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 and Phil Havens
Edited by Donald McKnight, Research Chief

Volume IV
Project Progress Report
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(Printed September 1973)

MEMORANDUM OF TRANSMITTAL

August 31, 1973

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

FROM: Frank Jones, Director
Division of Game

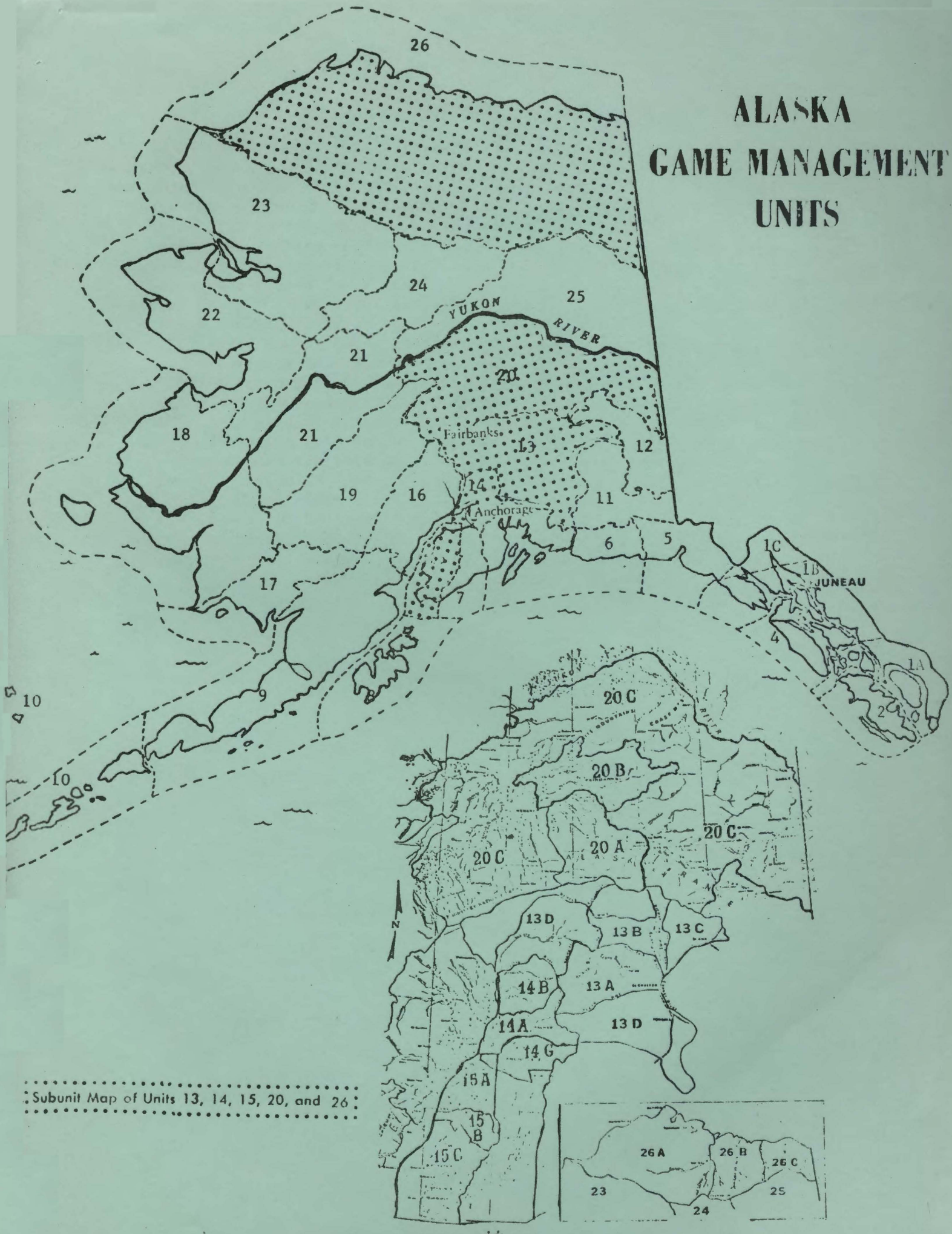
SUBJECT: Annual Report of Waterfowl Survey-Inventory Activities
July 1, 1972 to June 30, 1973

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

The waterfowl program in Alaska is still in its embryonic, thus transitional, stage. With the statewide waterfowl position scheduled for a move to Anchorage and a half-time waterfowl position in Juneau, the state's program will assume new dimensions.

For those people unfamiliar with game management unit boundaries, a map of Alaska showing these boundaries is included in this report. Also, a table of contents is included to facilitate access to specific information.

ALASKA GAME MANAGEMENT UNITS



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

CONTENTS

1972-73 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. 14 — Jan. 26**	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. 9 — Oct. 1** and **Nov. 1 — Jan. 21**	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. 14**	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	

WATERFOWL HARVEST AND HUNTER ACTIVITY

INTRODUCTION

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

Prior to the 1972-73 season, Bureau of Sport Fisheries and Wildlife projections for species composition of the harvest were admittedly questionable (Carney, pers. comm.). In 1972, sample size was increased by 95 hunters, and the number of duck wings sent in by Alaska hunters nearly doubled. Sample size will again be increased during the 1973-74 season, thus providing even more reliable species composition of the harvest data.

Previous Alaska Department of Fish and Game Survey and Inventory reports presented waterfowl hunter field bag check information by specific location. Although specific location data are available in the files, they have been summarized in this report by the harvest areas used for data breakdown of the mail questionnaire survey.

The 1972 waterfowl fall flight from Alaska was predicted to be better than in 1971. Although field reports varied, hunter success from most areas was reported to be better in the 1972-73 season.

PROCEDURES

Mechanics of the Survey and Hunter Reports

A computerized list of all people purchasing a 1972 resident hunting license was used for a sampling base. Approximately every tenth person (9.84% sample) was sent a survey form on February 3, 1973. Each form was self-contained with a postage paid return address printed on its reverse side. Three 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. Thus, the computer rejected punched numbers, and printed out reminder survey forms only for those people not returning the first forms.

The survey sampled 5,756 resident license buyers. Of this total, 3,579 (67.8%) returned a questionnaire. Responses usable for analysis (people who purchased a duck stamp and hunted waterfowl or bought a stamp but didn't hunt) were received from 910 people.

STATE OF ALASKA

WILLIAM A. EGAN, GOVERNOR

DEPARTMENT OF FISH AND GAME

SUBPORT BUILDING
JUNEAU 99801

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 1972, you can help insure continued liberal bag limits and good hunting for the future.

Thank you for your cooperation.

WATERFOWL HUNTER SURVEY - 1972-73

Instructions:

All hunters complete Part I. Only those who hunted waterfowl or bought a duck stamp in 1972 complete Part II. If you can't remember exact numbers, give your best estimates. Mail promptly - no stamp is necessary.

PART I

Did you hunt for waterfowl in Alaska during the 1972-73 season Yes☐ No☐
Did you buy a duck stamp in Alaska in 1972? Yes☐ No☐

Part II (Complete only if you hunted waterfowl in Alaska this season or bought a duck stamp in 1972.)

How many different days did you hunt waterfowl in Alaska? _____
How many of the following birds did you shoot and retrieve?
Game ducks (mallards, pintail, bluebill, etc..) :_____Non-game ducks (scoter, eider, old squaw, etc.) : _____
Geese: Canadas_____Snow_____White-front (specks)_____Brant_____Emperor_____Unknown_____
Cranes_____
Snipe_____
At which place did you shoot most of your ducks?_____geese?_____
(i.e., Pilot Point, Minto Flats, 6 miles S.W. Sitka, Chickaloon Flats, etc.)
How do you hunt waterfowl? Jump shoot☐ Pass shoot☐ Decoys☐
How many years have you hunted waterfowl?

☐ 1 yr. ☐ 2 - 5 ☐ 6 - 9 ☐ 10+ yrs.

How old are you?

☐ 18 & under ☐ 19-29 ☐ 30 - 39 ☐ 40+ yrs.

Comments: _____

UPON COMPLETION, FOLD THIS LETTER ON THE LINES INDICATED, STAPLE SHUT AND DROP IT IN THE MAIL. NO STAMP IS NECESSARY.

Sincerely,

James W. Brooks

Commissioner
Department of Fish and Game

Field Bag Checks

Random field checks of hunters were made in six of the 11 harvest areas. A total of 1,803 ducks were checked by Department of Fish and Game biologists and Bureau of Sport Fisheries and Wildlife Game Management Agents. Slightly over one-half (56%) 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. 1). 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 probably higher for geese than ducks, as geese are usually considered more of a trophy.

Data from the 910 usable waterfowl questionnaires were expanded for total waterfowl hunters on a proportional basis. Although 14,824 duck stamps were sold in Alaska according to Bureau of Sport Fisheries and Wildlife data, only 14,562 people were considered to be potential hunters. The BSF&W annually measures the proportion of stamps purchased for collecting purposes and Carney (pers. comm.) indicated 262 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 magnitude of hunting outside the legal season limits, the assessment of waterfowl hunter activity and waterfowl harvest is complicated (Timm, 1972).

Although 23 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

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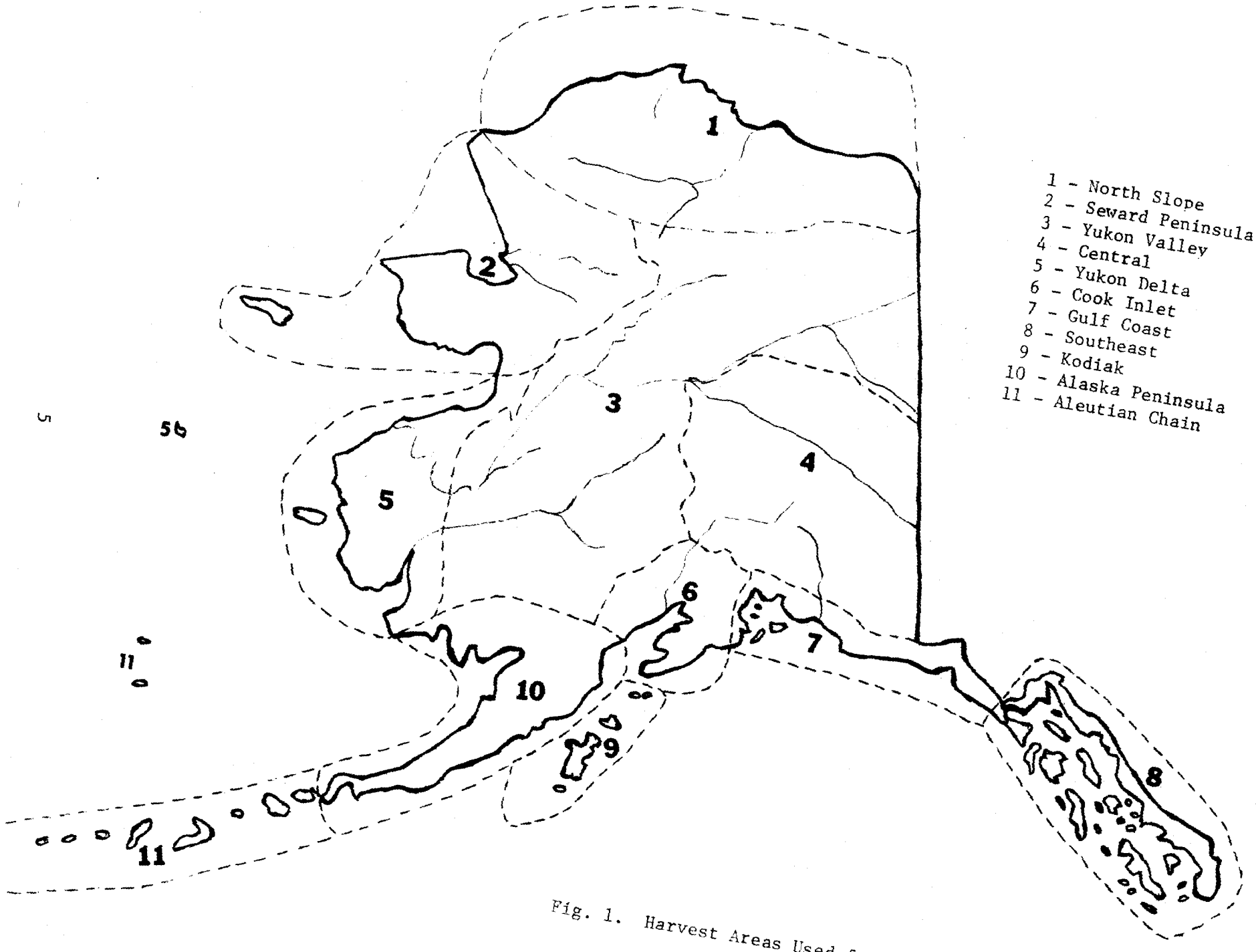

1 - North Slope
2 - Seward Peninsula
3 - Yukon Valley
4 - Central
5 - Yukon Delta
6 - Cook Inlet
7 - Gulf Coast
8 - Southeast
9 - Kodiak
10 - Alaska Peninsula
11 - Aleutian Chain

Fig. 1. Harvest Areas Used for Data Analysis.

this report are based solely on duck stamp sales and therefore should be considered the sport hunting harvest only.

