hunter questionnaire mail survey is believed to provide the best estimate of nongame duck kill.

Table 6 provides a comparison of duck harvest estimates by species using field bag check data and FWS parts collection survey data. Table 7 compares the duck species age ratios in the harvest for state bag checks and the Federal survey.

Goose Harvest

Hunters reported taking an average of 1.65 geese per active waterfowl hunter. This is a much higher success ratio than during the 1971-72 and 1972-73 seasons, when 1.08 and 0.99 birds per active hunter, respectively, were calculated to be taken. The 1973-74 statewide goose harvest was calculated to be 18,397 birds compared to 10,821 in the 1972-73 season.

Field bag checks are not considered to be adequate for determining statewide or even areawide species composition of the goose kill. Numbers of geese checked are few and bag checks are not conducted in enough locations to adequately sample harvests of all species.

Although hunters were not asked to report goose kill by species in the 1971-72 mail questionnaire they were asked to do so in the 1972-73 and 1973-74 surveys. Table 8 presents calculated goose harvest by species and by harvest area for 1973-74. Canada geese made up 71 percent of the reported state goose harvest, while emperor geese comprised 13 percent of the total bag. Black brant, white-fronts and snow geese made up 8, 6 and 2 percent, respectively, of the total goose harvest.

Crane Harvest

Hunters reported taking an average of 0.05 cranes per active hunter, as compared to 0.07 birds per hunter in 1972. The statewide calculated crane harvest was 602 birds, compared to 765 the previous year. Table 3 summarizes crane harvest by area.

Snipe Harvest

An average of 0.15 snipe reported per active hunter resulted in a calculated statewide harvest of 1,661 birds. During the 1972-73 season hunters reported 0.32 birds per man, for a total harvest of 3,498 snipe. Table 3 summarizes snipe harvest by area.

Hunter Characteristics

Because both area of residence (hunter's address on license) and area of most duck harvest were included on the survey forms, an estimate of travel involved to go duck hunting could be made. Of all hunters shooting most of their ducks out of their area of residence, about one-third went to the Gulf Coast area and over 30 percent each went to the Alaska Peninsula and Central areas. Nine percent of all hunters reported taking most of their ducks outside their areas of residence. This 9 percent represents about 1,000 hunters. Table 9 compares area of residence to the harvest area where hunters reported taking most of their ducks.

Table 6. A comparison between state and federal estimates of the statewide duck harvest by species, 1973-74.

Species	State Estimates*		Federal Estimates**	
	No.	% of total	No.	% of total
Pintail	32,948	36.8	26,765	29.3
Mallard	13,699	15.3	24,298	26.6
Am. Wigeon	15,400	17.2	14,707	16.1
G-W Teal	15,221	17.0	11,784	12.9
Shoveler	6,178	6.9	4,293	4.7
Scaups	806	0.9	3,837	4.2
Gadwall	179	0.2	457	0.5
Goldeneyes	358	0.4	1,553	1.7
Bafflehead	537	0.6	1,644	1.8
Canvasback	269	0.3	183	0.2
B-W Teal	179	0.2	365	0.4
Ringneck	-	-	639	0.7
Total Game	85,774	95.8	90,525	99.1
Total non-game	3,760	4.2	822	0.9
Total Ducks	89,534	100.0	91,347	100.0

* Species harvest projections are from 1973 field bag checks, except non-game ducks which are taken from the 1973 mail survey.

** Species harvest projections are from 1973 Fish and Wildlife Service data (Schroeder et al, 1974).

Table 7. Percent immature birds in the 1973-74 statewide waterfowl harvest as determined by combined random field bag checks, compared to FWS estimates. 1/

Species	Field Bag Checks		BSF&W Estimates	
	% imm.	S. Size	% imm.	S. Size
Pintail	74.1	672	85.7	336
Mallard	76.4	254	87.8	280
Am. Widgeon	79.8	312	-	-
G-W Teal	60.7	219	88.2	127
Shoveler	83.0	112	89.2	56
Dusky Canada goose	70.1	77	-	-
Lesser Canada goose	53.8	13	-	-
White-fronted goose	66.7	15	-	-

1/ Sorensen et al, 1974

Table 8. Calculated goose harvest by species by harvest area, 1973-74.*

Area	Species and Number: Canada No.	Canada % of species total	White-fronted No.	White-fronted % of species total	Emperor No.	Emperor % of species total	Brant No.	Brant % of species total	Snow No.	Snow % of species total	Total No.	Total % of statewide total
North Slope	-	-	146	12.8	0	-	0	-	0	-	146	0.8
Seward Pen.	324	2.5	0	-	185	7.8	186	11.9	0	-	695	3.8
Yukon Valley	259	2.0	146	12.8	0	-	0	-	0	-	405	2.2
Central	545	4.2	291	25.5	0	-	0	-	46	13.3	882	4.8
Yukon Delta	117	0.9	0	-	164	6.9	0	-	0	-	281	1.5
Cook Inlet	2,309	17.8	218	19.1	0	-	0	-	23	6.7	2,550	13.9
Gulf Coast	1,777	13.7	0	-	0	-	47	3.0	0	-	1,824	9.8
Southeast	1,608	12.4	146	12.8	0	-	0	-	46	13.3	1,800	9.8
Kodiak	26	0.2	0	-	116	4.9	0	-	0	-	142	0.8
Alaska Pen.	6,005	46.3	194	17.0	1,652	69.6	1,331	85.1	234	66.7	9,416	51.2
Aleutian Chain	0	-	0	-	256	10.8	0	-	0	-	256	1.4
Statewide	12,970	100.0	1,141	100.0	2,373	100.0	1,564	100.0	349	100.0	18,397	100.0

* Unknown goose harvest locations and areas and species reported as unknown are proportionally included in known harvest areas and species totals.

Table 9. Incidence of waterfowl hunting in areas other than that in which the hunter lives. *

Area of Residence	PERCENT OF HUNTERS WHO HUNTED MOST IN: No. Slope	Seward Pen.	Yukon Valley	Central	Yukon Delta	Cook Inlet	Gulf Coast	S.E.	Kodiak	Alaska Pen.	Aleut. Chain	Total out of Res. Hunt
No. Slope	100	-	-	-	-	-	-	-	-	-	-	0
Seward Pen.	-	100	-	-	-	-	-	-	-	-	-	0
Yukon Valley	-	-	83	-	-	17	-	-	-	-	-	17
Central	-	-	-	99	-	1	-	-	-	-	-	1
Yukon Delta	-	-	-	-	100	-	-	-	-	-	-	0
Cook Inlet	-	-	1	5	-	85	5	-	-	4	-	15
Gulf Coast	-	-	-	-	-	-	100	-	-	-	-	0
Southeast	-	-	-	-	-	1	2	97	-	-	-	3
Kodiak	-	-	-	-	-	-	-	-	83	17	-	17
Alaska Pen.	-	-	-	-	-	-	-	-	-	100	-	0
Aleutian Chain	-	-	-	-	-	-	-	-	-	-	100	0
Percent of Total Hunters Going to:	0	0	2	29	0	5	33	0	0	31	0	9

*Eg. Of the waterfowl hunters living in Southeast, 1 percent and 2 percent reported shooting most of their ducks in the Cook Inlet and Gulf Coast areas, respectively; a total of 3 percent traveled out of the Southeast to hunt. Of all waterfowl hunters in the state who hunted out of their unit of residence, none came to the Southeast. A total of 9 percent of all waterfowl hunters in the state shot most of their ducks in a different area than that in which they live.

DISCUSSION

Bias corrections for reported season duck bags were made using the same methods as last year and the same as the FWS method. Reported harvest was reduced by 15 percent as described by Carney (pers. comm.). The FWS uses a constant 15 percent reduction factor in Alaska. This represents a long-term average rate which was derived by using the Williams (1953) method.

Although the FWS does not correct for hunter bias in reported days hunted per season (Carney, pers. comm.), bias corrections were made in the ADF&G survey. Carney believes that if a hunter can remember anything about his hunting, he can remember the number of days he hunted. A review of the frequency of reported days hunted per season in Alaska indicates this may be a false assumption. People report hunting those number of days divisible by five (5, 10, 15, 20, etc.) much more frequently than other day classes. Also, very few people report hunting 13 days during the season (superstition bias). Therefore, bias corrections for days hunted were made as described by Williams (1953).

A comparison of the results of our 1973 mail survey and the 1973 estimates of waterfowl harvest and hunter activity made by the FWS (Schroeder et al. 1974) shows, except for hunter days and goose harvest, close correlation (Table 10). Our total goose harvest estimate was 60 percent above their harvest estimate. Also, species harvest estimates for emperor geese and black brant are quite different. Harvest estimates for white-fronted geese are identical. The Federal species composition data were derived from only 60 goose tails, however.

It is believed that our mail survey provided the best estimate of goose harvest, by species, in Alaska during the 1973-74 season. The FWS has considered going to a hunter reporting system to estimate goose harvest by species, as opposed to the present system where people send in goose tails. For various reasons they are not satisfied with the present system (Carney, pers. comm.).

The Alaska Peninsula was, as in 1971-72 and 1972-73, the major goose harvest area in the state and over one-half of the total harvest occurred there. Still relatively unknown to people outside Alaska, the Alaska Peninsula has some of the world's best goose hunting.

Although there are some well-known duck hunting areas in Alaska, such as Susitna Flats and Minto Flats, about 35 percent of the harvest occurred on lesser known areas. As seen in Table 4, 65 percent of the harvest occurred at the "big 21" duck hunting places in Alaska.

This survey did not sample hunters under 16 who did not purchase a hunting license. Carney (pers. comm.) estimates that about an additional 8 percent total hunter days and 5 percent total duck harvest can be attributed to juveniles.

Table 10. A comparison between 1973 ADF&G and USF&WS waterfowl hunter success surveys.*

	ADF&G		USF&WS	
Percent active hunters	68.6		72.8	
Number active hunters	11,150		11,838	
Days per active hunter	5.19		6.7	
Total hunter days	57,868		78,936	
Duck bag per active hunter	8.03		7.3	
Total duck bag	89,534		86,780	
Goose bag per active hunter	1.65		0.68	
Total goose bag	18,397		11,479	
Goose harvest by species		% of total		% of total
Canada	12,970	70.5	9,750	85.0
Emperor	2,373	12.9	350	3.3
Brant	1,564	8.5	-	0.0
White-fronted	1,141	6.2	1,000	8.3
Snow	349	1.9	350	3.3

* For adult hunters only (16 years or older).

SUMMARY

1. The total calculated duck, goose, crane and snipe harvests in Alaska during the 1973-74 season were: 89,534; 18,397; 602 and 1,661 birds, respectively.

2. Hunters spent a calculated 57,868 days hunting waterfowl in Alaska during the 1972-73 season; a decrease of 2 percent from the 1972-73 season.

3. Hunters harvested an average of 8.0 ducks each, and hunted an average of 5.2 days during the season.

4. Pintails, mallards, wigeons and green-winged teal constituted about 90 percent of the total duck harvest.

5. Canada geese comprised 85 percent of the state's goose harvest.

6. This survey indicated that 9 percent of the waterfowl hunters took most of their ducks in a different area than that in which they live.

DUSKY CANADA GOOSE STUDIES

Management Plan

In October 1973 a formal dusky Canada goose management plan outlining objectives, goals, and methods to achieve objectives was signed by the Commissioner, Alaska Department of Fish and Game; the Director, Oregon State Wildlife Commission; and the Region I Director, Fish and Wildlife Service. This represents the first goose management plan in the U. S. which has been signed by concerned agency heads.