Of those sampled, 683 people reported that they purchased a stamp and hunted one day or more. The number of stamp purchasers who did not hunt was 227 (75% active hunters). A calculated 10,930 people hunted waterfowl one or more days during the 1972-73 season. Table 1 summarizes these data.

Hunting Activity

Hunters reported hunting an average of 5.9 days during the 1972-73 season. After corrections for bias, each active hunter was calculated to have hunted an average of 5.4 days during the season. This projects to a total of 59,350 waterfowl hunter days during the 1972-73 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 9.9 ducks per season, compared to 9.6 in 1971. Corrections for bias provide a mean calculated kill of 8.4 ducks per active hunter, compared to 8.2 in 1971. Reported daily success was 1.7 ducks per day, while calculated daily success was 1.6 birds per day.

The projected statewide duck harvest was 91,703 birds, or a 9.7 percent increase from the 1971 duck harvest. Game ducks represented 92.5 percent (84,807) and nongame ducks 7.5 percent (6,896) of the total bag.

Tables 2 and 3 summarize these data.

Species Composition of Harvest

From 1960 through the 1971-72 season, field bag checks were intermittently conducted in five of the 11 harvest areas. Timm (1972) summarized these data. During the 1972-73 season, field checks were conducted in six of the harvest areas (Table 5). Pintails, mallards, green-winged teal and American widgeons comprised nearly 86 percent of the total ducks checked. Nongame ducks represented only 1.6 percent of the total ducks checked, compared to 7.5 percent nongame ducks reported in the mail questionnaire survey.

As described previously, the BSF&W increased their hunter sample by some 95 people in the parts collection survey during the 1972-73 season

Table 1. Summary of Alaska waterfowl hunter mail questionnaire survey, 1972-73.

Number of licensed hunters: resident 58,747 (5,936 subsistence)

Number of license buyers sampled: 5,756 (9.8%)

Number and proportion of respondents from survey*: 1st mailing 2,934 (55.0%); 2nd mailing 645 (27.5%); Total 67.8%

Number of returns usable for waterfowl calculations: 910

Projected number of hunters:

Duck stamps sold in Alaska: 14,824 (14,562 potential hunters)

Number of active hunters: 10,930 (75.06%)

Calculated statewide harvest:

Ducks: game 84,807; nongame 6,896; Total 91,703

Geese: Canada 7,196; emperor 1,883; brant 682; white-fronted 628; snow 433; Total 10,822

Cranes: 765

Snipe: 3,498

Hunter Days: 59,350

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

Table 2. Hunter success and activity as reported by areas: 1972-73 compared to the 1971-72 season.

Area	Percent Active Hunters	% Change From 1971-72	No. Ducks Per Season	% Change From 1971-72	No. Days Per Season	% Change From 1971-72	No. Ducks Per Day	% Change From 1971-72	No. Geese Per Season*	% Change From 1971-72
North Slope**	-	-	-	-	-	-	-	-	-	-
Seward Peninsula	81.8	+1	14.6	+20	10.1	+20	1.4	-18	4.6	-34
Yukon Valley**	100.0	+19	18.3	+79	7.1	-11	2.6	+44	4.7	-43
Central	68.5	+2	10.5	+4	5.5	+67	1.9	+12	3.8	-60
Yukon Delta	100.0	+13	9.2	-35	4.2	-29	2.2	+29	4.5	-65
Cook Inlet	75.4	+1	12.2	+18	5.7	+8	2.1	+11	3.0	-17
Gulf Coast	74.1	+9	14.0	+33	7.4	-9	1.9	+46	4.0	-7
Southeast	81.2	+9	9.9	-13	7.5	-4	1.3	-13	2.2	-31
Kodiak	75.0	-2	17.5	+32	8.2	-4	2.1	+24	-	-
Alaska Peninsula	63.6	-12	7.4	-11	6.1	N.C.	1.2	-14	11.4	+44
Aleutian Chain**	80.0	-12	12.8	+121	9.0	+10	1.4	+100	6.0	-18
Unknown	45.5	-	0.5	-	3.0	-	0.2	-	-	-
Statewide	75.06	+3	9.87	+3	5.88	-2	1.7	+6	4.2	-14
			8.39***	+3	5.43***	+25	1.55***	-18	0.99 per active hunter	-8

* Bag per hunter taking.
** Sample size less than 10 hunters.
***After correction for bias.

Table 3. Calculated duck, crane and snipe harvest and hunter activity by harvest area*, 1972-73.

Area	Hunter Days		Game Ducks		Nongame Ducks		Crane		Snipe	
	No.	% of Total	No.	% of Total	No.	% of Total	No.	% of Total	No.	% of Total
North Slope	-	-	-	-	-	-	-	-	-	-
Seward Pen.	2,908	4.9	2,629	3.1	1,007	14.6	521	68.1	640	18.3
Yukon Valley	771	1.3	1,441	1.7	352	5.1	-	-	-	-
Central	10,149	17.1	15,859	18.7	814	11.8	228	29.8	290	8.3
Yukon Delta	356	0.6	594	0.7	-	-	-	-	-	-
Cook Inlet	21,010	35.4	36,976	43.6	1,889	27.4	16	2.1	1,011	28.9
Gulf Coast	3,680	6.2	5,852	6.9	110	1.6	-	-	63	1.8
Southeast	16,084	27.1	17,555	20.7	587	8.5	-	-	1,333	38.1
Kodiak	1,662	2.8	1,272	1.5	1,889	27.4	-	-	-	-
Alaska Pen.	2,137	3.6	2,120	2.5	110	1.6	-	-	161	4.6
Aleutian Chain	593	1.0	509	0.6	138	2.0	-	-	-	-
Statewide	59,350	100.0	84,807	100.0	6,896	100.0	765	100.0	3,498	100.0

*Unknown area of harvest and activity proportionally included in known areas.

Table 4. Location of most hunting activity and greatest duck and goose harvest, 1972-73.

Location	Calculated duck harvest and hunter days: Hunter Days No.	Hunter Days % of state total	Ducks No.	Ducks % of state total	Location	Calculated goose harvest: No. geese	% of state total
Mendenhall Wetlands	5,579	9.4	4,585	5.0	Cold Bay	1,569	14.5
Susitna Flats	3,798	6.4	9,696	10.5	Pilot Point	1,255	11.6
Palmer-Hay Flats	3,561	6.0	4,677	5.1	Minto Flats	1,060	9.8
Copper River Delta	2,849	4.8	5,502	6.0	Copper River Delta	801	7.4
Minto Flats	2,611	4.4	6,786	7.4	Mendenhall Wetlands	671	6.2
Kachemak Bay	1,365	2.3	4,127	4.5	Yakutat Area	530	4.9
Eagle River Flats	1,187	2.0	1,284	1.4	Kachemak Bay	433	4.0
Stikine River Delta	1,128	1.9	2,751	3.0	Susitna Flats	357	3.3
Chilkat River	1,009	1.7	917	1.0	Chickaloon Flats	271	2.5
Chickaloon Flats	890	1.5	1,834	2.0	Blind Slough	173	1.6
Cold Bay	831	1.4	642	0.7	Stikine River Delta	162	1.5
Blind Slough	772	1.3	825	0.9	Duncan Canal	97	0.9
Trading Bay	594	1.0	1,376	1.5	St. James Bay	97	0.9
Salchaket Slough	475	0.8	642	0.7	Palmer-Hay Flats	65	0.6
Potter Marsh	415	0.7	917	1.0	Rocky Pass	43	0.4
Farragut Bay	356	0.6	92	0.1	Chilkat River	43	0.4
Eielson AFB	356	0.6	275	0.3	Eagle River Flats	32	0.3
Pilot Point	297	0.5	734	0.8	Potter Marsh	11	0.1
Kalsin Bay	237	0.4	642	0.7	Farragut Bay	11	0.1
Yakutat Area	178	0.3	183	0.2			
Rocky Pass	178	0.3	367	0.4			
St. James Bay	119	0.2	550	0.6			
Duncan Canal	59	0.1	92	0.1			
Subtotal	28,844	48.6	49,496	53.9		7,681	71.0
Statewide	59,350	100.0	71,703	100.0		10,821	100.0

Table 5. Duck species composition determined by random field bag checks - Central, Cook Inlet, Gulf Coast, Southeast, Kodiak and Alaska Peninsula harvest areas, 1972-73.

Species	Area and Percent Species Composition						
	Central	Cook Inlet	Gulf Coast	S.E.	Kodiak	Alaska Pen.	All Areas
Pintail	26.0	40.3	27.9	32.6	-	53.2	36.9
Mallard	15.8	19.6	33.5	18.8	12.5	16.3	21.0
G-W teal	10.2	13.8	7.7	15.9	-	9.2	12.2
Am. widgeon	19.1	17.9	15.3	5.8	-	6.4	15.7
Shoveler	10.7	5.7	8.0	2.2	-	5.0	6.3
Gadwall	-	0.3	2.1	1.5	-	2.8	0.8
Scaup	5.1	0.8	5.2	2.9	12.5	1.4	2.3
Goldeneye	5.6	0.8	0.3	3.6	25.0	3.6	1.8
Bufflehead	6.5	0.7	-	-	37.5	-	1.3
Canvasback	0.5	-	-	-	-	-	0.1
Merganser	-	-	-	12.3	12.5	0.7	1.1
Harlequin	-	-	-	4.4	-	-	0.3
Scoter	0.5	0.1	-	-	-	-	0.1
Steller's eider	-	-	-	-	-	1.4	0.1
	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sample Size	215	1014	287	138	8	141	1803

Total game ducks = 98.4%
Total nongame ducks = 1.6%

(about a 33% increase). Results were immediate: 1,822 wings were sent in during the 1972-73 season, compared to 882 during the 1971-72 season (Sorensen et al, 1973). 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 BSF&W is the best estimate available for 1972-73 statewide projections. However, it is also believed that hunters somewhat bias this survey by tending not to send in wings of nongame ducks. The hunter questionnaire mail survey is believed to provide the best estimate of nongame duck kill.

Table 6 provides duck harvest estimates by species for the Cook Inlet, Gulf Coast and Central harvest areas. These and statewide estimates are based on field bag check data and BSF&W parts collection survey data.

Goose Harvest

Hunters reported taking an average of 4.2 geese per successful goose hunter and .99 birds per active waterfowl hunter. Twenty-three percent of all active hunters reported taking one or more geese. Goose hunting success during the 1972 season was lower than in 1971, when 4.9 geese were reported per hunter taking geese and 1.08 birds were taken per active hunter. The 1972-73 statewide goose harvest was calculated to be 10,821 birds, compared to 11,343 in 1971-72.

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. Cold Bay is one exception to this and will be discussed later in this section.

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 survey. Table 7 presents calculated goose harvest by species and by harvest area. Canada geese made up two-thirds of the reported state goose harvest, while emperor geese comprised 17 percent of the total bag. Black brant, white-fronts and snow geese made up 6, 6 and 4 percent, respectively, of the total goose harvest.

Bureau of Sport Fisheries and Wildlife personnel conducted field bag checks in the Cold Bay area during the 1972-73 season. A total of 515 geese were checked. Species composition was: emperor geese - 51 percent; black brant - 25 percent; and Canada geese - 24 percent. The total calculated goose harvest at Cold Bay was 1,569 birds (Table 4). This projects to a harvest of 800 emperors, 392 brant and 377 Canada geese. The total calculated harvest on the entire Alaska Peninsula of emperor geese, black brant and Canada geese was 1,424, 483 and 1,503, respectively (Table 7). When comparing these figures, it appears that results of field checks at Cold Bay lend credibility to the accuracy of projecting bird harvests at specific locations using the mail questionnaire survey.

Table 6. Calculated duck harvest by species - Cook Inlet, Gulf Coast, Central and statewide, 1972-73.

Species	Cook Inlet*		Gulf Coast*		Central*		Statewide*		Statewide**	
	No.	% of total	No.	% of total	No.	% of total	No.	% of total	No.	% of total
Game Ducks										
Pintail	14,928	38.4	1,633	27.4	4,135	24.8	31,726	34.6	24,300	26.5
Mallard	7,232	18.6	1,961	32.9	2,518	15.1	18,155	19.8	22,646	24.7
Am. widgeon	6,610	17.0	894	15.0	3,052	18.3	13,477	14.7	14,397	15.7
G-W teal	5,094	13.1	452	7.6	1,618	9.7	10,544	11.5	11,644	12.7
Shoveler	2,100	5.4	465	7.8	1,701	10.2	5,500	6.0	4,585	5.0
Scaup	311	0.8	304	5.1	817	4.9	2,015	2.2	4,400	4.8
Goldeneye	311	0.8	18	0.3	884	5.3	1,558	1.7	733	0.8
Bufflehead	272	0.7	-	-	105	6.3	1,100	1.2	1,006	1.1
Gadwall	118	0.3	125	2.1	-	-	640	0.7	458	0.5
Canvasback	-	-	-	-	83	0.5	92	0.1	366	0.4
B-W teal	-	-	-	-	-	-	-	-	182	0.2
Ring-necked duck	-	-	-	-	-	-	-	-	90	0.1
Total Game	36,976	95.1	5,852	98.2	15,859	95.1	84,807	92.5	84,807	92.5
Nongame Ducks	1,889	4.9	110	1.8	814	4.9	6,896	7.5	6,896	7.5
Total Ducks	38,865	100.0	5,962	100.0	16,673	100.0	91,703	100.0	91,703	100.0

* Harvest projections by species are from 1972 field bag checks, except nongame ducks which are taken from the 1972 mail survey.

**Harvest projections by species statewide are from 1972 Bureau of Sport Fisheries and Wildlife wing collections, except nongame ducks which are taken from the 1972 mail survey.

Table 7. Calculated goose harvest by species and harvest area*, 1972-73.

Area	Species and Number: Canada No.	Canada % of species total	White-fronted No.	White-fronted % of species total	Brant No.	Brant % of species total	Snow No.	Snow % of species total	Emperor No.	Emperor % of species total	Total No.	Total % of statewide total
North Slope	-	-	-	-	-	-	-	-	-	-	-	-
Seward Peninsula	405	5.6	16	2.5	129	18.6	32	7.7	79	4.3	661	6.1
Yukon Valley	130	1.8	96	15.0	-	-	-	-	-	-	226	2.1
Central	933	12.9	286	45.0	-	-	49	11.5	-	-	1,268	11.7
Yukon Delta	159	2.2	64	10.0	-	-	-	-	65	3.5	288	2.7
Cook Inlet	1,330	18.4	144	22.5	-	-	32	7.7	-	-	1,506	13.9
Gulf Coast	961	13.3	-	-	49	7.0	81	19.2	-	-	1,091	10.1
Southeast	1,699	23.5	-	-	32	4.6	32	7.7	-	-	1,763	16.3
Kodiak	-	-	-	-	-	-	-	-	-	-	-	-
Alaska Peninsula	1,503	20.8	32	5.0	483	69.8	196	46.2	1,424	77.4	3,638	33.6
Aleutian Chain	108	1.5	-	-	-	-	-	-	272	14.8	380	3.5
Statewide	7,228	66.8	638	5.9	693	6.4	422	3.9	1,840	17.0	10,821	100.0

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

Crane Harvest

Hunters reported taking an average of .07 cranes per active hunter, as compared to .05 birds per hunter in 1972. The statewide calculated crane harvest was 765 birds, compared to 502 the previous year. Table 3 summarizes crane harvest by area.

Snipe Harvest

An average of 0.32 snipe reported per active hunter resulted in a calculated statewide harvest of 3,498 birds. During the 1971-72 season hunters reported 0.31 birds per man, for a total harvest of 3,087 snipe. Table 3 summarizes snipe harvest by area.

Hunter Characteristics

Hunters were asked on the mail questionnaire survey form to record the type of hunting method - jump shooting, pass shooting or decoy hunting - they employed. Statewide, pass and jump shooting (40 and 38 percent of total, respectively) were the most common methods, followed by decoy hunting (22 percent of the total). This closely correlates with results of the 1971-72 survey, where hunters reported 40 percent pass shooting, 39 percent jump shooting and 21 percent decoy hunting. Table 8 presents data on hunting methods as reported by area.

Hunters were also asked to provide their age and number of years of waterfowl hunting experience they had. Over half of Alaska's waterfowl hunters have ten or more years of hunting experience. The majority of these hunters are in the 19 to 39 age bracket. However, 27 percent of all hunters placed their age at 40 or more years. Table 8 summarizes these data by area.

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 one-fifth each to the Alaska Peninsula and Central areas. Over 6 percent of all hunters reported taking most of their ducks outside their areas of residence. This represents about 710 hunters. Table 9 compares area of residence to the harvest area where hunters reported taking most of their birds.

DISCUSSION

Comparison of projected duck stamp sales based on the mail survey and actual duck stamp sales as reported by the Bureau of Sport Fisheries and Wildlife provides strong evidence that the mail survey provided reliable harvest information. Projected stamp sales were 14,881 and actual sales were 14,824 (less than 1 percent error). Although 25 percent of all license buyers were sampled last year (1971-72) accuracy of stamp sale projections was not any better (14,493 projected compared to 14,423 actual) than that of this year's survey using a 10 percent sample.

Table 8. Duck hunting methods, waterfowl hunting experience and age of waterfowl hunters by harvest area, 1972-73.

Area of Residence	PERCENT OF TOTAL										
	Hunting Method			Years of Waterfowl Hunting Experience				Age of Waterfowl Hunters			
	Jump	Pass	Decoy	1	2-5	6-9	10+	18 & under	19-29	30-30	40+
North Slope*	0	0	0	0	0	0	0	0	0	0	0
Seward Peninsula*	12	76	12	0	19	12	69	12	12	29	47
Yukon Valley*	33	67	0	0	50	0	50	20	0	40	40
Central	46	35	19	18	30	7	45	5	39	28	28
Yukon Delta*	33	44	23	0	0	0	100	0	20	20	60
Cook Inlet	35	41	24	15	25	10	50	6	34	38	22
Gulf Coast*	58	31	11	6	26	5	63	5	26	21	48
Southeast	38	40	22	17	20	11	52	8	35	29	28
Kodiak*	42	42	16	8	38	0	54	0	27	60	13
Alaska Peninsula*	35	40	25	7	8	8	77	7	21	27	45
Aleutian Chain*	-	100	-	0	33	0	67	0	25	25	50
Statewide	38	40	22	15	24	9	52	6	33	34	27

*Sample of less than 20 hunters.

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

Area of Residence	PERCENT OF HUNTERS WHO HUNTED IN: North Slope	Seward Pen.	Yukon Valley	Central	Yukon Delta	Cook Inlet	Gulf Coast	S.E.	Kodiak	Alaska Pen.	Aleut. Chain	Total Out of Residence Hunt
North Slope	-	-	-	-	-	-	-	-	-	-	-	-
Seward Pen.	-	100.0	-	-	-	-	-	-	-	-	-	0.0
Yukon Valley	-	-	100.0	-	-	-	-	-	-	-	-	0.0
Central	-	-	0.9	98.2	-	-	-	0.9	-	-	-	1.8
Yukon Delta	-	-	-	-	100.0	-	-	-	-	-	-	0.0
Cook Inlet	-	-	0.4	2.7	-	88.9	3.4	1.5	0.8	2.3	-	11.1
Gulf Coast	-	-	-	-	-	5.0	95.0	-	-	-	-	5.0
Southeast	-	-	-	-	-	0.8	2.3	96.9	-	-	-	3.1
Kodiak	-	-	-	-	-	-	-	-	84.6	15.4	-	15.4
Alaska Pen.	-	-	-	-	-	-	-	-	-	100.0	-	0.0
Aleutian Ch.	-	-	-	-	-	-	-	-	-	-	100.0	0.0
Percent of Total Hunters Going to:	0.0	0.0	5.2	21.1	0.0	2.6	31.6	13.2	5.2	21.1	0.0	6.5

*Of the waterfowl hunters living in Southeast, 0.8 percent and 2.3 percent reported shooting most of their ducks in the Cook Inlet and Gulf Coast areas, respectively; a total of 3.1 percent traveled out of the Southeast to hunt. Of all waterfowl hunters in the state who hunted out of their area of residence, 13.2 percent came to the Southeast. A total of 6.5 percent of all waterfowl hunters shot most of their ducks in a different area than the one in which they live.

This evidence indicates a 10 percent license sample will be adequate in future years.

Bias corrections for reported season duck bags were made differently this year than last. Last year the method described by Williams (1953) was utilized. For this year's survey total reported harvest was reduced by 15 percent as described by Carney (pers. comm.). The BSF&W uses a constant 15 percent reduction factor in Alaska. This represents a long-term average reduction rate which was derived by using the Williams method. The 15 percent reduction figure will be used in future years to maintain continuity between the federal survey and our survey.

Although the BSF&W 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 reported hunting those number of days divisible by five (5, 10, 15, 20, etc.) much more frequently than other day classes. Also, very few people reported hunting 13 days during the season (superstition bias). Therefore, bias corrections for days hunted were made (Williams, 1953).

A comparison of the results of our 1972 mail survey and the 1972 estimates of waterfowl harvest and hunter activity made by the BSF&W (Carney et al, 1973) shows, except for goose harvest, close correlation (Table 10). Our total goose harvest estimate was 35 percent above their harvest estimate. Also, species harvest estimates for emperor geese, black brant and snow geese are quite different. Harvest estimates for Canada and white-fronted geese only show about 10 percent difference between the two surveys. The Bureau species composition data were derived from only 117 goose tails, however (Sorensen and Carney, 1973).

It is believed that our mail survey provided the best estimate of goose harvest, by species, in Alaska during the 1972-73 season. The Bureau has considered going to a hunter reporting survey 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, the major goose harvest area in the state and one-third of the total harvest occurred there. Still relatively unknown to people outside Alaska, the 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 half of the harvest occurred on lesser known areas. As seen in Table 4, 54 percent of the harvest occurred at the "big 23" 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 1972 ADF&G and BSF&W waterfowl hunter success surveys.*

	ADF&G		BSF&W	
Percent active hunters	75.1		75.2	
Number active hunters	10,930		10,957	
Percent hunters who were successful (who hunted)	89.2		81.3	
Days per active hunter	5.4		5.8	
Total hunter days	59,350		63,992	
Duck bag per active hunter	8.4		7.5	
Total duck bag	91,703		82,108	
Goose bag per active hunter	.99		.73	
Total goose bag	10,822		8,036	
Goose harvest by species	% of total		% of total	
Canada	66.8	7,228	82.9	6,662
Emperor	17.0	1,840	3.4	273
Brant	6.4	693	3.4	273
White-fronted	5.9	638	7.7	619
Snow	3.9	422	2.6	209

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

SUMMARY

1. The total calculated duck, goose, crane and snipe harvests in Alaska during the 1972-73 season were: 91,703; 10,822; 765; and 3,498 birds, respectively.

2. Hunters spent a calculated 59,350 days hunting waterfowl in Alaska during the 1972-73 season; an increase of 33 percent from the 1971-72 season.

3. Hunters harvested an average of 8.4 ducks each, and hunted an average of 5.4 days during the season.

4. Pintails, mallards, widgeons and green-winged teal constituted about 80 percent of the total duck harvest.

5. Canada geese comprised two-thirds of the state's goose harvest.

6. Pass and jump shooting are the two favorite methods of duck hunting in Alaska.

7. Over half of the state's waterfowl hunters have ten or more years of hunting experience.

8. Over two-thirds of the state's waterfowl hunters are between the ages of 19 and 39.

9. This survey indicated that 6.5 percent of the waterfowl hunters took most of their ducks in a different area than that in which they live.

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WATERFOWL BREEDING PAIRS SURVEY - 1972

INTRODUCTION

Since the mid-1950's, aerial surveys have been conducted in Alaska to measure the size of the breeding duck population. All major production areas are sampled except the North Slope. This year the state participated in the survey with Dan Timm flying as observer-copilot. Except for two other years, Bureau of Sport Fisheries and Wildlife personnel have conducted the entire survey.

Production habitat in Alaska is divided into two strata, or habitat types - tundra and forested interior areas. There are an estimated 43,450 square miles of tundra habitat and 33,200 square miles of interior production habitat. Results are analyzed separately for each area.

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 1,696 linear miles were flown in the tundra stratum and 1,712 miles in interior areas. This resulted in samples of 424 square miles and 428 square miles, respectively.

The survey started May 21 (first day of open water on Lake Hood in Anchorage) and was completed on June 20. One- to five-day delays were not uncommon as waiting for optimum survey conditions on the Yukon Flats and Yukon Delta was necessary. Adverse local weather also caused several days delay.

WEATHER AND HABITAT CONDITIONS

Snow cover persisted through the first half of May in interior areas and to about June 1 on the west coast tundra areas. Ice remained on some lakes even longer. Warm weather came to interior areas about May 20, causing a rapid snow melt and flooding in most river valleys. Flooding was severe in the lower Innoko and Kuskokwim river valleys, and moderate to light elsewhere.

Dabbler nesting was undoubtedly delayed in most parts of the state, and diver nesting delayed in tundra areas. Because warm weather came so rapidly in the interior, dabbler production was possibly only slightly affected; diver production was probably normal. Both diver and dabbler production in tundra areas was probably below average.

RESULTS

Ground surveys to assess the percent, by species, visibility rates from the air, are not conducted in Alaska. Visibility rates vary by

species by year in other areas where they are assessed. For example, scaup and most other divers are easier to see from the air than are pintails. Pintails are easier to see than are teal, etc. In years of high water when there is considerable shallow, temporary water pintails, for example, are harder to see than in years of poor water when the birds tend to flock, and the amount of emergent vegetation is reduced. Thus, annual air-ground comparisons are necessary for accurate total breeding duck estimates.

Because these ground surveys are not conducted in Alaska, a long-term average visibility rate is assigned for each species. These rates are taken from areas having habitat conditions similar to Alaska with known visibility rates.

Table 1 presents the projected breeding duck populations in Alaska from 1969 through 1972. Populations uncorrected for visibility rates and populations corrected for visibility are given for all four years.