The management objective for the dusky goose population is to achieve and maintain an annual post-season population of between 20,000 and 25,000 geese. The Department of Fish and Game is obligated to several management procedures, all of which are described in the plan. These are:

1) Conducting annual pre-season banding of about 500 birds.
2) Conducting annual production estimate and fall flight forecast.
3) Obtaining tail feather length and other measurement data from known dusky geese, to be used in Oregon for the separation of dusky geese from other subspecies of Canada geese in the harvest.
4) Participating in the Dusky Canada Goose Sub-Committee which will make management recommendations to the Pacific Flyway Council and Technical Committee.

Production and Fall Flight

The January 1973 mid-winter inventory of 16,000 dusky geese was the lowest in 10 years and reflected poor production in 1971 and 72. Weather and timing of spring breakup on the Copper River Delta in 1973 were normal and unlike the severe springs of the previous two years.

Although a formal nesting success study was not conducted in 1973, Area Biologist Julius Reynolds recorded an average of 4.9 eggs per nest in 48 randomly located dusky goose nests. This compared to average clutches of 4.4 and 3.6 in 1972 and 71, respectively, and an average 4.9 eggs per nest during the previous eight years.

On July 26, 1973 an aerial census was made on the Copper River Delta and 4,582 adult and 1,291 immature dusky geese were counted for an observed 22 percent young. After a visibility correction factor of 50 percent for young was applied (Timm, 1971 unpubl. memo. Ak. Dept. Fish & Game piks. Anchorage), there was a calculated 36 percent young in the population. This compares to 1972 and 1971 production estimates of 10.6 percent and 16.2 percent young in the population, respectively, and a 1952-63 average of 45.6 percent young. The 1973 calculated fall flight of dusky geese was 24,100 birds. The 1974 January mid-winter inventory showed 18,400 dusky geese, indicating a harvest of 5,700 birds during the fall of 1973.

Banding and Recoveries

On July 29, 1973, 494 dusky geese were banded by biologists from the Alaska Department of Fish & Game, the U. S. Forest Service and the Fish & Wildlife Service. Participants came from as far away as the Finley National Wildlife Refuge in Oregon.

The following number of dusky geese were banded and recovered during 1973.

	Normal Birds			Neck-Collared Birds		
	Ad. Male	Ad. Female	Local	Ad. Male	Ad. Female	Local
# Banded	196	184	10	55	43	6 #
#Recovered	6	5	1	3	3	0 %
%Recovered	3.1	2.7	10.0	5.5	7.0	-

The 104 color-marked birds received a yellow plastic collar with one black letter and two black numbers. Color marking was done to supplement a dusky goose study which began during the spring of 1974. A M.S. candidate from the U. of Alaska will conduct the study.

The 2.9 percent first year recovery rate on all adults compares to first year adult rates of 9.5 percent, 2.8 percent and 7.7 percent in 1970, 71 and 72, respectively. The current band reporting rate is not known.

Tail Feather Lengths

As more non-dusky Canada geese are beginning to winter in the Willamette Valley, separating subspecies in the harvest is becoming increasingly difficult. Age ratios of duskys in the Oregon harvest have been monitored to check the accuracy of productivity estimates on the breeding grounds.

Tail fans were collected on the Copper Delta in 1973 from 65 geese shot before September 15, and having the visual appearance of duskys. A central tail feather from each bird was measured in millimeters. Results of these data and data collected in future years will be utilized by waterfowl managers in Oregon to hopefully separate dusky geese from non-dusky geese in the harvest.

The average tail feather length taken during the 1973 season for adults was 153mm (n=15); and for immatures, 136 mm (n=50).

STATEWIDE WATERFOWL BREEDING PAIRS SURVEY - 1974

Introduction

Annual aerial surveys have been conducted in Alaska since the mid-1950's to measure the size of the breeding duck population. All major production areas are sampled except the North Slope. This year, as in 1972, the state participated in the survey with Dan Timm serving as observer. State observers have been utilized four different years since the survey's conception.

Production habitat in Alaska is divided into a number of different strata, or areas with similar average breeding duck populations. There are about 79,000 square miles of production habitat in Alaska, according to available Fish and Wildlife figures.

Methods

Aerial transects were made over predetermined flight paths that are flown identically each year. All ducks, geese, cranes, swans and loons were counted within one-eighth mile of both sides of the Beaver aircraft. A total of 3,552 linear miles of transects were flown, resulting in a total sample of 888 square miles of habitat.

The survey started May 17 and was completed on June 9. The only delay encountered was on the Yukon Flats where we had to wait for lake ice to melt.

Weather and Habitat Conditions

The winter of 1973-74 was normally cold but snowfall averaged much below normal across Alaska. Ice was therefore unusually thick on lakes and rivers. Most snow evaporated during the warm weather in April, precluding any substantial runoff. No flooding was encountered during the survey period.

Although trees were fully leaved and spring had long since arrived on the Yukon Flats and Tetlin areas, heavy ice was present in these areas on about 60 percent of the lakes. Dabbler nesting probably was not delayed though. The remainder of Alaska that was surveyed experienced a very early, but dry spring; nesting conditions were optimum. The Yukon Delta experienced the earliest spring in at least 10 years (cf. Lensink, pers. comm.).

Although the Seward Peninsula apparently had an average breakup, on June 4 we found 25° temperatures and 30 knot winds. Some of the water around edges of the lakes was refreezing.

About 80 percent of the state had optimum nesting conditions.

Survey Results

Ground surveys to assess the percent, by species, visibility rates from the air, are not conducted in Alaska. Visibility rates vary by year and by species in areas where such ground surveys are made.

Early in 1974 a complete statistical analysis of all breeding pairs survey data and ground counts in Alaska and elsewhere was made by the USFWS. Using some early ground work in the 1960's by Pete Shepherd and Cal Lensink, and ground-air comparison counts in the Canadian Far North, long term average visibility rates for each species have been calculated.

The totals of each species observed in 1974 were multiplied by respective visibility rate factors. For example, 810 mallards x 3.1625 and 506 green-winged teal x 9.5255, etc. Although these visibility factors vary by year, and are based on an incomplete sample of Alaska habitat, they provide the best air-ground truth estimates available for the state.

The following are calculated breeding duck populations in Alaska for 1972, 1973, 1974 and for the 1965-1973 nine year average. Breeding ducks on the Old Crow Flats are also included.

	1972	1973	1974	1965-73 Ave.
Total Ducks	4,656,400	4,795,100	5,103,500	4,386,000

Conclusions

One might assume that since in 1974, there were a total of 5,103,500 caluclated breeding ducks in Alaska there are possibly at least twice that many. This survey is designed to mainly measure the size of the dabbling duck population. Therefore, such species as eiders, old squaw, harlequin, and mergansers are significantly underestimated. The survey probably does provide reasonable population estimates of most dabblers, scaup, scoter, canvasback, bufflehead and goldeneye, except for those on the North Slope which isn't surveyed.

The Fish and Wildlife Service has, through the years, refined breeding bird surveys to a point of reasonable accuracy. However, projections of game duck populations in Alaska are perhaps the least accurate of any area surveyed in North America. These projections could be significantly improved by two means: 1) Conduct at least one good air-ground study over all representative habitat, preferably on an annual basis; and 2) Redelineate and measure on 1: 63,360 maps, Alaska's production habitat. The figure being used now was derived from 1:250,000 maps and does not include much of the fringe or marginal habitat in the state.

COOPERATIVE MANAGEMENT AGREEMENTS

Copper River Delta

In April, 1973 a Copper River Delta management meeting was held in Cordova. Most people knowledgeable about, and directly involved with various phases of land and/or wildlife management on the delta attended the meeting. A comprehensive management scheme was outlined at the meeting, and various individuals agreed to work on parts of the management program. In early June 1974 another meeting was held to report on progress and to review the new research projects initiated during the year, status of the dusky goose population, status of oil lease applications on the delta and other pertinent information.

Breeding Waterfowl Survey

One of the major responsibilities of the Department of Fish and Game outlined at the meeting was to inventory the breeding duck population, including its size, species composition and distribution on the delta.

Prior to the 1964 Good Friday Earthquake, the Fish and Wildlife Service flew annual breeding duck surveys across the delta. Their 7-year average breeding duck population was 27,700 birds or 69.25 birds per square mile on 400 square miles of habitat (J. King 1974, pers. comm. USF&WS, Juneau). Surveys were not flown from 1964 thru 1973.

Since the 1964 earthquake many field workers have mentioned the scarcity of breeding ducks on the delta. Due to ground uplift of some six feet in 1964 and the resulting modification of the delta's plant communities and ponds, conditions are believed to be less favorable for duck production than prior to 1964. A breeding pairs survey on the delta was flown in 1974, to measure any changes in the breeding duck population and to obtain current data on species composition and distribution.

Procedures:

The major waterfowl habitat on the delta was first encompassed by lines drawn on a 1 inch : 1 mile map (Fig. 3). The land area within these lines was then planimetered. A total of 308 square miles of major habitat was measured. It is believed that all major waterfowl production habitat on the Copper River Delta is represented within this area.

Old Fish and Wildlife Service survey maps were reviewed and areas of survey coverage noted. Transect lines were then drawn on the new map to approximately cover the same area that was covered pre-1964. Each transect was broken into 38, three-mile segments. By using three-mile segments, rather than standard 16-mile segments used by the Fish and Wildlife Service in the rest of Alaska, more precise duck distribution data could be obtained.

The 38 segments represent 114 linear miles. When each observer counts birds one-eighth of a mile from the aircraft, 28.5 square miles of habitat are surveyed, or 9.25 percent of the total waterfowl habitat.

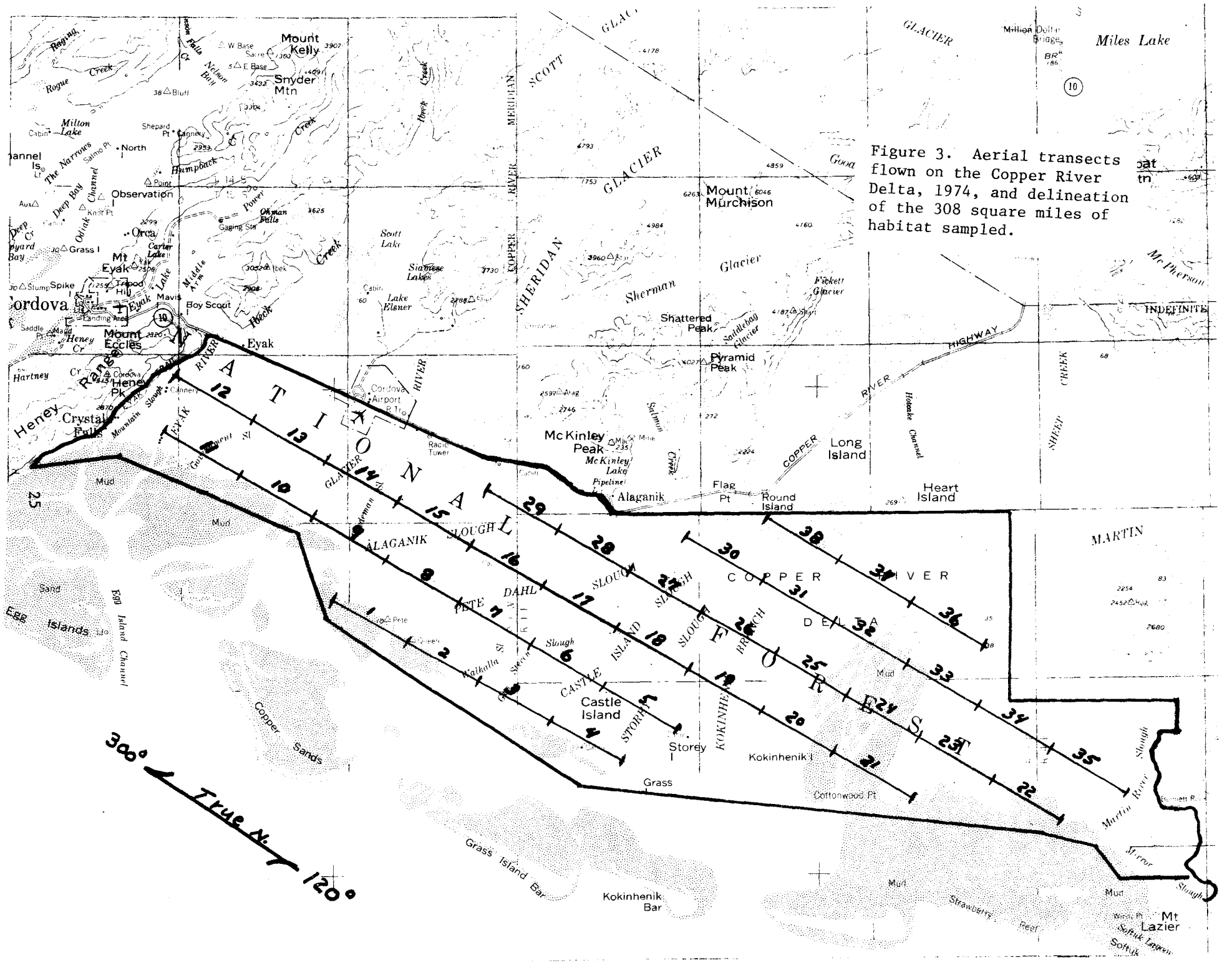


Figure 3. Aerial transects flown on the Copper River Delta, 1974, and delineation of the 308 square miles of habitat sampled.

Only 1.09 percent of the waterfowl habitat in Alaska is surveyed on the statewide breeding waterfowl pairs survey.

On May 15, 1974 Jim King (USFWS) and Dan Timm (ADFG) flew the survey on flight routes as depicted in Fig. 3. All ducks, geese, swans and loons were counted one-eighth mile either side of the Beaver aircraft. The survey was conducted from an altitude of 100 to 150 feet. Birds were recorded by species and whether they were single birds, in pairs or flocks.

Data were analyzed for the survey area and then expanded by a factor of 10.807 for the entire delta (308 square miles). Visibility rates for each species were applied, as discussed in the 1974 Statewide Breeding Waterfowl Survey section elsewhere in this report.

Results:

The 1974 breeding duck population on the Copper Delta was calculated to be 23,441 birds. There were also a calculated 17,696 dusky geese, 551 swans, and 1,124 loons (1081 red-throated and 43 Arctic). Table 11 presents a comparison between the 1974 calculated breeding duck population and the 7-year average pre-64 population. Pre-64 population data for geese, swans and loons are not available. Table 12 presents the calculated square mile density of dabbling ducks, diving ducks and dusky geese on the 38 three-mile segments covered in the survey (Fig. 3). Because some of the segment end points were missed due to the observers' preoccupation with counting large numbers of birds, a few of the segments are lumped. The survey was flown from inch to the mile maps, rather than from a 4 inch: 1 mile map as in Fig. 3. This proved more difficult than using a 4: 1 scale map.

Discussion and Conclusions:

As previously stated, many field workers on the Copper Delta since 1964 have commented on the scarcity of ducks during the summer months. Therefore, a decrease in number of breeding ducks in 1974 was expected, from the 7-year pre-64 average population. A decrease from 27,700 to 23,441 ducks (15.4 percent) was recorded, but a much larger decrease was expected.

Significant changes in the population size of some species did occur. For example, mallards decreased 54 percent, scaup decreased 57 percent, and total divers were down 36 percent. Wigeons were up 75 percent, G-W teal 157 percent, shoveler 132 percent and merganser 1,802 percent. Changes in the population size of individual species can be expected, depending upon the species adaptability to ecological changes resulting from the 1964 earthquake.

The possibility exists that the 23,441 breeding duck population is an inflated figure and fewer birds actually nested on the delta. The survey was flown May 15, - perhaps early enough to count birds which were migrating through to more northern areas.

Table 11. The 1974 Breeding Duck Population on the Copper River Delta Compared to the Seven Year Pre-1964 Average Population.

Species	1974 No. Birds	1974 % of Total	Pre-64 Ave. No. Birds	Pre-64 Ave. % of Total	Percent Population Change
Pintail	7,370	31.4	6,800	24.5	+ 8.4
Mallard	2,563	10.9	5,600	20.2	-54.2
Am. Wigeon	2,100	9.0	1,200	4.3	+75.0
G. W. Teal	2,059	8.8	800	2.9	+157.4
Shoveler	1,161	5.0	500	1.8	+132.2
Gadwall	103	0.4	200	0.7	- 48.5
Tot. Dabblers	15,356	65.5	15,100	54.5	+ 1.7
Scaups	4,329	18.5	10,000	36.1	- 56.7
Merganses	1,902	8.1	100	0.4	+1,802.0
Goldeneys	1,189	5.1	1,700	6.1	- 30.0
Bufflehead	350	1.5	200	0.7	+ 75.0
Canvasback	315	1.3	200	0.7	+ 57.5
Tot. Divers	8,085	34.5	12,600*	45.5	- 35.8
Total	23,441	100.0	27,700	100.0	- 15.4

* Includes 400 scoter.

Table 12. Calculated square mile densities of dabbling ducks, diving ducks and dusky Canada geese on 38 three mile segments (Figure 1) - Copper Delta, 1974.

Segment Number	Birds Per Square Mile				
	Dabb. Ducks	Div. Ducks	Mergansers	Tot. Ducks	Dusky Geese
1	79.5	-	-	79.5	39.3
2	140.2	152.5	-	292.7	419.1
3	117.5	128.9	64.1	310.5	252.1
4	-	-	-	-	-
5	11.4	-	-	11.4	-
6	100.4	-	-	100.4	10.9
7	45.5	23.6	31.9	101.0	165.9
8	145.9	78.6	53.3	277.8	410.3
9	68.2	16.0	-	84.2	89.5
10	90.9	117.4	-	208.3	213.9
11	225.5	54.9	-	280.4	52.4
12	11.4	-	-	11.4	6.5
13	45.5	-	-	45.5	54.6
14	56.8	-	-	56.8	39.3
15	90.9	7.6	-	98.5	37.1
16	34.1	7.6	-	41.7	52.4
17	34.1	7.6	-	41.7	13.1
18	-	-	-	-	-
19-21	26.5	-		49.7	-
22	11.4	-	-	11.4	-
23	11.4	-	-	11.4	-
24	100.4	-	-	100.4	-
25	-	7.6	-	7.6	-
26	-	-	-	-	-
27-28	95.7	3.2	-	98.9	12.0
29	84.6	19.8	10.6	11.5	194.3
30	-	-	-	-	-
31-33	-	39.2	1.8	41.0	-
34	11.4	7.6	-	19.0	-
35	-	7.6	-	7.6	24.0
36	79.6	-	-	79.6	-
37	-	-	-	-	-
38	-	-	-	-	-
Totals	49.8	20.1	6.2	76.1	57.5

As can be seen in Table 2, areas of major and minor duck and goose densities across the delta can be readily ascertained. These data are also available for loons and swans. More definitive swan data can be obtained, however, by reviewing the section on the 1974 Gulf Coast Swan Survey, in this report.

One indication of this is to compare the ratio of ducks observed to be in pairs, singles and in flocks on the delta, to these same ratios observed over the rest of Alaska on the breeding duck survey (May 17-June 9, 1974).

These comparisons are as follows:

	Percent of birds observed to be in:			
	Pairs and Singles		Flocks	
Area	Dabblers	Divers	Dabblers	Divers
Copper Delta	90.8	76.5	9.2	23.5
Remainder of State*	97.8	88.3	2.2	11.7

*Only those birds also observed on the Copper Delta; ie. Old Squaw and Scoter not included.

As can be seen from the above comparisons, a significantly larger proportion of both dabblers and divers were in flocks on the Copper Delta, compared to the rest of Alaska. Flocked birds are more indicative of birds which haven't established a territory and thus are probably still in migration.

It is probable that the 1974 breeding duck survey was conducted too early and the 23,441 ducks population is somewhat inflated. In future years the survey should be made in late May.

The survey resulted in a calculated dusky goose population of 17,696 birds. The visibility rate for Canada geese was assumed to be 80 percent. The Fish and Wildlife Service does not provide visibility rates for geese, as they do for ducks (see section on breeding waterfowl survey - this report).

The calculated 17,696 dusky geese on the delta compares quite favorably with the mid-winter inventory count in Oregon of 18,400 birds (4 percent difference). People conducting the count in Oregon had expressed some concern over the accuracy of the 1974 winter survey due to the increasing number of non-dusky geese wintering in the Willamette Valley.

Our breeding grounds survey lends support to their winter count. Assuming a lower visibility rate for Canada geese, the 17,696 birds could easily project to a higher figure. We do not believe more than 80 percent of the geese were seen from the air on the May survey.

Gulf Coast Swan Census

On May 3, 4 and 5, 1974, biologists from the Department of Fish and Game, U. S. Forest Service and the University of Alaska flew a trumpeter swan survey from Cordova to Cape Yakataga. It is felt that nearly all swan habitat in the area was covered.

Both the flight path and individual swan observations were marked on 1:250,000 or 1:63,360 scale topographic maps; copies are on file in

Anchorage. Individual swan sightings were recorded on forms much like those used by King (1968), so supplemental data on habitat type, pond size, and wetland type are also on file.

Spring surveys were flown in the Gulf Coast area in 1970 and 1972. Coverage in 1970 was not as complete (Cordova to Tsiui River) as it was in 1972 and 1974 (Cordova to Cape Yakataga). Table 13 presents data from the 1974 and 1972 surveys and Table 14 compares 1970, 1972 and 1974 data, with 1974 and 1972 adjusted to duplicate the 1970 survey area.

Only one gray colored immature bird was recorded in 1974, and none were seen in 1972. In 1970 9.1 percent of the birds observed were judged to be immature. No explanation is offered for the lack of young observed during the 1972 and 1974 censuses.

Definite egg counts were obtained from four nests in 1974, averaging five eggs per nest.

It appears that 1974 will be a very productive year for trumpeter swans on the Gulf Coast, as well as for other waterfowl. Spring breakup was much earlier than normal and clear, warm weather has prevailed through the spring and early summer.

One indication of the probable good productivity this year is the percent of observed pairs with a nest. In 1970 (a good production year) 47 percent of the pairs had nests. In 1972 (a very poor production year) 30 percent had nests. In 1974, 45 percent of the pairs had nests. The 91 total nests observed in 1974 is more than in either 1970 or 1972 (79 nests and 61 nests, respectively).

The status of the Gulf Coast trumpeter swan populations appears to be excellent.