Table 1. Breeding duck populations in Alaska, 1969-1972.

	Year								
	1969		1970		1971		1972		4-year Ave.
	*UNC	C	UNC	C	UNC	C	UNC	C	C
Total Ducks**	1,442	3,134	1,664	3,843	1,385	2,805	1,620	4,140	3,480

* UNC = uncorrected visibility; C = corrected for visibility.
**In thousands.

The 1972 corrected population of 4,140,000 birds represented nearly 9 percent of the continental population of breeding ducks.

Scaups, pintails and scoters comprised about 73 percent of the birds observed on the survey. American widgeons, mallards and old squaws made up about 20 percent. Other species observed included: green-winged teal, shoveler, canvasback, goldeneye, bufflehead and eider. The projected canvasback population in Alaska was nearly 10 percent of the world's population of about 1/2 million total birds.

CONCLUSIONS

Breeding duck surveys throughout the United States and Canada are a vital part of determining the annual surplus of ducks available for hunting. The surveys in Alaska play a prominant role in assessing some important game duck populations - pintail and scaup in particular. In years of poor water conditions on the prairies, some ducks over-fly to northern habitats of Alaska and Canada. In these years Alaska's breeding bird survey is especially important. Extensive production surveys in Alaska would be particularly desirable during these years.

Although geese are counted on the aerial survey, population projections have proven unsatisfactory due to the small area sampled and difficulty of observing some species (i.e. white-front). Winter inventories and other counts have proven more satisfactory than breeding ground population estimates.

The Bureau of Sport Fisheries and Wildlife has, through the years, refined breeding bird surveys to the point of reasonable accuracy. In Alaska, however, the true magnitude of the state's duck populations will not be determined until both air-ground comparison studies and extensive production studies are made.

SOUTHEASTERN WATERFOWL INVESTIGATIONS

WATERFOWL SURVEYS

Game Management Unit #1 - Mainland

On October 20, 1972, an aerial survey of the Stikine River Delta was made between 1130 and 1210 hours (one hour before high tide). Although the entire delta was flown, the tide line was emphasized. The following are results of that survey.

Area	Mallard	Pintail	Mixed Dabbler	Snow Geese	Canada Geese
Le Conte Bay and Mallard Slough	125	300	2325	-	143
North Arm	90	-	80	-	-
Sergieff Island	72	-	-	25	-
Dry Island	-	-	880	-	107
Dry Strait and Grossy Island	35	-	-	-	45
Total Delta	322	300	3285	25	295
1971*	-	-	6876	998	165

*Average counts of surveys flown October 17, 18 and 19, 1971.

When comparing 1972 survey data to those of 1971, it appears there was a significant decrease of both ducks and snow geese using the delta during late October. Snow goose numbers on the delta fluctuate from day to day because the geese do not stay very long. Thus, there could easily have been several thousand birds present the day before or day after the 1972 survey. Local reports did not indicate fewer ducks on the delta in 1972 compared to 1971. In fact, just the opposite was reported.

Game Management Unit #2 - Prince of Wales Island

No formal surveys were conducted during the reporting period.

Game Management Unit #3 - Kupreanof Islands

On February 8, 1973, an aerial survey of Rocky Pass was made. Only mallards and Canada geese were counted. Mallards were the only dabbling

ducks observed. Due to the extensive tide flats exposed at low tide, the count of 3,509 mallards and 361 Canada geese must be considered minimal.

River Basin Studies, BSF&W, has started an estuary evaluation study in Southeast Alaska. Part of the study will include bird counts four times a year in bays due to be logged, and a complete waterbird and waterfowl inventory of Southeast Alaska. The Department of Fish and Game has been cooperating by furnishing an observer for the aerial surveys.

On April 27, 1973, five bays were surveyed on the west side of Kuiu Island. Only that area from tide line (including tide flats) out about one-fourth mile was surveyed. The survey was made from 45 minutes before high tide to two hours after.

Following are the results of that survey.

Species	Saginaw Bay	Security Bay	Rowan Bay	Bay of Pillars	Elena Bay
Mallard	206	223	156	120	112
Mixed dabblers*	-	215	34	-	16
Divers	436	1094	290	389	1061
Canada geese	19	40	22	6	16
Gull*	14	11	21	52	17
Cormorant	-	1	4	1	-
Loon*	3	-	1	-	-

*More precise species data available in files.

Although the above data are for entire bays, each bay was separated into five-mile beach segments. Birds were totaled for each five-mile segment. These data are also available in the files.

Game Management Unit #4 - Admiralty, Baranof and Chichagof Islands

In cooperation with River Basin Studies, Port Fredrick and Tenakee Inlet were surveyed on February 2, 1973. Birds were counted from tide line (including tide flats) out about one-fourth mile. A count of mallards in Hawk Inlet was also made on the same day. Tenakee and Port Fredrick was broken into five-mile segments, as described previously. The following are results of that survey.

Species	Port Fredrick	Tenakee Inlet	Hawk Inlet
Mallard	892	796	315
Goldeneye	498	397	-
Merganser	173	45	-
Scoter	419	156	-
Scaup	-	6	-
Old squaw*	-	2	-
Harlequin	-	23	-
Bufflehead	-	19	-
Canada goose	250	98	-

*Many observed in open water not in the counting area.

Tenakee and Port Fredrick will be used to test various aerial survey techniques for use in other Southeast Alaska bays and estuaries. Survey lines one-fourth mile apart will be drawn on maps traversing each bay. These survey lines will be flown and birds counted to assess bird populations in open water.

As part of a Forest Service sponsored land-use study of West Chichagof-Yakobi islands, Fish and Game personnel spent several weeks in the area aboard the M/V Surfbird. Since very little is known about the avifauna of the area, complete records were kept of birds observed and their relative abundance. The following is a summary of bird observations.

From May 16 through May 29, 1973, personnel aboard the BSF&W boat Surfbird recorded birds observed during a study of West Chichagof-Yakobi islands. Although all members of the crew contributed, most of the bird recording was done by Fred Robards and Sid Morgan of the BSF&W and Loyal Johnson, Bruce Short and Dan Timm of ADF&G.

The following areas were covered, both by boat and ground observation, in order of coverage: Lisianski Inlet and Pt. Adolphus; Stag Bay; Lisianski Strait; Goulding Harbor; Herbert Graves Island and Black Bay; Kimshan Cove; Myriad Islands; islands in Elbow Passage; Klag Bay; Lake Anna; Ford Arm; Suloia Bay; Fish Bay; Bear Bay; Poison Cove; Ushk Bay; Fick Cove; Patterson Cove; Douglas Bay; South Arm of Hoonah Sound Flats; Moser Island; and the North Arm of Hoonah Sound. Little recording, except for the tufted puffins, brant and red-throated loons was done on the outside waters - seas were very rough!

Bird lists were kept each day by area, so more detailed information for many species is available and in the Juneau files. Some of the more interesting notes are included below. Another similar trip will be made in July; undoubtedly more birds will be added to the list then.

Bird List

Waterfowl

mallard -
pintail -
American widgeon -
green-winged teal -
shoveler -
blue-winged teal - one observed in North Arm of Hoonah Sound
old squaw - only one seen, in middle of Hoonah Sound
harlequin -
greater scaup -
lesser scaup -
bufflehead -
Barrow's goldeneye -
common goldeneye -
common merganser -
red-breasted merganser -
surf scoter -
white-winged scoter -
common scoter - relatively few observed anywhere
Canada goose - no geese observed from Lisianski Inlet through Goulding Harbor; first birds were in Black Bay; very few geese in Hoonah Sound
black brant - six observed off coast of Khaz Peninsula; 32 in Patterson Bay

Shore Birds

northern phalarope - several thousand seen near Pt. Adolphus
red phalarope - about 25 near Pt. Retreat and 20 on Moser Island
semi-palmated plover -
sanderling -
lesser yellowlegs -
greater yellowlegs -
spotted sandpiper -
whimbrel - one pair in South Arm of Hoonah Sound
black oyster catcher -

Pelagic and Marine Birds

marbled murrelet - very common all areas
tufted puffin -
rhinocerous auklet -
pigeon guillemot -
red-throated loon -
arctic loon -
common loon -
mew gull -
herring gull -
Bonaparte's gull -
glaucous-winged gull -

black-legged kittiwake - only observed in Hoonah Sound
arctic tern - only observed in Suloia Bay
Leach's petrel -
double-crested cormorant -
pelagic cormorant -

Birds of Prey

bald eagle -
peregrine falcon - one observed in Suloia Bay area
marsh hawk - one observed in Lisianski Inlet
goshawk -
sharp-shinned hawk - one observed in South Arm of Hoonah Sound

Song Birds

Wilson's warbler - common in all areas
yellow warbler - second most common warbler
orange-crowned warbler - only observed in Hoonah Sound
Myrtle warbler -
pine siskin -
varied thrush - common in all areas
hermit thrush - common through Ford Arm; none observed after we left Ford Arm
robin - common in all areas
song sparrow - common in all areas
tree sparrow - common in all areas
Savannah sparrow - only observed in Hoonah Sound
tree swallow - common, many times more abundant than violet-green
violet-green swallow -
water pipit - common in most areas
ruffous hummingbird - common in most areas
belted kingfisher - only one observed, in Black Bay
Oregon junco -
dipper -
downy woodpecker -
yellow-shafted flicker - only one observation, in South Arm of Hoonah Sound
yellow-bellied sapsucker -
brown creeper - only one observation, in Kimshan Cove area
western flycatcher - only birds observed were on south and southeast sides of Chichagof Island
western wood pewee - only one observation, in South Arm of Hoonah Sound
red crossbill -

Crows, Ravens and Jays

northwestern crow - common in all areas
common raven - common in all areas
Steller's jay - one observation in Stag Bay; two in Goulding Harbor

"Probables"

arctic or Tennessee warbler - two different birds observed in Hoonah Sound; birds must have been one of these two species

olive-sided flycatcher -

Of interest is that we did not hear any blue grouse on the entire trip.

Random Surveys

Swan and Canada goose observations are being recorded throughout the year in the Southeast. Numbers of birds and specific location are noted. These records are maintained in the files.

WINTERING MALLARD STUDIES

Banding

From February 17-24, 1973, a bait trapping operation was conducted in Rocky Pass in an attempt to band wintering mallards. No birds were banded.

One week before the traps were set, several prebaiting sites were established. Crows cleaned up all but two of the bait piles; ducks had eaten two piles of corn. After the traps were set, mallards returned to the baited areas only one or two different nights, eating only a small amount of corn around each trap. Due to mild weather and lack of ice on the tide flats, the birds had no need to eat corn in an "unnatural situation."

One night a mallard was trapped. The next morning we found the trap overturned and duck feathers were scattered around the area. Fresh wolf tracks indicated a wolf had upset the trap, probably by putting his muzzle in the trap entrance and lifting.

It was felt that some other bait besides corn would be desirable because Southeast mallards probably have never seen corn. Harry Merriam tried baiting with shrimp refuse from the Petersburg processing plant. Before mallards could find the shrimp, crows and gulls had cleaned it up.

It appears possible, from this year's observations, that mallards can be captured with cannon nets. At extreme high tides the birds consistently use the same loafing areas. Cannon netting appears practical, at least in Rocky Pass, only a few days each month when the tides are quite high.

Sex Ratios

Sex ratios were taken on mallards in Rocky Pass during the trapping period. A total of 475 birds were counted; 289 males (60.9%) and 186 females (39.1%).

Food Habits

During the winter of 1972-73 eleven mallards and two Canada geese were collected. A total of 33 mallards and four Canada geese have been collected the past two winters for food habits and analysis. One more winter of collecting is planned in order to get an adequate sample of birds for analysis.

HABITAT IMPROVEMENT

From May 2 through May 7, 1973, Fish and Game personnel assisted the Forest Service with a pothole blasting project on the Stikine River Delta. Thirty-five holes were blown, bringing the total number created since 1969 to 97. All 35 potholes were made on Sergieff Island this year. This project is being conducted in an effort to attract ducks off the intertidal zone to the ponds, thus improving hunting.

During mid-October 1972, several days were spent on Binkley's Slough evaluating the potholes created in that area. Although ducks were seen on about one-third of all ponds, snipe were seen around nearly every pothole.

Several people reported excellent jump shooting on the ponds in early November. The ponds become especially good late in the season, before freeze-up, when high winds force birds off tide line.

The Forest Service made three check dams across sloughs on Sergieff Island during the summer of 1972. During the winter ice took one out. By spring 1973 the other two had washed out. Because the dams economically provide large surface areas of water, modifications of the dams will be made and more will be constructed.

VANCOUVER CANADA GOOSE STUDY

During February 1973, an S & I proposal to study the feasibility of conducting a Ph.D. study on Vancouver geese (*Branta canadensis fulva*) was written. These birds are the least studied of all subspecies of Canada geese. Very little is known about the birds except for recoveries from geese banded by Fred Robards of BSF&W, and scattered reports from state and federal biologists and the public.

Although there is considerable logging activity in Southeast Alaska and much more planned for the future, relatively little is known about logging's environmental impact. To insure proper future considerations for habitat of the Vancouver goose, a study was proposed to acquire more knowledge about the birds.