Banding:

On July 27, 1973 Fish and Game biologists assisted Dr. William Sladen of John Hopkins University, with capturing and color-marking 12 trumpeter swans on Peninsula Lake. Two swans were recaptured that had previously been color-marked on Bering Lake. Each blue collar put on had three white numbers followed by a letter. Each bird also received a blue leg band with the same number - letter sequence.

Birds banded in 1972 on Bering Lake have been sighted on Vancouver Island, B. C. (wintering) and on the Willapa Nat. Wildlife Refuge near Illwaco, Washington.

Stikine River Delta

Area game biologist in Region I assisted the U. S. Forest Service with pothole blasting during the early spring of 1974. This was the third year that Fish and Game assisted with the project. Efforts were concentrated on Sergieff Island in 1974, as in 1973. A total of about 142 potholes have been blasted on Sergieff Island and in the Binkley's Slough area since 1969.

Table 13. Trumpeter Swan Survey Data, Cordova through Cape Yakataga.

Year	Single Swan near nest	Single Swan	Pairs near nest	Pairs without nest	Flocked* Birds	Total
1972	6	28	55	128	129	529
1974	8	34	83	102	159	571

* Any group of three or more swans

Table 14. Trumpeter Swan Survey Data, Cordova through Tsiui River.

Year	Single swan near nest	Single swan	Pairs near nest	Pairs without nest	Flocked* Birds	Total
1970	1	41	78	88	342	716
1972	5	27	54	115	123	493
1974	7	33	75	96	156	538

The U. S. Forest Service has also erected a total of 12 wooden "check" dams across the upper portions of sloughs. The first three of these dams created ponds of desirable size, but they washed out within a year. If a suitable construction method can be found, these dams would probably create more surface water area at less cost, than dynamite can create.

VANCOUVER CANADA GOOSE STUDIES

Glacier Bay Banding

During the period July 7-9, 1973, molting Canada geese in Adams Inlet, Glacier Bay were banded. All birds were at least one year old. A total of 333 geese were banded, and one goose was rebanded as the original band put on in 1965 was quite worn.

Of the 142 females banded, 57 (40.1 percent) of the birds had a brood patch, indicating they had constructed a nest but failed to raise a brood of young. No goslings were observed in Adams Inlet during the three days of banding; about 2,000 adult birds were observed.

White plastic neck collars with two black letters were put on 303 geese. The following measurements in millemeters were taken from 309 geese: culmen length and greatest depth; nail to nare; nail width and length; inside and total tarsus; and total weight.

The banding, neck collaring and measuring was done for several reasons. One was to determine if the geese molting in Glacier Bay are all Vancouvers (*B. c. fulva*), or whether some birds are a different subspecies. Several years of band recoveries and a statisical analysis of the measurements will be necessary to determine this. The project was also done to supplement a Ph.D. study on Vancouver geese which was scheduled to start in 1974. This project did not materalize, but 1973 preliminary investigations are reported in the 1973 Waterfowl S & I report.

Recoveries - Shot Birds

There were 12 banded birds (8 males and 4 females) shot during the 1973-74 waterfowl season. All 12 birds had received a neck collar. This represents first year recovery rates of 2.8 percent for females, 4.2 percent for males and 3.6 percent for all birds. The first year recovery rate for all birds banded in Glacier Bay from 1956 to 1965 was 2.6 percent (unpubl. data in ADF&G files). However, none of these birds were neck-collared. Of the 30 birds banded in 1974 not receiving a neck collar, none were recovered during the first hunting season after banding.

Two of the 12 birds recovered were shot in Oregon, in the northern part of the Willamette Valley (both were shot in late December). Two birds were shot about 20 miles north of Sitka in mid October, and the rest were taken in the Juneau area and at Berner's Bay. Only one of the 12 birds is known to have lost it's collar before being shot. This bird was shot September 1, at Juneau.

In many cases birds were observed from the air or from the ground at a distance where the black letters could not be read. Cases of only a white collar being seen are:

LOCATION	DATE	REMARKS
Berner's Bay	21 August 1973	6 + white collars -215 Total geese
Berner's Bay	30 August 1973	1 bird - 13 total geese
St. James Bay	30 August 1973	12+ collars - 300 total geese
Fick Cove	31 August 1973	4 collars - unknown total number of geese
Hood Bay	5 September 1973	2 collars - 17 total geese
Chiak Bay	5 September 1973	4 collars - 50 total geese
Chiak Bay	17 September 1973	1 collar - 15 total geese
Hood Bay	24 September 1973	1 collar - 51 total geese
Crab Bay	24 September 1973	1 collar - 73 total geese
Kadashan Bay	24 September 1973	3 collars - 68 Total geese
Neka Bay	25 September 1973	2 collars - 99 total geese
Hoonah Area	25 September 1973	2 collars - 80 total geese
Big John Bay	9 March 1974	1 collar - 250 total geese

When sufficient recoveries are in, a paper will be published combining and comparing measurements of Glacier Bay geese and geese elsewhere in Alaska, believed to be Vancouvers.

Sight Records of Neck Collared Birds

Sight records where the letters on the collar were ascertained are as follows:

Collar No.	Date	Location	Remarks
CJ	12-18-73	Baskett Slough NWR,Oregon	bird shot 3 days later, bird was next to a yellow collared dusky goose and no size or color difference was noticeable-
KK	12-18-73	" " "	Vancouver was a adult female, dusky a adult male.
PJ	30 May thru 3 June, 1974	Hood Bay, Adminalty Isl.	In company of 20-42 other geese.
DB	12-7-73 12-8-73	Sunny Point (Juneau)	
LD, GG, KN PH, ED, GN, GA, LE, JE, OT, AS	12-8-73	Sunny Point (Juneau)	
PH, LE, AS,	12-9-73	Sunny Point (Juneau)	
ED, AC	12-10-73	Sunny Point (Juneau)	
ED,EE, LE	2-22-74 & 2-24-74	Sunny Point (Juneau)	
PH, GN, NS	3-8-74	Fish Creek (Juneau)	250 Total Birds.
LE, ED, JS, JY, JD, SP	3-18-74 & 3-19-74	Sunny Point	
LE, EE, JS, JY, JD, SP	3-30-74 3-31-74	Sunny Point	252 Total Birds.
JY, JP, SP	4-5-74 4-8-74	Sunny Point	

Jim King recorded most of the birds at Juneau.

WINTERING MALLARD AND CANADA GOOSE STUDIES

Food Habits

During the winter of 1973-74, 14 mallards were collected in Southeast Alaska and on Kodiak Island, and three Canada geese were taken in Southeast Alaska. A total of 38 mallards and 6 Canada geese have been collected to date, during the late winter months for food habits analyses. All digestive tracts from collected birds were sent to Bob Bromley, a M. S. canidate at the U. of Alaska, who will do the food habits analysis.

During the winter of 1974-75, an accellerated collecting program is planned to acquire the desired sample sizes of mallards and geese.

Banding

From March 6 - 13, 1974 a wintering mallard banding effort was made in Rocky Pass, near Petersburg. Operations were based from the Fish & Wildlife Service M/V "Surfbird". Only one mallard was caught and banded. Nine mallards were also captured in a small trap baited with oats, but a goshawk entered the trap and killed all the ducks.

A rocket propelled net was utilized this year with no success. The net had to be placed at high tide line to keep it dry. Hours of observation showed that mallards actively fed up to about 1 hour before high tide. From 1 hour before high tide to about 1 hour after, the birds merely sat in the water in front of the bait by the net and wouldn't approach near enough to be caught. On several nights during low tides, birds apparently flew on to the rocket net site and ate the bait.

LESSER CANADA GOOSE BANDING DATA ANALYSIS

Although lesser Canada geese have been banded in Alaska since 1921, little band recovery analysis had been done on these birds. Three things prompted this lesser Canada goose banding data analysis: 1) the increasing numbers of non-dusky Canada geese wintering in the Willamette Valley of Oregon; 2) the almost total lack of knowledge about lesser Canadas in the Pacific Flyway; and 3) the desire to document the fact that Alaskans harvest very few lesser Canadas, although the Federal Government imposes special bag and possession limit restrictions on dark geese in Alaska.

Until a few years ago, less than 5,000 non-dusky Canada geese wintered in western Oregon. Numbers of non-dusky geese have been rapidly increasing the past two years. Over 12,000 lesser Canadas were counted during the 1974 mid-winter inventory. Since Alaska has a vested interest in all Canada geese and dusky geese in particular, it is important to determine where these new winter residents are coming from and how many of them there might be.

Although most of the Pacific Flyway has a daily bag limit of 3 Canada goose, data to substantiate this liberal bag are lacking. Reliable data on population numbers, productivity, harvest or even where the

birds are coming from are lacking. Alaska banding data were analyzed as a first step to stimulate interest in lesser Canadas in the flyway - nearly all of which come from Alaska.

Although Alaska has a basic goose bag of 6 birds, there is a 4 goose restriction on Canada and white-fronted geese. Although this restriction may be warranted for white-fronts and dusky geese, it seems unlikely that it is warranted for lesser Canadas. Thus lesser Canada recovery data were analyzed to help document the low sport hunting mortality in Alaska and to help support future season liberalization requests.

The following is a copy of a report sent to members of the Pacific Flyway Technical Committee. Data in this report were discussed at the spring, 1974 meeting of that group. The outcome will be a lesser Canada banding effort at Cold Bay during the fall of 1974. Lesser Canada goose studies were also delegated to the Dusky Canada goose sub-committee.

Pacific Flyway Technical Committee Report - Status of Lesser Canada Geese in Alaska.

Daniel Timm
Alaska Department of Fish and Game
Spring, 1974

Introduction

During the past few years, the ratio of non-dusky geese to dusky Canada geese in the Willamette Valley has been steadily increasing. During the 1974 mid-winter inventory, 25 percent of the white-cheeked geese in the valley were not dusky geese. This increase led Chuck Henny, Migratory Bird Populations Station, to investigate the source of these new winter residents in the Willamette Valley. The logical place to look was Alaska. This report is a summary of Henny's harvest distribution analysis of lesser Canada geese banded in Alaska, and my calculations of recovery and mortality rates and supplemental information.

There have been about 1,964 lesser Canada geese banded in Alaska since 1921. The majority of these birds (1,924) were banded in four locations: Yukon-Kuskokwim Delta; Innoko River Drainage; the Kotzebue Basin; and the North Slope. Figure 1 shows these locations. The remainder of the birds have been banded in the Anchorage area, the Yukon Flats, and the Fairbanks area.

These locations are not by any means the only major concentration areas of lesser Canadas in Alaska. Field reports by several people indicate lesser Canadas are scattered across nearly all of Interior Alaska. For example, in 1971 USGMA Ray Tremblay "happened upon" perhaps 40,000 molting subadults on the North Slope. He banded 749 incidental to white-front banding. In 1973, he came across about 6,000 molting birds on the upper Noatak River in the Brooks Range. Due to the lack of time and other priorities, he unfortunately did not band any of these birds. Reports from others also indicate there are many unbanded populations of lesser Canadas in Alaska.

Summary of Recovery Distribution

All recoveries in this report represent birds shot or found dead during the legal hunting season. Data are complete through the 12/31/73 Fish and Wildlife Service IBM recovery listing.

Y-K Delta

Figure 2 shows the recovery pattern for these birds. There have also been three recoveries in Alaska, but none in British Columbia. Since 1962 there have been only seven recoveries, so current information on this population is not available.

These birds do not show a preference for eastern Washington and Oregon like the other banded populations. Frank Kozlik said that perhaps only 10,000 lesser Canadas are scattered in northern California, so the possibility that Y-K Delta birds are being short-stopped north of California definitely exists. All recoveries north of California have been in late November, except for one in December and one in late October.

Figure 1.

Major Banding Locations of Lesser Canada Geese in Alaska.

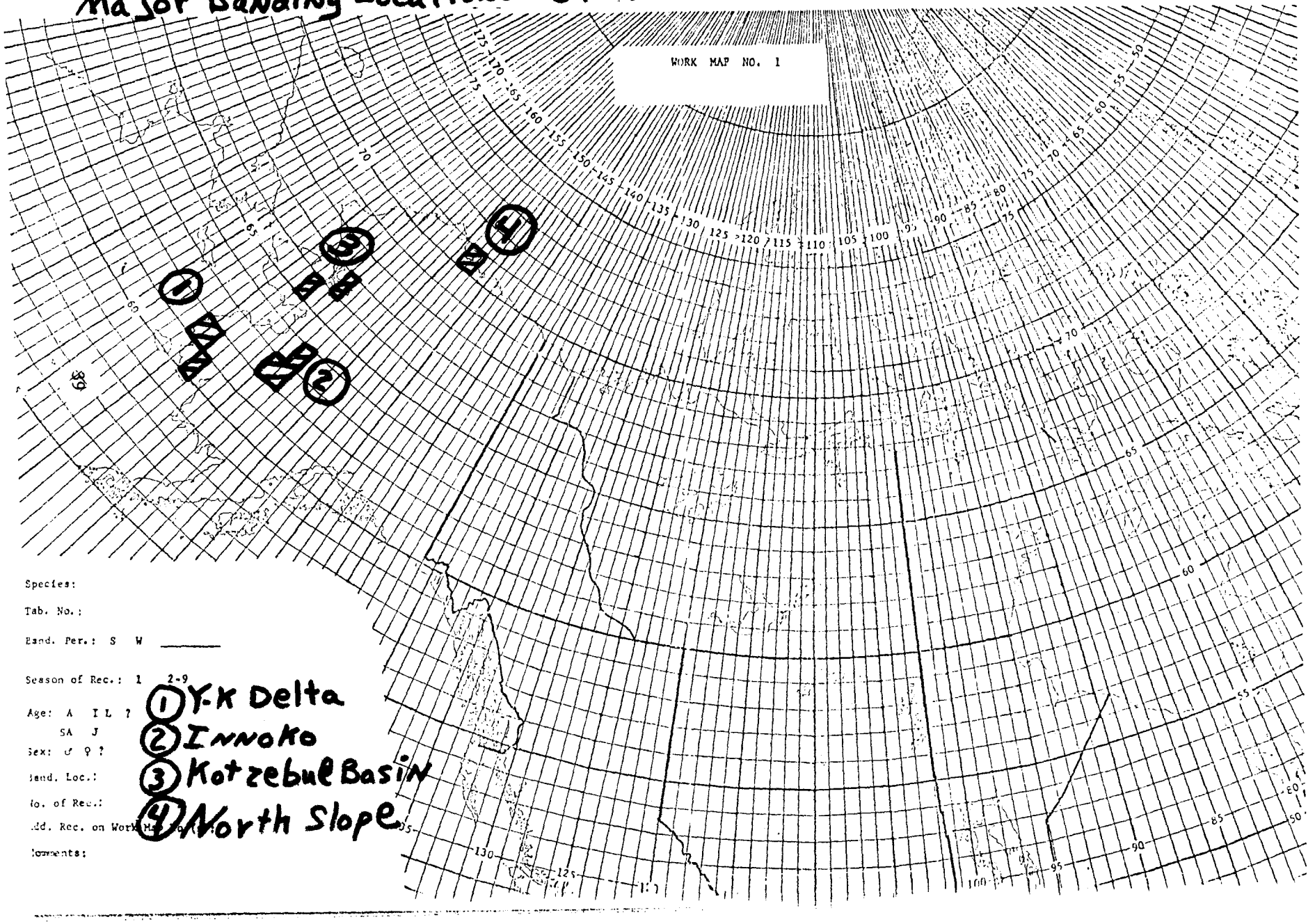
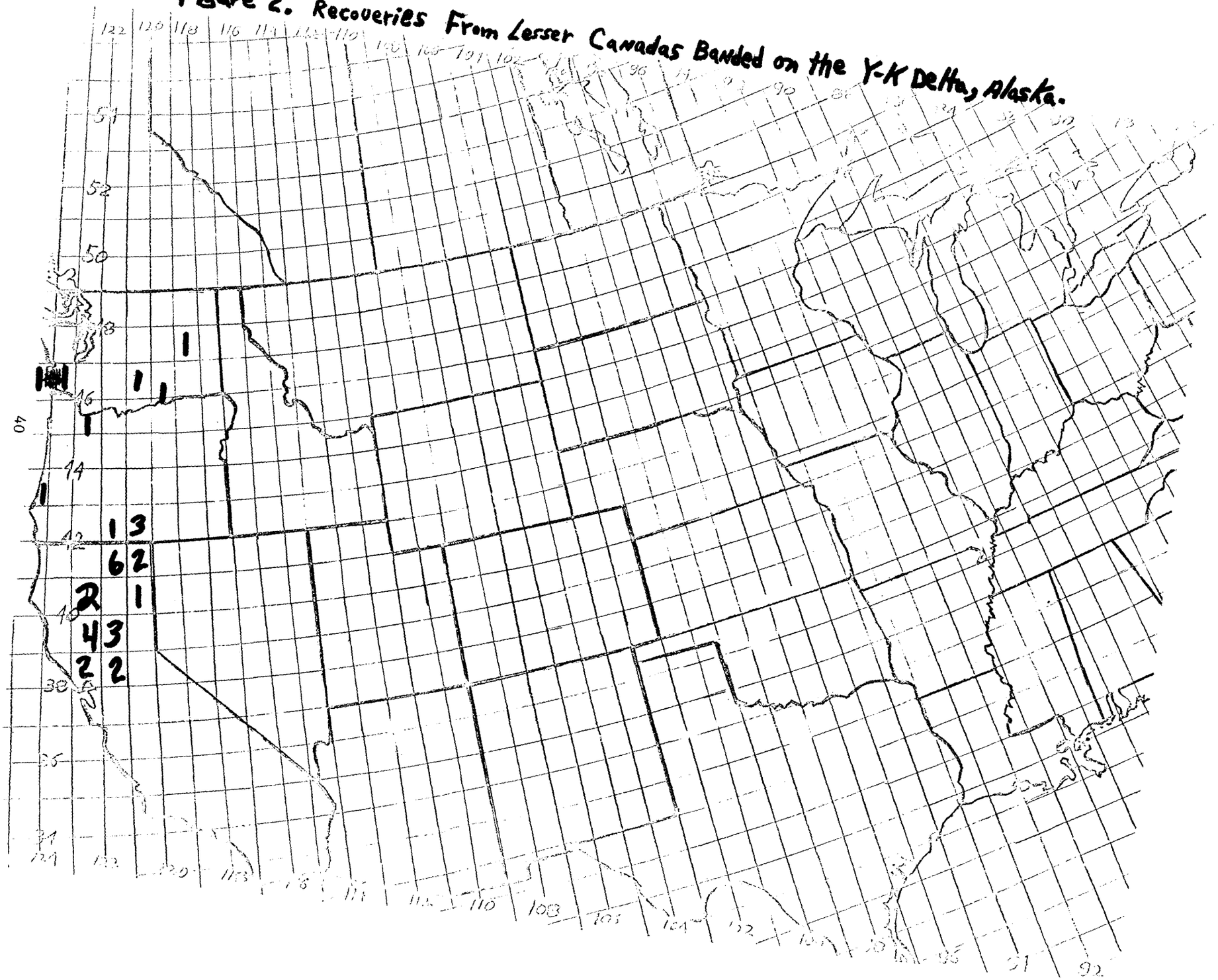


Figure 2. Recoveries From Lesser Canadas Banded on the Y-K Delta, Alaska.



Innoko Drainage

Figure 3 shows the recovery pattern for lessers banded just east of the Y-K Delta. There have been 12 recoveries in Alaska - three in the banding area, eight near Anchorage and one in Southeast Alaska. These birds obviously follow a coastal migration pattern as 18 recoveries have occurred on Vancouver Island. Their wintering area appears to be in eastern Washington and northeastern Oregon. The few recoveries south of these areas have occurred in late December and January.

The last birds banded from the Innoko population were in 1954, so current data are not available. The population is of unknown size, but fairly large.

Kotzebue Basin

Recoveries from lesser Canadas banded on the Seward Peninsula and in the Selawik area are shown in Figure 4. Both their migration pattern and wintering area appear to be very similar to Innoko birds. Four recoveries from the Anchorage area and seven on Vancouver Island have also occurred. The single recovery south of the wintering area was in early January.

Except for 22 adults banded in 1969, the last lesser Canadas banded were in 1958. This population is also large, but exactly how large is unknown.

North Slope

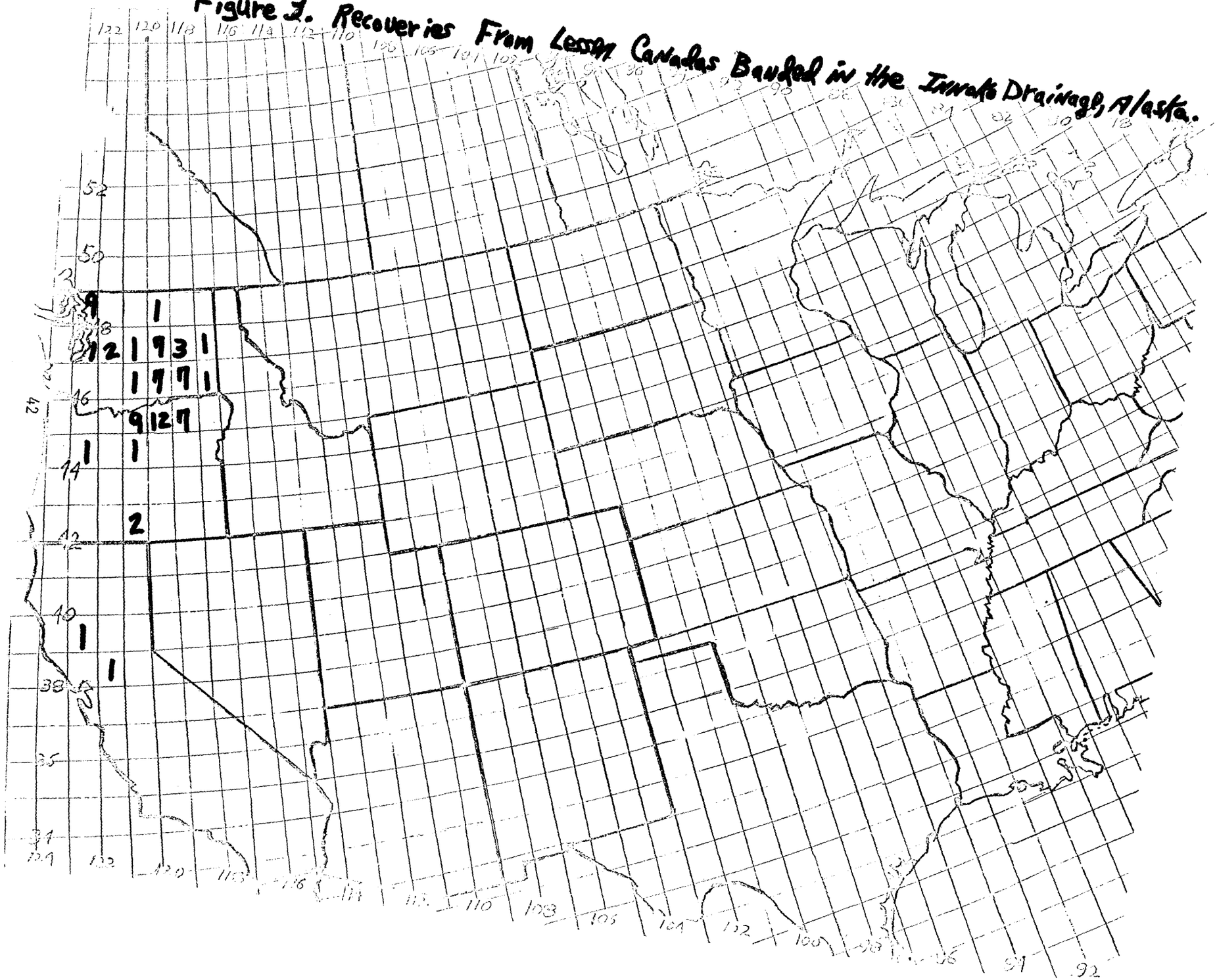
Recoveries from the 749 birds Ray Tremblay banded in 1971 are shown in Figures 5 and 6. These birds show some very interesting patterns. The two major banding areas - Third Try Lake and Notent Lake - are located only 12 miles apart. However, about one-half of the recoveries from Third Try Lake (Figure 5) are located in extreme southeastern Washington while the other half are in eastern Washington and Oregon. All birds from the Notent Lake banding (Figure 6) exhibit a strong affinity for eastern Washington and Oregon, except for one recovery in northwestern Oregon. The one recovery in western Alberta perhaps indicates some of these birds are migrating down the east side of the Rockies. One recovery also occurred in the center of Alaska.