In early spring we were contacted by a Ph.D. candidate from Utah State University who was very interested in conducting research on Vancouver geese. He (John Ratti) agreed to travel to Alaska at his own expense for a summer's preliminary work necessary to design a Ph.D.

study. Fish and Game agreed to furnish his food while he was on BSF&W boats, provide some aerial survey charter time, and pay for minor miscellaneous costs.

During the summer of 1973, John spent time on the BSF&W M/V's Curlew and Surfbird. He also flew aerial surveys in the Wrangell, Petersburg and Kuiu Island areas, and conducted ground work in Rocky Pass and the Wrangell Narrows. To acquire more data on goose distribution in the Southeast, Fish and Game requested all Department, BSF&W and USFS personnel to report random sightings of Canada geese.

The following summary of 1973 activities was written by John Ratti, and summarizes both his observations and those of several Fish and Game people. John will be conducting a Ph.D. study beginning the summer of 1974, and doing his research from Oregon State University.

1973 FIELD SEASON: SUMMARY OF ACTIVITY AND OBSERVATIONS

1. During the period of April 25 through July 10, Vancouver Canada goose (*B. c. fulva*) surveys were conducted at Glacier Bay and on Chichagof, Admiralty, Etolin, Zarembo, Kuiu, Wrangell, Kupreanof, Mitkof and Baranof islands in Southeast Alaska.

2. A total of 1,091 miles of beach and shoreline were surveyed; 669 miles by skiff and 422 miles by low-level aerial survey. A total of 1,854 Vancouver geese were observed.

3. Birds were most commonly found in protected coves and bays near tidal flats. These areas frequently had grassy meadows, large acreages of tidal flats during low tide, and freshwater streams emptying into the bay.

4. Areas producing few goose observations were exposed shorelines, usually having a narrow low-high tide margin, with rocky intertidal zone.

5. Nine goose nests were discovered; six with eggs (6, 4, 4, 4, 3, 2), two without eggs, and one old nest from the previous season (this nest successfully hatched five eggs according to a nearby cabin owner).

6. It appears that egg laying began the last few days of April with many eggs hatching around June 1.

7. Five nests were found on small islands in saltwater bays and coves. One nest was found on a freshwater island (rock), one on the bank of a freshwater beaver pond, and one on a cut tree stump located in an intertidal zone. The most unusual nest was located on a horizontal limb of a spruce tree, approximately 50 feet off the ground.

8. A total of 67 goslings were observed. One group had 45 adults with 37 goslings. When approached, only 20 adults remained with the goslings while 25 flew from the area. Only one lone pair with six

goslings were observed; all others were in groups of various sizes.

9. Broods are quite secretive, spending much of their time near the forest edge. Broods readily escaped potential danger in the forest underbrush.

10. Although sufficient data are lacking, it appears that well over 50 percent of the geese observed were nonbreeding birds.

11. On four different occasions adult pairs were observed landing in, or taking flight from trees. One pair was observed landing in a spruce tree over 100 feet above the ground.

12. Logging activity appears to move geese out of the area being logged. The length of displacement is unknown.

13. Observations of general goose behavior were recorded. Those included daily activity, territoriality, courtship, feeding, loafing and goose-bear interactions.

14. A memorandum was distributed to all Alaska Department of Fish and Game and U. S. Forest Service personnel in Southeast Alaska requesting information on any goose nests discovered, broods observed, or large concentrations of geese.

15. Approximately 500+ molting birds will be banded and physical characteristics recorded at Adams Inlet in Glacier Bay during mid-July. Approximately 300 birds will receive Sherwood-type neck collars.

NOTE: Much of the time, activity and location of this year's field work was dictated by the cooperating agencies offering field support, while conducting field investigations unrelated to waterfowl. Consequently, much of the above information is misleading. For example, of the nine goose nests located, seven were discovered within a 26-hour period; all 67 goslings were observed in a six-day period.

SOUTHCENTRAL WATERFOWL INVESTIGATIONS

Game Management Unit 6 - Prince William Sound

Harvest and Hunting Pressure

Results of the hunter questionnaire survey and bag check data are included in the section on statewide harvest.

Composition and Productivity

Dusky Canada Goose Studies:

Annual appraisal of nesting conditions and success is important in establishing meaningful recommendations for hunting seasons and bag limits of this intensely utilized goose population.

To meet this obligation, nesting studies are undertaken to determine clutch size, nesting densities and hatching success. In addition, habitat selection sites are noted and aerial production surveys are conducted. Pre-season banding is also carried out in an attempt to monitor the harvest as closely as possible.

Nesting

For the second consecutive year spring arrived late on the Copper River Delta. On May 27 an estimated two feet of snow remained on the ground and on the 13th of June there was still some snow left.

As expected, nesting was delayed and many dusky Canada geese (*Branta canadensis occidentalis*) probably did not attempt to nest.

In 1970, 35 percent of the nests had hatched or had pipping eggs by June 10. By contrast it was June 30 before that percentage was reached in 1972.

Midwinter inventories conducted in Oregon and Washington in January 1972 revealed only 17,000 dusky Canada geese. This was the lowest number recorded since 1965 and, coupled with unfavorable breeding conditions during the summer of 1972, produced a low fall flight.

One hundred thirty-five nests were located during the study. The total clutch size of 57 of these nests was determined. Total clutch size was recorded if on subsequent visits the nests had equal or fewer number of eggs than on the previous visit. Nesting success was based on the presence of hatched eggs or by the presence of predated eggs or destroyed nests. Table 1 lists hatching success and clutch size.

Nest Sites

In the past, most nests have been situated in the forb-grass community. For instance, Trainer (1959) found that of 244 nests, 218

Table 1. Dusky Canada goose nesting study.

Year	No. Nests	Hatched		Abandoned		Flooded		Destroyed	
		No.	%	No.	%	No.	%	No.	%
1959	222	198	89.2	7	3.2	14	6.3	3	1.3
1964	102	84	82.4	8	7.8	0	0.0	10	9.8
1965	221	139	62.9	15	6.8	0	0.0	67	30.3
1966	100	97	97.0	3	3.0	0	0.0	0	0.0
1968	38	33	86.8	0	0.0	0	0.0	5	13.2
1970	186	164	88.2	6	3.2	0	0.0	16	8.6
1971	100	76	76.0	0	0.0	0	0.0	24	24.0
1972	116	94	81.0	0	0.0	0	0.0	22	19.0

Year	Average Clutch Size	No. Nests
1959	5.6	194
1964	4.3	114
1965	5.8	140
1966	4.8	100
1968	5.1	75
1970	5.4	146
1971	3.6	113
1972	4.4	57

or 97.3 percent were in the forb-grass community and only 6 or 2.7 percent were in sedge. However due to ecological changes resulting from the 1964 earthquake and resulting uplift of the delta, a transitional sedge-grass community has become obvious. In 1972 the following was the breakdown of nest site selection.

Table 2. Nest site selection, 1972.

Community	Number	Percentage
Sedge	26	19.3
Sedge-grass	9	6.7
Forb-grass	99	73.3
Mud bank	1	0.7

Prior to the 1964 uplift, sedge communities were flooded periodically while the higher forb-grass communities remained above all but the highest flood tides. Therefore nests located in the sedge communities were much more vulnerable to flooding and those nesting in such locations were less successful in their nesting attempts. However, flooding is no longer a problem and we are now seeing a shift in nest selection sites.

Although included in the forb-grass community in Table 2, the shrub or sweet gale (*Myrica gale*) stands are an important nesting type. Of the 99 nests located in the forb-grass, 19 nests were located under a canopy of this plant. Crow (1968) points out the increased invasion of *Myrica* on the Copper River Delta and in view of this, continued monitoring of nest site selection may indicate whether the dusky Canada goose can take advantage of changing conditions and adapt to nesting sites that were not chosen prior to uplift in 1964.

Nest Study Plots

Seven of 15 nesting plots established in 1967 were checked in 1970 and again in 1972. This information is presented below.

	No. Nests	
Plot No.	1970	1972
1	7	2
2	2	4
3	5	5
4	3	1
5	4	2
8	6	4
9	0	2
Total	27	20

Nesting densities in 1972 were lower than in 1970 throughout the delta, but the above information is presented only for future reference and comparison when more data are available.

Photographic Record of Nest Study Plot

The nest study plots were photographed during the second week of July, 1972. Changes in gross vegetational characteristics should be noticeable by comparing pictures taken from the same places in later years. Pictures are on file in Anchorage, Juneau and Cordova. Photos are in the 35mm color format.

Production

Aerial surveys to determine age composition were conducted on August 8, and are presented in Table 3. Applying a 50 percent differential visibility rate as explained by Timm (1971), there were an estimated 10.6 percent young in the total population.

Table 3. Age composition of dusky Canada geese on the Copper River Delta, August 1972.

Date	Number Adults	Number Young	Observed Percent Young	Calculated Percent Young
8/8/72	7,321	436	5.6	10.6

Banding

On August 7, 417 geese were banded (210 adult males, 206 adult females and 1 local female). Unfortunately, due to low production and irregular group location, only one young-of-the-year was banded, and this bird was not captured in the drive but instead was caught by hand. There were an additional 47 band returns (recaptures from previous years' banding). One of the birds banded was judged to be a lesser Canada goose.

Measurements of Dusky Canada Geese

Subspeciation in Canada geese in not fully understood. There is a small population of an undetermined subspecies that nests on some of the islands of Prince William Sound. Specimens have been identified by Dr. J. W. Aldrich of the National Museum of Natural History as being dusky Canada geese, Vancouver Canada geese (*Branta canadensis fulva*) and an intermediate form. The number of specimens used in his subspecies determination and in the original separation by Delacour (1954) is unknown.

One hundred adult dusky Canada geese from the Copper River Delta were measured during the 1972 banding operation. Measurements of Vancouver Canada geese will be obtained during further banding operations

on that subspecies. With these greater sample sizes for both subspecies, a clearer picture of Alaskan coastal nesting geese may emerge. Results of dusky Canada goose measurements are found below.

	Adult Males (ss=47)			Adult Females (ss=53)		
	Culmen	Tarsus	Culmen + Tarsus	Culmen	Tarsus	Culmen + Tarsus
Average	46.2	89.2	135.0	43.4	82.3	125.8
90% Confidence Limit	42.6 to 49.8	85.5 to 92.9	128.8 to 141.1	40.3 to 46.5	75.6 to 88.9	117.1 to 134.3

Trumpeter Swan Survey:

On June 16 and 18, 1972, Game Biologists P. Havens and J. Reynolds flew a trumpeter swan survey from Cordova to Cape Yakataga. This expanded the area covered in the 1970 survey to include all swan habitat between two obvious natural boundaries - Prince William Sound and Cape Yakataga. Aircraft used were a Cessna 180 and a DeHavilland Beaver. It is felt that all swan habitat in the area was covered. In the past these surveys were flown in May, but due to extremely late snow and ice cover, the 1972 survey had to be delayed. Swans observed were marked on 1:250,000- or 1:63,360-scale topographic maps and copies are on file in Anchorage and Cordova. Previous surveys have covered varying parts of the area (ADF&G, 1971). It is hoped that future surveys include all habitat between Cordova and Cape Yakataga and will therefore be comparable.

Other workers have remarked on the ease with which young of the previous year were identified by their gray color during May surveys. It therefore came as a surprise that no gray birds were observed during the June 1972 surveys. Whether the gray feathers have been replaced by June or there were no yearling birds in the survey area has not been determined. However, fewer flocked birds recorded in 1972 seems to indicate a lower number of nonbreeding (younger) birds.

In total, 183 pairs were seen, 55 of which were near nests. In addition, six single swans were observed by nests. Twenty-eight additional single swans were also noted.

As in previous years any group of more than three birds was considered nonbreeders. Seventeen of these groups were seen ranging in size from three to 20 birds and totaling 129 swans. Total number of swans surveyed was 529 (Table 4). Table 5 compares 1970 data with 1972 data adjusted to duplicate survey areas.

While no survey was done on swans in 1971, yearly Canada goose surveys were completed. Due in part to an extremely late spring, goose production was down. As the swans occupy much of the same habitat type, it might be speculated that the late spring of 1971 also affected swan production adversely; this theory is reflected by absence of gray birds and the reduced number of flocked nonbreeding swans observed in 1972. The same general conditions prevailed in 1972 and production could again have been affected.

Table 4. Trumpeter swan survey data - Game Management Unit 6*.

	Single Swan	Single Swan Near Nest	Pair Near Nest	Pair Not Near Nest	Flocked Birds	Total
1972	28	6	55=110	128=256	129	529

*That portion of Unit 6 lying between Cordova and Cape Yakataga.

Table 5. Trumpeter swan survey data - Game Management Unit 6*.

	Single Swan	Single Swan Near Nest	Pair Near Nest	Pair Not Near Nest	Flocked Birds	Total
1970	41	1	78=156	88=176	342	716
1972	27	5	54=108	115=230	123	493

*That portion of Unit 6 between Cordova and Tsiu River.