As said previously, Tremblay thought there may be as many as 40,000 lesser Canadas on the North Slope. Since he banded birds from only two areas, there are still many unbanded segments of the North Slope population. Judging from the dissimilar wintering areas exhibited by birds from the Third Try Lake area, birds from other parts of the North Slope could be wintering in the Willamette Valley.

Other Banding Areas

A few lesser Canadas have been banded in the Anchorage vicinity, on the Yukon Flats and in the Fairbanks area. Three recoveries from the Yukon Flats were all in eastern Washington and northeastern Oregon. The one recovery from the Anchorage area occurred in the Willamette Valley.

Figure 3. Recoveries From Lesser Canadas Banded in the Innoko Drainage, Alaska.



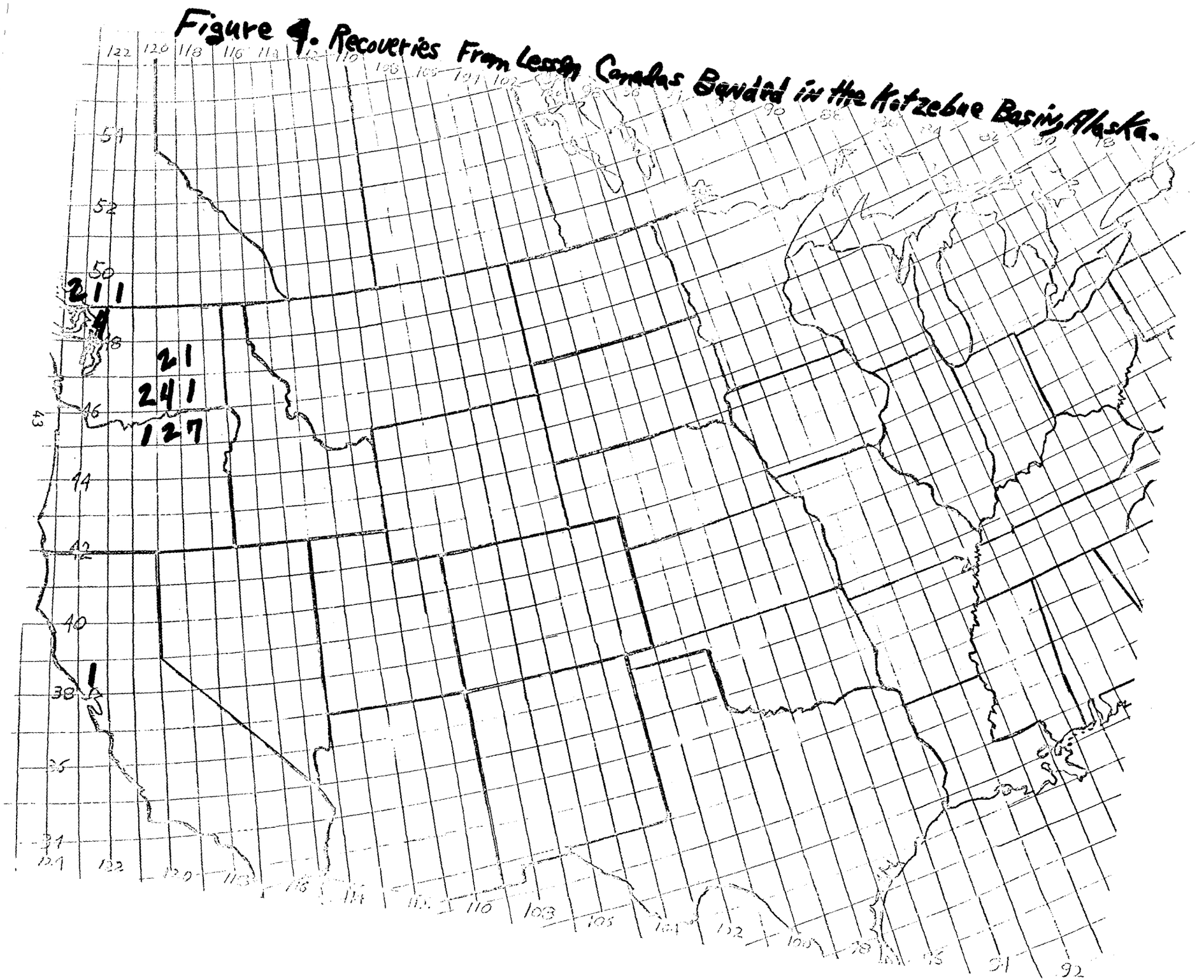


Figure 9. Recoveries From Lesser Canadas Banded in the Kotzebue Basin, Alaska.
211
9
21
241
127
1

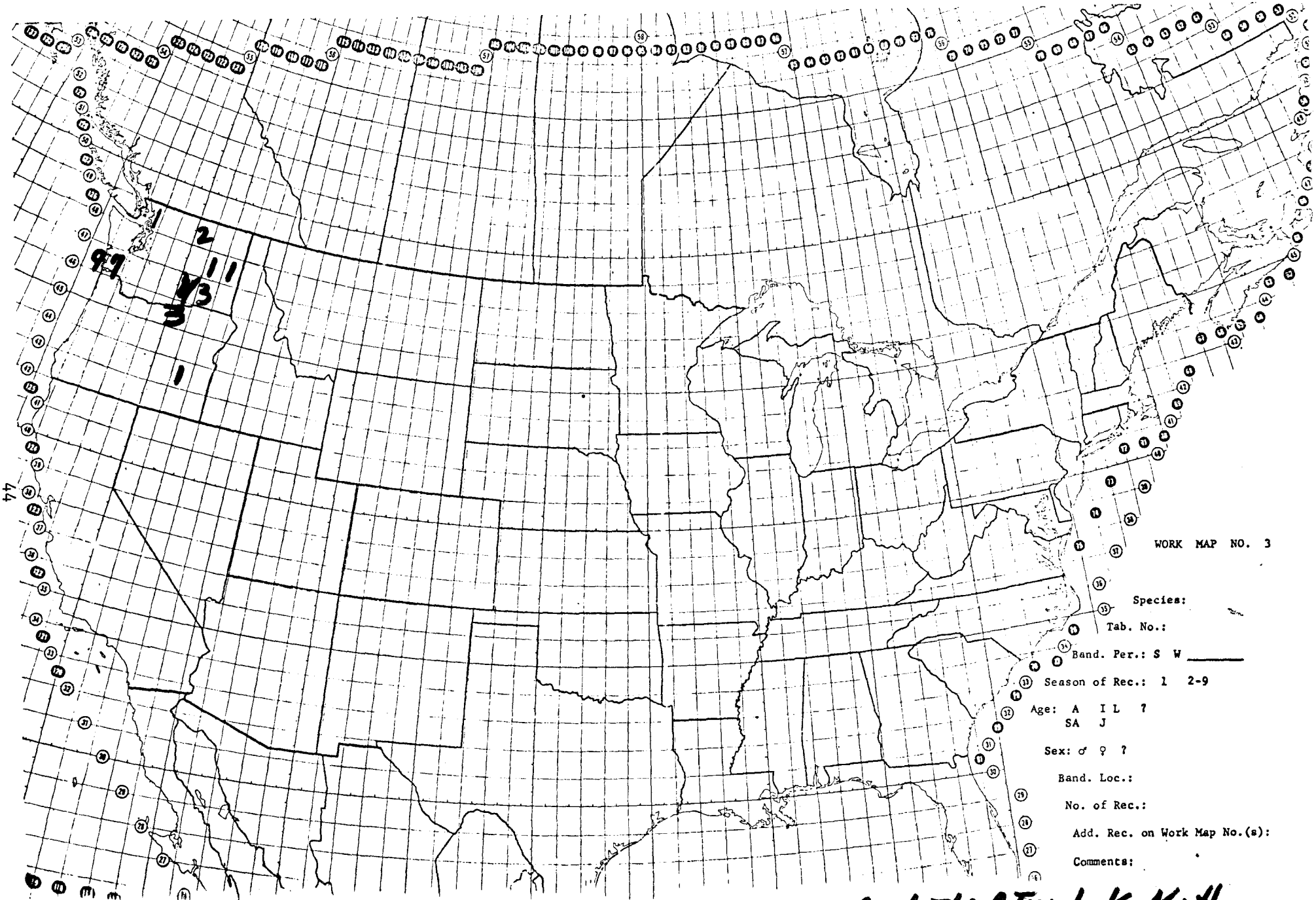


Figure 5. Recoveries From Lesser Canadas Banded at Third Try Lake North Slope, Alaska.

Data thru 12/31/73

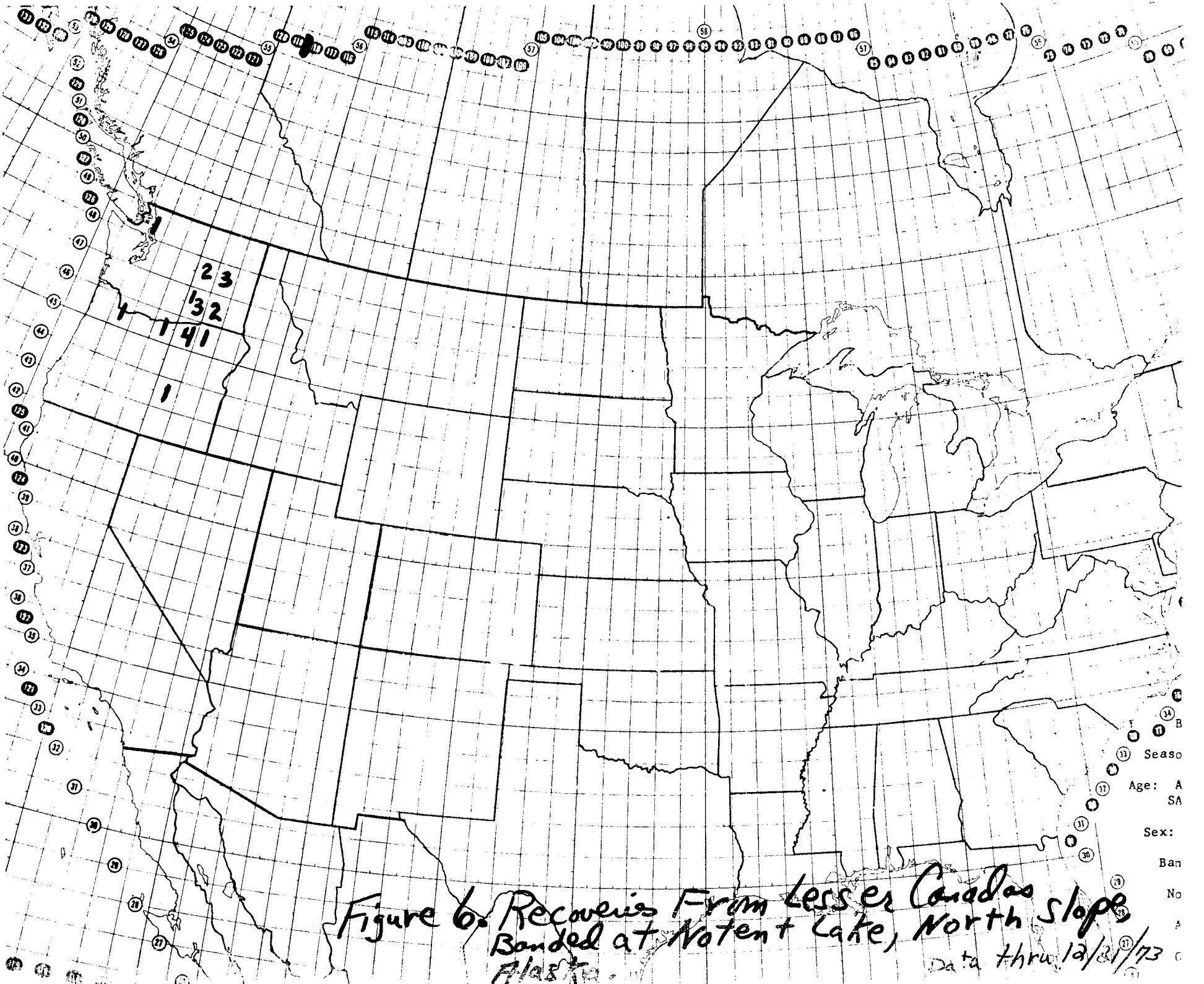


Figure 6. Recoveries From Lesser Canadas Banded at Natent Cate, North Slope Alaska.

Data thru 12/31/73

Most of the birds banded in the Anchorage area have been picked up by local people, raised as pets, and then banded and released. The one recovery in the Willamette Valley could therefore be abnormal. However, there are lessers breeding in the immediate Anchorage area (probably less than 300 pairs) and some of the birds could be wintering in the Willamette Valley. An attempt will be made to band more wild birds this summer.

These recovery data indicate that a unique situation exists in the Pacific Flyway. In other parts of the country Canada geese breeding farther to the north generally winter farther to the south; those breeding in more southern latitudes tend to winter farther north. Such is not the case with lesser Canadas from Alaska. The following data demonstrate this inverse relationship does not exist.

Breeding Area	Mean Latitude of Breeding Area	Mean Latitude of Recovery
Y-K Delta	61.0	41.0
Innoko	62.5	45.4
Kotzebue	66.0	45.8
North Slope	70.7	46.0

Recovery and Mortality Rates

Because most of the lesser Canada banding was done in the 1950's and early 1960's, current mortality information is not available. However, all returns are in from most of the banding, so a complete mortality picture can be obtained.

The following are recovery rates for lesser Canadas banded at the four major banding locations:

Immatures

Location	Banding Period	No. Banded	1st yr. r. r.	Total r. r.
Y-K Delta	1941&69	14	7.1	14.3
Innoko	1949-54	601	12.0	25.6
Kotzebue	1955-58	94	11.7	29.8
No. Slope	None Banded			

Adults*

Location	Banding Period	No. Banded	1st yr. r. r.	Total r. r.
Y-K Delta	1962-68	156	4.5	22.4
Innoko	1948-54	205	5.9	28.3
Kotzebue	1955-58&69	89	4.5	14.6
No. Slope	1971	749	4.4	8.7**

* Combination of adults and sub-adults - both sexes
** Incomplete returns

The following are mortality rate estimates for lesser Canadas banded in three areas. Data were combined for the Innoko and Kotzebue Basin areas, because birds from these populations have similiar migration patterns and wintering areas. Adult rates are a combination of both sub-adults and adults. All recoveries are from birds shot or found dead during legal season. The dynamic life-table method of mortality calculation was used.

Yukon Delta:

Adults

Year Banded	No. Banded	Hunting Season Recoveries 1	2	3	4	5	6	7	8	9	10+	Total
1962	132	3	6	5	5	5	2	1	-	1	-	28
1966	11	2	1	-	-	1	-	-	-	-	-	4
1968	13	2	1	-	-	-	-	-	-	-	-	3
Totals	156	7	8	5	5	6	2	1	-	1	-	35
Mortality		20.0	28.6	25.0	33.3	60.0	50.0	50.0	-	100.0	-	30.2

Innoko-Kotzebue:

Adults

Year Banded	No. Banded	Hunting Season Recoveries 1	2	3	4	5	6	7	8	9	10+	Total
1948	14	-	2	2	1	-	-	1	-	1	-	7
1949	84	7	4	1	2	1	4	-	3	-	3	25
1950	11	-	-	1	1	-	-	-	-	-	-	2
1951	30	-	2	1	-	2	-	-	-	1	-	6
1954	66	5	3	1	1	3	1	2	-	-	2	18
1955	13	1	-	-	2	-	-	-	-	-	-	3
1956	29	2	-	-	1	1	-	-	-	-	-	4
1957	7	1	1	-	-	-	-	-	-	-	-	2
1958	18	-	1	-	-	-	-	-	-	-	-	1
1969	22	-	1	1	1	-	-	-	-	-	-	3
Totals	294	16	14	7	9	7	5	3	3	2	5	71
Mortality		22.5	25.5	17.1	26.5	28.0	27.8	23.1	33.3	28.6	100.0	25.4

Immatures

Year Banded	No. Banded	Hunting Season Recoveries 1	2	3	4	5	6	7	8	9	10+	Total
1948	21	1	2	-	2	2	-	1	1	-	-	9
1949	60	3	-	-	1	-	1	-	1	-	2	8
1950	92	7	1	-	1	4	-	-	-	1	4	18
1951	49	6	3	1	-	1	-	-	-	1	-	12
1954	379	55	9	7	5	7	-	3	9	2	10	107
1955	5	-	1	-	-	-	-	-	-	-	-	1
1956	42	8	1	-	-	-	1	1	8	-	1	20
1957	41	3	1	-	1	1	-	-	-	-	-	6
1958	6	-	-	-	-	-	-	-	1	-	-	1
Totals	693	83	18	8	10	15	2	5	20	4	17	182
Mortality		45.6	18.2	9.9	13.7	23.8	4.2	10.9	48.8	19.0	100.0	27.1

It is interesting to note that although the first year mortality rate for Innoko-Kotzebue immatures is 45.6 percent, the average annual mortality rate is 27.1 percent - not much higher than the 25.4 percent average rate for adults. Theoretically the second through 10+ year average mortality rate for immatures should be the same as the average adult rate. For some reason the 2 - 10+ average immature rate is less (20.2%), compared to the average adult rate of 25.4 percent.

Other peculiarities of these recoveries are not explained in this paper. For example, the number of recoveries appears high in the 5th, 8th and 10+ years after banding, for Innoko-Kotzebue immatures. For birds banded in 1956, there were as many recoveries after the 8th year of banding as there were the first year. Either vulnerability to the gun was very high that year - perhaps because of weather - or some reporting abnormality exists. Adults banded on both the Y-K Delta and Innoko-Kotzebue areas have a "reasonably normal" recovery pattern.

Neither recovery nor mortality rates for both Innoko-Kotzebue immatures and adults appear to be excessive. However, no estimate of productivity for these birds is readily available. An estimate may be made by using the Bureau goose tail collection data from the high, lesser Canada goose harvest counties in Oregon and Washington. Tail feather lengths would have to be classed as either long (moffitti) or short (taverneri?).

Hunting mortality on Y-K Delta lesser Canadas appears high, but no productivity estimates are available for these birds either. These data would be much more difficult to obtain because of the birds' wider dispersal. Also, the wintering area may have changed since the last birds were banded. For example, four recoveries are available from the 20 birds banded on the Y-K Delta in 1968 and 1969. Two occurred in northern California in November and January (40-120 & 41-121); one in Oregon during late November (42-120); and one in Washington in early November (46-123).

First year recovery rates from birds banded on the North Slope indicate hunting mortality is probably not excessive on this population. However, as indicated previously, other segments of the North Slope population could be migrating to different wintering areas and thus be receiving more (or less) hunting pressure than the two banded segments.

Discussion

Except for two populations of Canada geese - great basin geese and dusky geese - states of the Pacific Flyway have not intensively managed goose populations like other flyways have. There has been no apparent need to conduct intensive banding, productivity and harvest surveys. I submit that this need is now apparent and both the states of the Pacific Flyway and the Bureau must initiate programs to gather basic lesser Canada goose management information.

There are several reasons for this. Growing anti-hunting sentiment, which can result in adverse political pressures, threatens the very existance of sport hunting - waterfowl included. The day is approaching

when we may have to justify, in no uncertain terms and probably in a court of law, exactly why we have a daily Canada goose limit of three birds and long goose seasons in most of the flyway. At this point, what do we know about lessers? We don't know how many there are; where many of them are coming from; what the current harvest and mortality rates are, or even how many birds are harvested; what their annual or long-term productivity is; or even what subspecies we have. We really don't know very much except that they continue to come south and they seem to be in good shape.

I believe a short-stopping situation is developing in the Willamette Valley. During the 1974 mid-winter inventory, about 25 percent of the white-cheeked geese were not duskys. A few years ago there were very few of any other subspecies except dusky geese in the Valley. The shift to grain crops from grass is possibly the reason for this change - perhaps we can do nothing about it. However, we would be lacking as professionals if we didn't at least determine where the birds are coming from, how many potentially might be short-stopped, and what the total implications are.

If we had two or three very poor production years in a row on the Yukon Delta, where and how much should we restrict season length and bag limit? Or if we had two bust years on the North Slope but good years on the Seward Peninsula, would we have to restrict? My point is this: just because we've gotten by - mainly because nobody was watching - and still have apparently abundant lesser Canada populations, doesn't mean we can afford to be complacent in times of plenty. We've got a good thing going and I believe we should learn as much as we can to keep it that way.