Management Summary and Conclusions

The second consecutive late spring has caused a reduction in total numbers and a lowering of productivity of the dusky Canada goose. If a high harvest takes place and there is another disaster on the nesting grounds in 1973, the population could be in serious trouble.

Close monitoring of production and harvest are recommended. If the population continues to be hampered by poor production, a drastic reduction of harvest is recommended.

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Game Management Unit 7 - Eastern Kenai Peninsula

No Survey and Inventory work done in this unit during the reporting period.

Game Management Unit 8 - Kodiak and Associated Islands

Harvest and Hunting Pressure

A split waterfowl season was initiated in Unit 8 during this reporting period. It was felt that this would enable the best use of both early migrating birds plus a chance to hunt late arriving and wintering waterfowl. Season dates were September 9 - October 1 and November 1 - January 21. Two or more seasons will be required to evaluate the split season.

Results of the hunter questionnaire survey are included in the section on statewide harvest.

Composition and Productivity

Survey flights were conducted and are reported in Appendices I - VI. Divers include old squaw, harlequin, goldeneye and bufflehead.

APPENDIX I

Waterfowl Survey Data, Unit 8, Ugak Bay - Kodiak

Species	January 21, 1972*	November 9, 1972**
Dabblers	193 (mallards)	184 (90% mallards)
Divers	143	980
Scoters	98	163
Common & Steller eider	0	86
Emperor geese	35	0

* Estimate by B. Ballenger (coverage unknown).
**Estimate by D. Timm and P. Havens (coverage good).

APPENDIX II

Waterfowl Survey Data, Unit 8, Gull Cape - Kodiak

Species	February 18, 1972*	November 9, 1972**
Dabblers	50 (mallards)	2600 (60% mallard, 20% G-W teal, 20% pintail)
Divers	25 (old squaw)	0

* Estimate by B. Ballenger (coverage unknown).
**Estimate by D. Timm and P. Havens (coverage good).

APPENDIX III

Waterfowl Survey Data, Unit 8, Uyak Bay - Kodiak

Species	January 21, 1972*	November 9, 1972**
Dabblers	371 (mallard)	1615 (80% mallard, 10% pintail, 5% G-W teal, 5% widgeon)
Divers	639	140
Scoters	48	0

* Estimate by B. Ballenger (coverage unknown).
**Estimate by D. Timm and P. Havens (coverage good).

APPENDIX IV

Waterfowl Survey Data, Unit 8, Miscellaneous Observations, January 21, 1972*

Area	Species	Number
Old Woman Bay	Scoter**	50
	Harlequin	80
	Old squaw	175
	Goldeneye**	70
Middle Bay	Harlequin	21
	Old squaw	70
	Goldeneye**	90
Kalsin Bay	Mallard	15
	Scoter**	50
	Harlequin	28
	Old squaw	145
	Goldeneye*	62
	Emperor geese	60
Cape Chiniak	Harlequin	10
	Old squaw	237
	Goldeneye**	10
Narrow Cape	Scoter**	3
	Harlequin	33
	Old squaw	202
	Goldeneye**	20
Pasagshak Bay	Scoter**	21
	Harlequin	69
	Old squaw	35
Spiridon Bay	Mallard	112
	Harlequin	4
	Old squaw	18
	Goldeneye**	4
Uganik	Mallard	307
	Scoter**	74
	Harlequin	46
	Old squaw	136
	Goldeneye**	10
	Emperor geese	3
Terror Bay	Mallard	70
	Harlequin	79
	Goldeneye**	6

* Estimate by B. Ballenger
**Not identified to species

APPENDIX V

Waterfowl Survey Data, Unit 8, Miscellaneous Observations, February 18, 1972*

Area	Species	Number
Tugidak Island	Old squaw	390
Alitak Bay	Scoter**	25
	Old squaw	50
	Emperor geese	10
Olga Bay	Scoter**	20
	Old squaw	90
	Goldeneye**	10
	Emperor geese	50
Deadman Bay	Scoter**	20
	Old squaw	105
Portage Bay	Mallard	20
	Old squaw	95
	Emperor geese	30
Kaiugnak Bay	Mallard	60
	Old squaw	105
	Goldeneye**	10
Three Saints Bay	Old squaw	310
Barling Bay	Old squaw	50
Old Harbor	Old squaw	120
Kiliuda Bay	Mallard	367
	Old squaw	85
	Goldeneye**	66
	Steller eider	10

* Estimates by B. Ballenger.
**Not identified to species.

APPENDIX VI

Waterfowl Survey Data, Unit 8, Akhiok Bay*

Species	November 9, 1972
Mallard	280
Pintail	200
Widgeon	290
Scoter**	180
Diver**	380
Emperor geese	770

* Estimates by D. Timm and P. Havens.
**Not identified to species.

Game Management Unit 9 - Alaska Peninsula

Harvest and Hunting Pressure

Results of the hunter questionnaire survey and bag check data are included in the section on statewide harvest.

Composition and Productivity

Limited surveys were conducted by James Faro on the Bristol Bay side of the Alaska Peninsula during October; these are reported in Appendix I.

In the spring of 1970 Faro surveyed a portion of the Pacific side of the Alaska Peninsula and those results were reported in the 1970 progress report. In 1972 much of the same area was surveyed again but during the fall, and the results are attached as Appendix II. Diving ducks included scoters, eiders, harlequin, goldeneye and old squaw. Dabblers were pintails and mallards. Coverage was around shorelines to one-eighth mile off shore, with Faro observing from one side of the aircraft and Havens observing from the other. Because of white-capped waves and turbulent air, the counts should be considered minimal.

The cormorant rookery at Cape Seniavin was resurveyed in order to gain species composition data as suggested by Havens in Timm (1971).

Counts were made from the beach on June 27, 1972, with the aid of 7 x 35 binoculars. Four hundred and twenty-six cormorants were identified to species. Three hundred and thirty-two (77.9%) were red-faced (*Phalacrocorax urile*) and 94 (22.1%) were pelagic (*P. pelagicus*).

Management Summary and Conclusions

A request was made to the U. S. Fish and Wildlife Service to allow a 300-bird, by permit only, season on whistling swans in that part of Unit 9 west of the Naknek River and Katmai National Monument. A 700-permit season was also requested for Game Management Unit 18. A copy of both requests and supporting data are found in Appendix III. The U. S. Fish and Wildlife Service denied the requests on the basis of adverse national public reaction to increased hunting of swans.

Recommendations

The addition of a limited swan season, in Unit 9, is recommended to be pursued further.

LITERATURE CITED

Timm, D. 1972. Report of Survey and Inventory Activities - Waterfowl. Fed. Aid in Wildl. Rest. Proj. W-17-4, Alaska.

APPENDIX I

Waterfowl Survey Data, Unit 9, October 3 and 4, 1972*

Species	Nelson Lagoon	Ilnik	Port Heiden	Cinder River	Pilot Point
Dabbler	1,675	2,870	840	1,390	2,020
Diver	14,200	880	2,400	2,330	0
Canada geese	0	0	925	440	3,960
Emperor geese	2,250	2,185	1,945	1,900	205
Snow geese	0	0	0	0	1,740
Total Waterfowl	18,125	5,935	6,110	6,060	7,925

*Estimates by J. Faro.

APPENDIX II

Waterfowl Survey Data, Unit 9, Pacific Side of the Alaska Peninsula

Area	Date	Observation	
Kujulik Bay (turbulent with some white caps)	10/11/72	Diver	114
		Emperor geese	277
Chignik Bay (turbulent with some white caps)	10/11/72	Diver	26
		Emperor geese	9
Chignik Lagoon (turbulent with some white caps)	10/11/72	Dabbler	410
		Diver	47
		Emperor geese	696
Castle Bay	10/11/72	Diver	287
Ivanoff Bay	10/11/72	Dabbler	585
		Diver	58
		Emperor geese	400
Stepovak Bay	10/11/72	Diver	862
Grub Gulch Bay	10/11/72	Diver	228
		Emperor geese	13
Clark Bay	10/11/72	Diver	64
		Emperor geese	40
Orzinski Bay	10/11/72	Dabbler	20
		Diver	63
		Emperor geese	2
American Bay	10/11/72	Diver	62
Chichagof Bay	10/11/72	Diver	76
Dorenoi Bay	10/11/72	Diver	32
Beaver Bay		Dabbler	6
		Diver	63
		Emperor geese	155
Canoe Bay	10/11/72	Dabbler	304
		Diver	73
		Emperor geese	985

Appendix II (continued)

Area	Date	Observation	
Pavlof Bay (west of Canoe Bay)	10/11/72	Dabbler	35
		Diver	352
		Emperor geese	328
Cold Bay (Kelp Point to Nurses Lagoon)	10/11/72	Dabbler	18
		Diver	302
		Emperor geese	1487
		Brant	1250
Morzhovoi Bay	10/11/72	Dabbler	65
		Diver	14
		Emperor geese	3322
		Brant	468
		Canada geese	570
Aniakchak Bay (lagoon looks like good habitat)	10/12/72	Dabbler	50
		Diver	49
		Emperor geese	350
Amber Bay	10/12/72	Dabbler	30
		Diver	72
		Emperor geese	238
Yantarni Bay	10/12/72	Dabbler (on river)	30
		Diver	36
		Emperor geese	75
Chiginagak Bay	10/12/72	Diver	125
		Emperor geese	227
Agripina Bay	10/12/72	Diver	62
		Emperor geese	138
Wide Bay (windy partial coverage only)	10/12/72	Diver	21
		Emperor geese	610
Portage Bay	10/12/72	Diver	89
		Emperor geese	95
Puale Bay	10/12/72	Diver (95% scoter)	653
		Emperor geese	32

APPENDIX III

A Proposal for a Whistling Swan Season in Alaska

Introduction

The fall flight of whistling swans (*Olor columbianus*) that leaves the State of Alaska each year numbers about 70,000 birds (King and Lensink, 1971). The North American population has been placed at over 150,000 individuals by Lynch (1972).

Banding efforts by the Bureau of Sport Fisheries and Wildlife and W. J. L. Sladen of Johns Hopkins University on both breeding and wintering grounds have demonstrated somewhat discrete, if overlapping populations.

Legal hunting seasons for swans have been held in Utah, Montana and Nevada; and these states report an increase in hunter interest - especially Utah which reports 6,563 applications for 2,500 permits in 1971 (Regenthal, pers. comm.). Table 1 shows harvest figures from the three states.

Table 1. Legal harvest of whistling swans.

Year	Utah Number	Nevada Number	Montana Number
1962	320	No Season	No Season
1963	392	"	"
1964	335	"	"
1965	336	"	"
1966	491	"	"
1967	246	"	"
1968	520	"	"
1969	1290	87	"
1970	812	210	179
1971	890	96	90

The illegal spring swan harvest on the Yukon-Kuskokwim Delta has been placed at 5,585 by Klein (1966). Although no more recent studies have been done, with an advent of food stamps and relocation of many natives from the villages to larger towns such as Bethel, it is likely that the spring harvest will decrease.

The magnitude of spring and summer hunting of swans in other parts of Alaska is unknown but is probably minimal.

Proposal

The Alaska Department of Fish and Game proposes to hold a whistling swan season concurrent with the general waterfowl season. Traditional season dates in the proposed areas are September 1 through December 14. Freeze-up limits the season length and usually occurs by November 1 on the Alaska Peninsula and October 10 on the Yukon-Kuskokwim Delta.

Harvest will be by permit only and will be limited to 300 permits on the Peninsula and 700 on the Delta, with a season bag limit of one swan per permit holder.

Boundaries are described as follows: That portion of Game Management Unit 9 lying west of a line following the east bank of the Naknek River to the boundary of Katmai National Monument, thence following the western boundary of Katmai National Monument to the Pacific Ocean (Appendix I); and Alaska Game Management Unit 18 (Appendix IV).

Permits will be issued from Alaska Department of Fish and Game headquarters in Juneau. Applications must be postmarked before August 1. If more than 300 and 700 applications are received for each area, respectively, a drawing will be held. A valid state hunting license and federal duck stamp are necessary if the applicant is over 16, although a nonresident under 16 also needs a state hunting license.

A questionnaire will be sent to all permit holders after the close of the season.

Justification

King and Lensink (1971) estimate average fall flight of 10,600 swans from the Alaska Peninsula. They also estimate about 9,200 square miles of nesting habitat on the Bristol Bay lowlands, of which the Alaska Peninsula is the biggest part. In 1971, Shepherd surveyed about 100 square miles of habitat adjacent to the proposed hunting area and censused 199 swans or about two swans per square mile (Shepherd et al, 1972). We can safely estimate that the population of whistling swans in the Bristol Bay lowlands is between 10,600 and 18,400 swans. The Yukon-Kuskokwim Delta population has been estimated at about 50,000.

In contrast, Hansen et al (1971) in their definitive work on the trumpeter swan in Alaska, indicate no verified records of trumpeter swans occurring on the Alaska Peninsula or Yukon-Kuskokwim Delta. They do record two possible trumpeter sightings on the Delta.

Whistling swan production data from Alaska are lacking except from the Yukon-Kuskokwim Delta (Lensink, 1971). Average clutch size from 1963-1971 is 4.3, and survival of young from hatching to winter from 1964-1970 averages 53.24 percent.