Cases of short-stopping geese - and not just Canada geese - are many. Florida and the Carolinas no longer see many Canada geese. States south of Missouri seldom see a wild Canada goose, and now the birds are staying longer in Minnesota and Iowa. The blue-snow issue partially was responsible for Louisiana leaving the flyway and has Texas infuriated. White-fronts are wintering in increasing numbers in Kansas, and have even wintered in Nebraska. New Mexico has cut its goose season to zero in parts of the state, but its Canada goose wintering population is still declining.

In many cases, changes in agriculture and reservoir construction preclude waterfowl managers having much influence on migration patterns one way or the other. However, frequently the modification of bag limits, shooting times, season length and the creation of closed areas, etc., will alter goose migration patterns.

Hopefully, goose migration patterns in the Pacific Flyway will not be significantly altered. However, base data on goose populations in the flyway are needed to both recognize any such developments, and to possibly do something about them if they do occur.

Recommendations

There are both immediate and long term information needs relative to lesser Canadas in the flyway. I feel the best vehicle available to

identify all long-term needs and to accomplish objectives is through a lesser Canada goose sub-committee. Some of the long-term needs appear to be banding information to measure the current status of previously banded populations; an expanded banding effort on the North Slope; banding in Interior Alaska on never-before banded populations; analysis of Fish and Wildlife Service tail data to ascertain productivity; better estimates of harvest; and a taxonomic study to identify what subspecies we have and where their respective breeding areas are.

The most immediate need is to learn where the "other Canadas" are coming from that are now wintering in the Willamette Valley. It would seem that either: (1) The Y-K Delta population is being shortstopped; or (2) a population not represented by banding is increasing and/or being shortstopped; or (3) possibly both of these factors may be involved. I tend to think that part of the Y-K Delta population is being shortstopped.

Last fall the Izembeck Refuge manager was able to count 120,000 lesser Canadas in small flocks, during a three-day long migration. I propose that at least a two-year pre-season banding effort be made at Cold Bay, beginning in late August this year and continuing through September. Conditions are such that perhaps 2,000 Canadas can be banded each year.

There have been two recoveries at Cold Bay from lesser Canadas banded on the Y-K Delta. The other recovery in Alaska occurred near the Copper River Delta - perhaps indicating some Y-K Delta lessers migrate along the coast and some overfly the Gulf of Alaska. Three recoveries is a small sample though.

Banding at Cold Bay would be a much cheaper operation than breeding grounds banding on the delta. Total costs for a four-week operation for two men (excluding refuge personnel) would be about $1,500. A two-week summer operation on the delta would run about $5,000, with possibly fewer birds being banded.

I propose that both the Alaska Department of Fish and Game and the Fish and Wildlife Service in Alaska each send one man on the project. My request to the Alaska Department would be much enhanced, however, if the southern states could provide just a few hundred dollars to assist with expenses.

In summary, I do not think the Pacific Flyway can continue the luxury of having a population of geese perhaps in excess of a quarter million birds, and know virtually nothing about them.

CANVASBACK BANDING DATA ANALYSIS

Much of the considerable amount of band recovery data for Alaska banded waterfowl has not been analyzed due to the lack of manpower and other priorities. Occassionally manpower from outside sources is offered to do such analysis - such was the case for the canvasback data.

Tim Moerlien, an Anchorage high school student, analyzed all canvasback banding data as part of a special biology class project and to further his knowledge of waterfowl management techniques. The canvasback data were given to him because of the nationwide concern for the species. The following are results of his efforts with some refinements and interpretation by the Waterfowl Coordinator.

Number of Birds Banded

A total of 2,608 canvasbacks have been banded in Alaska at four locations (Figure 1). The earliest banding was at Minto in 1951 and the last banding occurred on the Yukon Delta in 1966. Most of the banding was in conjunction with Rampart Dam studies at Tetlin and the Yukon Flats. The following are number of birds banded of each age and sex by location.

	Ad. Male	Ad. Female	Imm. Male	Imm. Female	Total
Yukon Flats	1212	388	57	75	1,732
Tetlin	345	270	67	79	761
Minto	1	7	27	30	65
Y-K Delta	39	11	-	-	50
State Totals	1,597	676	151	184	2,608

Distribution of Recoveries

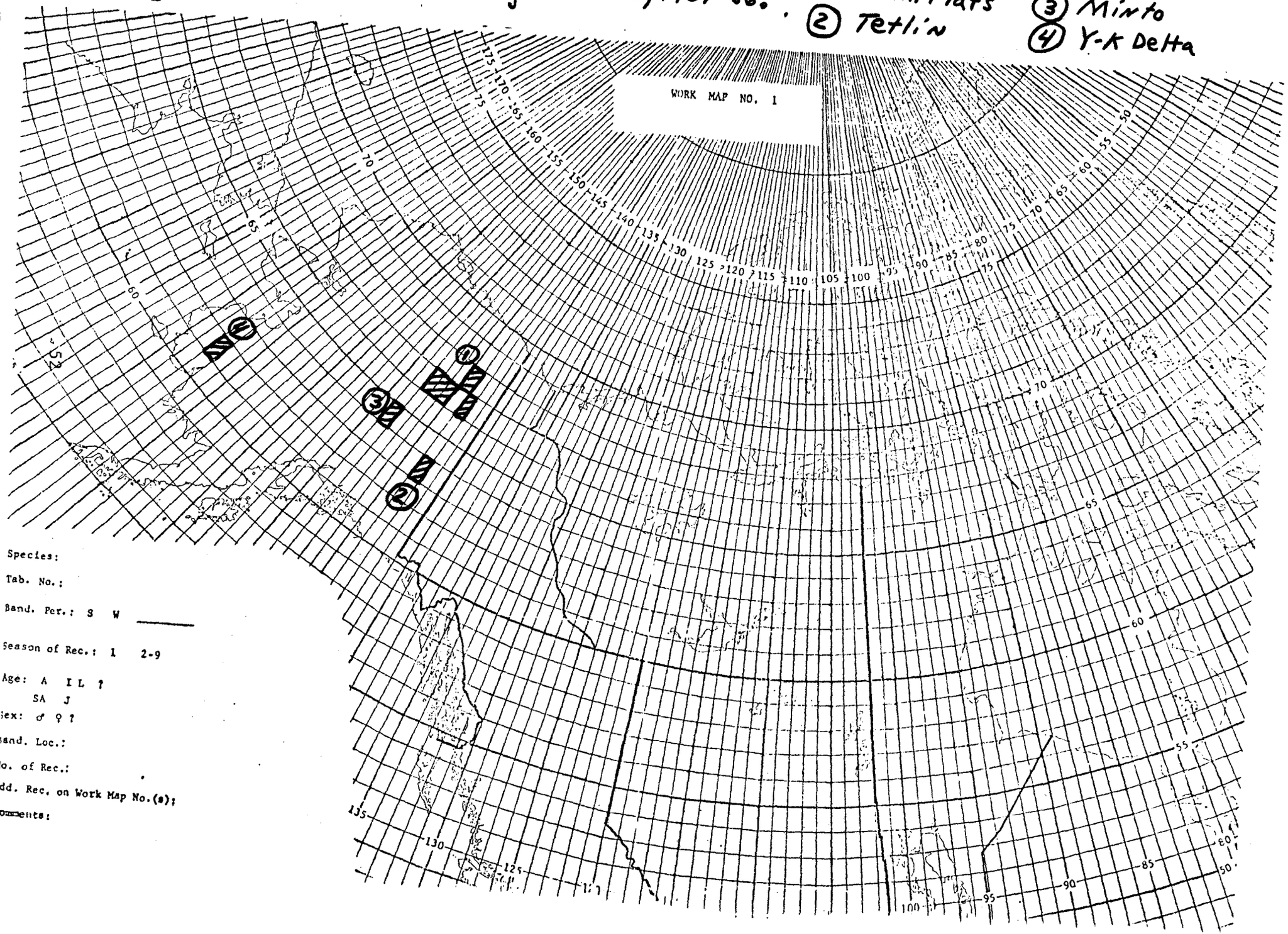
Table 1 presents distribution of band recoverys from the four banding locations, by state of recovery. These data indicate that about two-thirds of canvasbacks from Alaska migrate to and are shot in states of the Pacific Flyway. When British Columbia is included, over 70 percent of the birds appear to remain on the West Coast.

Further analysis might reveal different migration patterns for various age-sex classes. Adult males may also tend to winter in different flyways in different years. However, data were not analyzed to that degree.

The following are average first year recovery rates for canvasbacks banded during 1951-66:

Age	Banding Period	
	Open season (51-59 & 64-66)	Closed season (60-63)
Adult	2.4 %	0.9 %
Immature	15.5 %	3.5 %

Figure 1. Canvasback Banding Locations, 1951-66: ① Yukon Flats ② Tetlin ③ Minto ④ Y-K Delta



Distribution of Recoveries

PERCENT DISTRIBUTION OF CANVASBACK RECOVERIES FROM BIRDS BANDED AT FOUR LOCATIONS IN ALASKA, 1951-66. 1/ (data thru 2/28/74 FWS IBM listing)

RECOVERY LOCATIONS	BANDING LOCATIONS				
	Yukon Flats	Tetlin	Minto	Y-K Delta	All Alaska
Alaska	1.6	1.1	18.2	-	2.0
Oregon	11.9	14.1	27.3	-	12.8
Washington	15.0	12.9	27.3	-	14.5
California	37.8	32.9	-	42.8	35.1
Idaho	0.5	-	-	-	0.3
Montana	0.5	-	-	-	0.3
Utah	1.6	-	-	-	1.0
Tot. Pac. Fly.	68.9	61.0	72.8	42.8	66.0
No. Dakota	-	1.1	-	-	0.3
Kansas	-	1.1	-	-	0.3
Texas	1.0	2.3	-	14.3	1.7
Tot. Cent. Fly.	1.0	4.5	-	14.3	2.3
Minnesota	1.0	1.1	-	14.3	1.4
Iowa	0.5	1.1	-	-	0.7
Arkansas	0.5	-	-	-	0.3
Louisiana	1.0	2.4	-	-	1.4
Wisconsin	3.1	1.1	-	-	2.4
Illinois	0.5	-	-	-	0.3
Michigan	0.5	-	-	14.3	0.7
Tot. Miss. Fly.	7.1	5.7	-	28.6	7.2
New York	1.6	1.1	-	-	1.4
Conn.	-	1.1	-	-	0.3
New Jersey	1.0	-	-	-	0.7
Maryland	6.7	5.9	9.1	14.3	6.8
Virginia	2.1	2.3	-	-	2.0
No. Carolina	2.6	-	-	-	1.7
Tot. Atl. Fly.	14.0	10.4	9.1	14.3	12.9
B. Columbia	3.6	8.2	18.2	-	5.4
Alberta	1.6	1.1	-	-	1.4
Sask.	-	1.1	-	-	0.3
Ontario	2.6	3.5	-	-	2.7
Tot. Canada	7.8	14.9	18.2	-	9.8
Tot. Mexico	1.0	3.5	-		1.7
Tot. U. S.	91.2	81.6	81.8	100.0	88.5
Tot. Rec.	193	85	11	7	296
Tot. Banded	1,732	761	65	50	2,608

1/ Birds found dead or shot during hunting seasons - all sex & age classes.

First year recovery rates differed markedly for both age classes during open and closed hunting seasons. Average mortality rate estimates for all years of banding averaged 22 percent for adults and 41 percent for young. These rates appear high; successive years of banding data are necessary to monitor the current status of canvasbacks in Alaska.

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