The following table is taken from Lynch (1971) and lists percentages of immature swans in the population wintering in the Pacific and Atlantic flyways.

Table 2. Percent immature whistling swans on wintering areas.

Flyway	1966	1967	1968	1969	1970	Ave.
Atlantic	8.5	9.0	10.1	4.8	14.9	9.5
Pacific	11.2	25.0(Est.)	21.3	34.3	19.5	20.3

These data show a much greater percentage of young in Pacific Flyway whistling swans - the reason for this is not known. Possibly arctic breeding birds wintering in the Atlantic Flyway characteristically have lower productivity than those near-arctic breeding birds wintering in the Pacific Flyway.

Nagel (1970) listed breeding population indices for whistling swans from 1960-1970; and although fluctuations appear, he concluded that continuation of limited whistling swan seasons in the Pacific Flyway was justified.

Table 3. Breeding population indices and midwinter census of whistling swans in the Pacific Flyway (after Nagel, 1970).

Year	Breeding Population Indices		Midwinter Censuses
	Canada	Alaska	
1960	23,600	79,300	35,501
1961	29,600	79,000	40,784
1962	26,500	56,000	32,345
1963	32,100	64,000	46,327
1964	17,800	50,500	29,564
1965	20,500	62,250	42,646
1966	15,800	52,000	36,604
1967	18,100	43,000	48,926
1968	18,800	50,000	35,630
1969	24,100	75,000	74,879
1970	29,200	69,000	31,000

Banding returns, while not numerous, indicate that whistling swans banded in the Bristol Bay-Alaska Peninsula areas are recovered more frequently in California, while those banded on the Yukon-Kuskokwim Delta are distributed throughout the west and on one occasion the southeastern United States (Appendices II and III).

Table 4 summarizes all banding data to October 1971.

It is obvious from both direct and total recovery rates that swans from the Bristol Bay area are being recovered less frequently than swans from the Yukon-Kuskokwim Delta. However, both areas demonstrate very low recovery rates. It should be pointed out that of the 29 swans recovered, all except one was banded as a local.

Banding efforts on wintering grounds, carried out by Sladen in the Atlantic Flyway, "demonstrate that birds marked in the Chesapeake Bay area are breeding along the tundra from the Mackenzie River Delta (4 sightings) eastward to the Anderson River Delta (3), Coppermine River (2), and King William Island, Northwest Territories" (Sladen, 1969).

LeResche (pers. comm.) reports observations of two collared swans

Table 4. Summary of whistling swan banding data to October 1971.*

Area Banded	No. Banded	Number Recovered**		Percent Recovery	
		Direct	Total	Direct	Total
Bristol Bay	198	3	5	1.5	2.5
Yukon-Kuskokwim Delta	445	17	24	3.8	5.3

Area Banded	Where Recovered																	
	AK		B.C.		WA		CA		NV		UT		TX		GA		Alberta	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Bristol Bay	0	0	0	0	0	0	3	1.5	1	0.5	1	0.5	0	0	0	0	0	0
Yukon-Kuskokwim Delta	1	0.2	1	0.2	2	0.4	6	1.3	1	0.2	10	2.2	1	0.2	1	0.2	1	0.2

* See Appendices II and III also.
**Recoveries from birds shot or found dead during hunting season (Sept. 1 - Jan. 31).

on Alaska's North Slope on July 26, 1972 - one collared at Chesapeake Bay, the other in Ohio. Alaskan based River Basin personnel place the North Slope whistler population in excess of 10,000 birds.

It therefore appears from the available data that Atlantic Flyway swans breed along the northern tundra of North America, and that swans from the Yukon-Kuskokwim Delta winter throughout the west. Bristol Bay swans are also found in the west but primarily in California, a state not having a legal swan season. Appendix IV shows major whistling swan breeding areas in Alaska.

It is interesting to note that Lynch (1972) speculates on page 24 of his 1971 annual report that the North American whistling swan population may be nearing the saturation point. However, no known studies of swan habitat carrying capacities have been conducted.

Hunting pressure within the boundaries of the proposed harvest areas is light as evidenced by 1971 duck stamp sales of 543 on the Peninsula and 174 on the Yukon-Kuskokwim Delta. Timm (1972) calculated total hunter days on the Peninsula for the 1971-72 hunting season at 2,093. Hunter days on the Yukon-Kuskokwim Delta were calculated to be 769. Because of the remoteness of both areas, hunting pressure is not expected to increase significantly because of a swan season. It is believed that if some swan harvest on the Yukon-Kuskokwim Delta is legalized, some of the illegal harvest may be reduced. Little or no illegal harvest of whistlers occurs on the Alaska Peninsula.

Summary

The Alaska Department of Fish and Game proposes to hold a hunting season for whistling swans to be limited to 1,000 permits and held concurrent with the general open season for waterfowl and to take place in part of Game Management Unit 9 on the Alaska Peninsula, and in Game Management Unit 18 on the Yukon-Kuskokwim Delta.

Estimated fall flights from the Alaska Peninsula are between 10,600 and 18,400 and from the Yukon-Kuskokwim Delta about 50,000. Hunting pressure within the proposed areas is light and is not expected to increase.

Three hundred permits would be issued for the Peninsula and 700 for the Yukon-Kuskokwim Delta.

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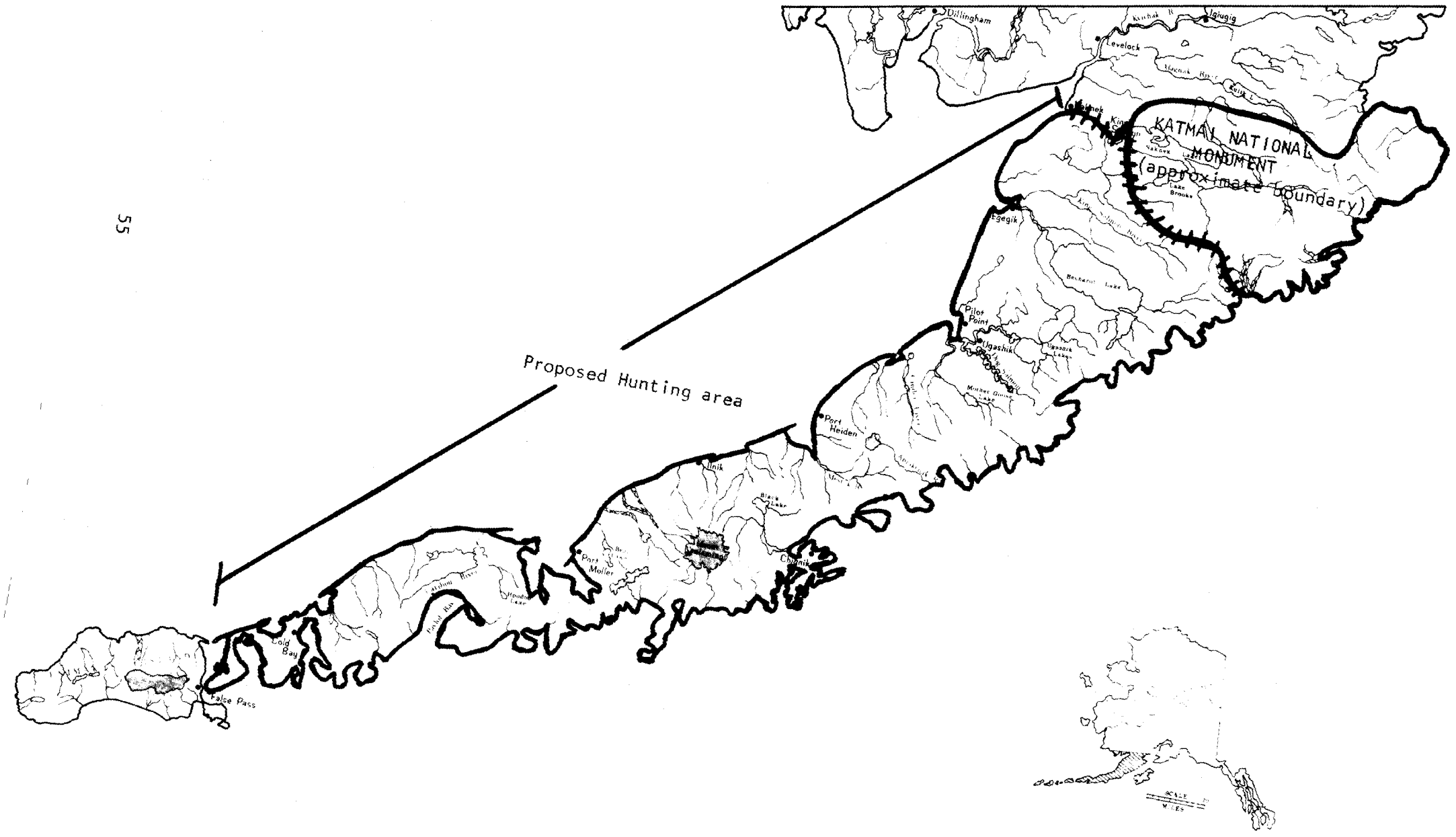
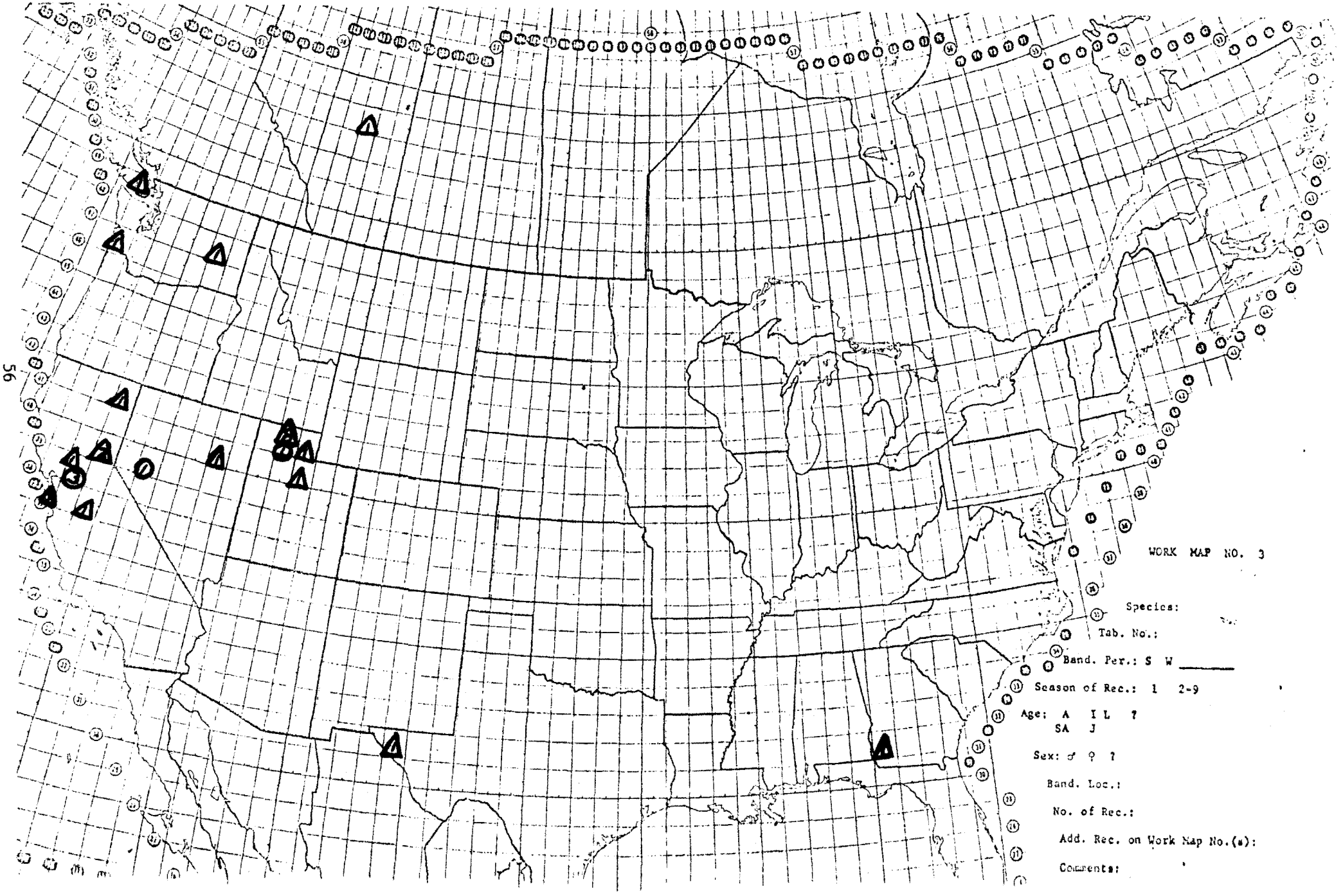
Appendix 1. Proposed Hunting Area
Game Management Unit 9

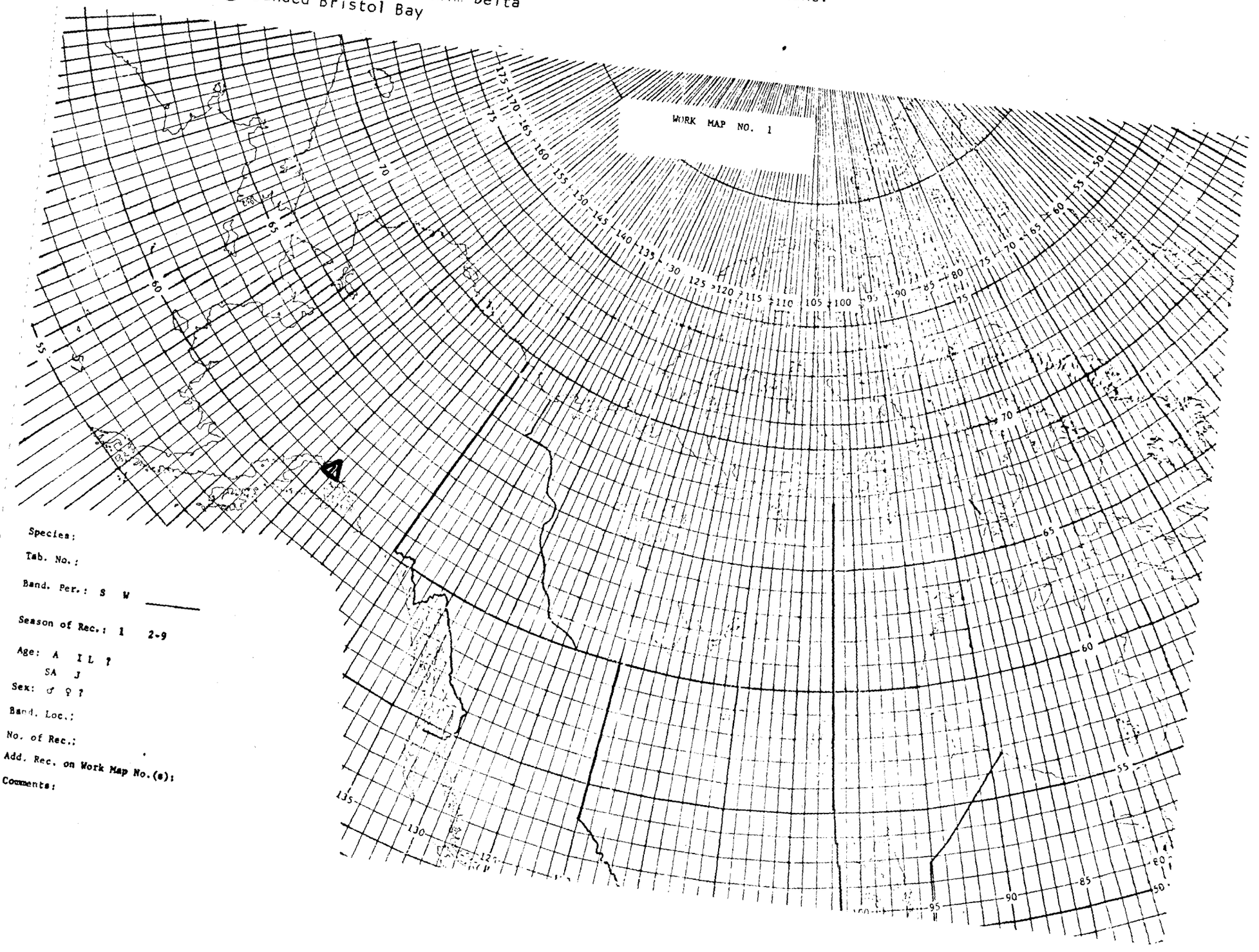


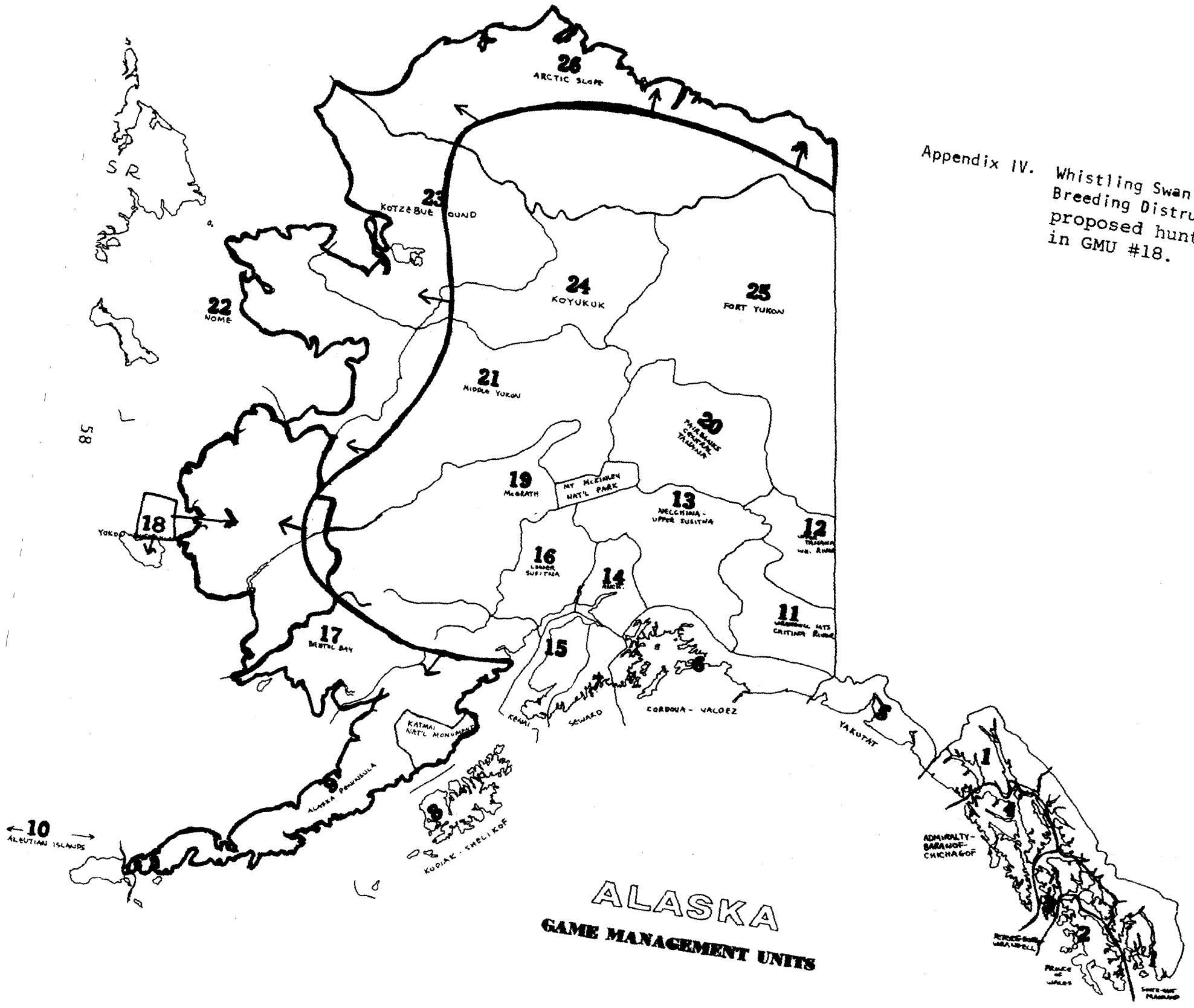
Appendix II. Whistling Swan Recovery From Alaskan Banded Swans.



Appendix III. Whistling Swan Recovery From Alaskan Banded Swans.

△ Banded Yukon Kuskokwim Delta
○ Banded Bristol Bay





Appendix IV. Whistling Swan
Breeding Distrubition and
proposed hunting area
in GMU #18.

Game Management Unit 10 - Aleutian Islands

No Survey and Inventory work done in this unit during the reporting period.

Game Management Unit 13 - Nelchina Basin

No Survey and Inventory work done in this unit during the reporting period.

Game Management Unit 14 - Upper Cook Inlet

Harvest and Hunting Pressure

Results of the hunter questionnaire survey and bag check data are included in the section on statewide harvest.

The Alaska Legislature in 1972 created the Potter Point State Game Refuge, located on Turnagain Arm between Potter Station and Campbell Point. Many of the lands within the refuge boundary are privately owned and some are under lease from the state. Money was not appropriated for a land survey, so the boundaries are general.

An attempt was made by biologist D. Bader to determine hunter use of the refuge during the general waterfowl season. From September 1 to October 6, 1972, 20 trips were taken to the refuge at various times during legal shooting hours. One hundred and twenty-nine hunters were observed in the field, an average of 6.4 hunters per day. This figure is, of course, minimum because not all hunters can be seen from the road. Numbers varied from 50 on opening day to zero on two of the days.

Composition and Productivity

No studies were conducted this reporting period.

Management Summary and Conclusions

During the early winter of 1972 the Department was advised by the Greater Anchorage Area Borough that plans were being made to construct a sewer line across part of the Potter Point Refuge to connect to a pumping station near Campbell Creek.

Joint meetings with Borough representatives and the engineering firms responsible for design resulted in a system of ponds and seeding of berm piles as designed by Bader and R. Smith.

Construction was completed in 1973. It is hoped that not only can progress be served, i.e. sewer lines, but that waterfowl habitat can be improved.

Progress was made in finalizing the Susitna Flats Resource Area's management plan. The Department of Natural Resources and the Department of Fish and Game have basically agreed on the final version. A final draft needs to be prepared and a joint presentation by ourselves and the Department of Natural Resources will be made to the Matanuska-Susitna Borough.

Limited surveys were conducted over marshes in Unit 14 this reporting period. They are included as Appendix I.

Recommendations

No changes in seasons and bag limits are recommended.

APPENDIX I

Waterfowl Survey Data, Unit 14, Susitna Flats - 1972

Species	August 29	September 20	October 2
Dabbler	9,150	5,000	1,950
Canada geese	1,450	200	125
Swan	0	40	1,822
Total Waterfowl	10,600	5,240	3,897

Game Management Unit 15 - Kenai Peninsula

Harvest and Hunting Pressure

Results of the hunter questionnaire survey and bag check data are included in the section on statewide harvest.

Composition and Productivity

On June 1, an aerial survey of waterfowl habitat on the Fox River flats revealed 16 lone male mallards. No studies of visibility indices were conducted so conclusions are speculative. However, an estimated 25 breeding pair of mallards are utilizing the Fox River flats.

Management Summary and Conclusions

The Chickaloon Flats continued to receive increasing use by goose hunters during early October. This marsh provides the best goose hunting in Cook Inlet. Survey data from the Chickaloon are found in Appendix I. Kachemak Bay was surveyed in November by Havens and Timm (Appendix II) and time was spent investigating possible winter banding sites in China Poot Bay. The entire bay was covered by boat and potential trap sites were located. If ice and bird life cooperate, winter banding of ducks in China Poot Bay may be attempted in the future.

Game Management Unit 16 - West Side of Cook Inlet

No Survey and Inventory work done in this unit during the reporting period.

APPENDIX I

Waterfowl Survey Data, Unit 15, Chickaloon Flats - 1972

Species	August 29	September 20	October 2
Dabbler	3,900	10,000	2,000
Canada geese	500	3,000	8,600
Total Waterfowl	4,400	13,000	10,600

APPENDIX II

Waterfowl Survey Data, Unit 15, Kachemak Bay - November 3, 1972

Location	Mallard	Scoter*	Diver**	Total
Head of Kachemak Bay and Martin River Flats	1,732	20	198	1,950
Aurora Lagoon	64	0	270	334
Halibut Cove	0	148	260	408
China Poot Bay	265	245	172	682
Neptune Lagoon	0	0	18	18
Kasitsna Bay	0	150	240	390

* May include common, white-winged and surf scoter.
**May include old squaw, bufflehead, American and Barrow's goldeneye, red breasted and common merganser.

Game Management Unit 17 - Bristol Bay

Harvest and Hunting Pressure

Results of the hunter questionnaire survey and bag check data are included in the section on statewide harvest.

Composition and Productivity

On June 21, 1972, biologists J. Faro and P. Havens flew a brief reconnaissance over part of Unit 17 waterfowl production habitat. Densities of waterfowl were variable. Three areas were covered and are reported below.

1. Nushagak Peninsula: five transects totaling about 45 linear miles were flown. Waterfowl seen within one-fourth mile on each side of the aircraft (Cessna 180) were noted as follows:

Pairs	Single Males	Flock
Scaup (3)**	Scaup (2)**	White-fronted geese (29)
Scoter (3)**	Scoter (1)**	Goldeneye (50)**
Unidentified (2)	Pintail (2)	
W. swans (4)*		

* Two pair had two cygnets each.
**Not identified to species.

It should be noted that the white-fronted geese were located in a large lake near the end of the peninsula and were flightless molters.

2. Kulukak River: a meandering flight path followed the river for approximately 10 miles. All likely-looking habitat was surveyed. Three pairs of whistling swans, four pairs of unidentified species of scaup, one unidentified goldeneye and two unidentified scoters were noted.

3. Togiak River: a search of both sides of the Togiak River upstream for about 10 miles revealed only one pair of scaup and one lone scoter.