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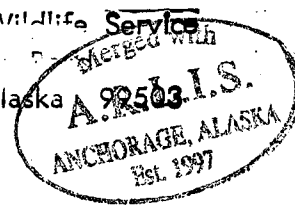
10<sup>6</sup>  
Ilesluk Lake Alaska, A Cosmopolitan Duck Molting Resort

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Juneau, Alaska, May 1972

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## Introduction

The molting ducks of Takslesluk Lake have provided a source of food to Eskimos of the central portion of the Yukon-Kuskokwin Delta for many generations. These tundra citizens use boats to drive the flightless birds to one end of the lake where they can club, shoot, net or otherwise take possession of some hundreds of them in a single day. During three years (1963-65) Fish and Wildlife Service personnel caught and banded 4,483 ducks there. Recovery of 222 of these bands show a surprising dispersion through 40 degrees of latitude and 180 degrees of longitude or from North Carolina to Central Siberia. The three banding crew leaders, W. White 1963, M. Zahn 1964 and R. Tremblay 1965 deserve much credit for the success of this unusual project. I am indebted to D. Pospahala of the Migratory Bird Populations Station for help in compiling fall duck population figures in Table 1.

## Description of the Area

Takslesluk Lake lies about 40 miles northwest of Bethel Alaska at 610 N. and 1635 W. It is near the center of the 26,000 square miles of waterfowl habitat on the Pleistocene delta of the Yukon River. Although most of the boreal forest of Interior Alaska lies to the Northeast of Takslesluk Lake and it is nearly 400 miles south of the Arctic Circle the climate and vegetation are considered true Arctic by most authorities. (Stonehouse 1971, Salcmosen & French 1958)

The entire Delta area is characterized by low tundra dotted with thousands of lakes. The coastal areas within the Clarence Rhode National Wildlife Range have large goose nesting populations described by several

observers (Spencer Et. al. 1951, Hansen & Nelson 1957, Nelson and Hansen 1959). Inland around Takslesluk Lake the habitat is dryer and the climate less marine resulting in slight vegetative changes. (Walkingshaw 1949, Williamson 1957, Burns 1964). Ducks rather than geese become the most abundant form of waterfowl in the central part of the Delta. A few miles east of the banding site scattered spruce (picea sp.) and birch (betula sp.) appear as pioneers on the tundra but it is 100 miles east to the nearest real forest.

The Delta is known for its large duck breeding population. Table 1 shows the stimated average fall population of ducks on the 26,000 square miles of the Delta. These figures were recently compiled by the author from 14 years of air survey data, 1957 to 1970 at the Migratory Bird Populations Station, Patuxent, Maryland.

Takslesluk Lake is characteristic of the central delta. It is a rather large lake for this pothole area being 12 by 3 1/2 miles in extent, however, it has a shallow mud bottom and is probably not over 15 feet deep anywhere. Eight to 10,000 ducks normally molt their flight feathers on this lake. Summer storms from the southwest with winds of 20 to 40 knots make this a difficult area in which to work.

There are two Eskimo villages within 15 miles of Takslesluk Lake on a connecting waterway, Kasigluk and Nunapitchuk, with a combined population of over 600 people. These people are a long way from the coast and the major rivers where most Eskimos live and they rely heavily on the resources of lakes and marshes. They have traditionally made a lot of use of the waterfowl of the area.

Table 1. Breeding populations in Alaska of species banded at  
Taksiesluk Lake.

	Yukon Delta	All Alaska	Percent on Yukon Delta
Pintail ( <i>Anas acuta</i> )	288,000	813,000	35%
Canvasback ( <i>Athya valisineria</i> )	1,200	38,000	3%
Greater Scaup ( <i>Athya marila</i> )	326,000	449,000	73%
Lesser Scaup ( <i>Athya affinis</i> )	10,000	547,000	2%
Common Goldeneye ( <i>Bucephala clangula</i> )	21,000	108,000	19%
Barrows Goldeneye ( <i>Bucephala islandica</i> )			
Bufflehead ( <i>Bucephala albeola</i> )	2,500	64,000	4%
Old Squaw ( <i>Clangula hyemalis</i> )	292,000	470,000	62%
Total	940,700	2,489,000	

## Methods

During each of the three years of banding, large drive traps of the style used at Ontig Lake (King 1963) were constructed at the east end of the lake. These traps consisted of a 100 yard net lead, a 30,000 odd square foot holding pen of chicken wire with a small catching pen at the end. The whole trap was in water two to three feet deep on a relatively flat mud bottom. Two airplanes and three or four motor powered boats were used for the drives. It took twelve to fourteen hours to move the ducks the twelve miles up the lake.

Duck drives were scheduled each year for the first part of August but as a wind greater than five knots made the lake too rough to navigate there was usually a delay waiting for a calm day. In 1964, several thousand ducks were caught on August 1. As it was dark when the ducks were finally in the pen they were left overnight as planned. The next day high winds were putting two foot waves through the trap, and removing the ducks proved nearly impossible. The high winds continued unabated and on the fourth day what ducks that had not escaped through breaks in the trap were released. Bad weather continued and the project was terminated after banding only 201 birds.

In 1965 the same method produced a catch of nearly 4,000 ducks in one drive, 3,699 of which were banded. In 1965 continuous high winds, rain and fog again hampered the project and only 573 ducks were banded during a two week effort.

The first column of Table 2 lists the total number of ducks by species banded during the three year period. The species composition of the catch bears little relation to the population composition listed in Table 1 because of the trapping method which was designed for the diving ducks primarily. All birds in the catches were at least one year old. This is the first time that

Table 2. Recoveries from Takslesluk Lake banding.

Species	No. Banded	Location of Recoveries				Percent of Recoveries					Other U.S.
		USSR	Canada	Alaska	Lower 48 States	Total Recovered	Percent Recovered	USSR	Canada	Alaska	
Pintail	6					0	0				
Canvas- back	50				7	7	14				100
Greater Scaup	2,294		20	30	120	170	7		12	18	70
Lesser Scaup	31				2	2	7				100
Common Goldeneye	108			2	1	3	3			67	33
Burdows Goldeneye	6			1		1	17			100	
Cuffle- head	204	1		6		7	3	13		87	
Old Squaw	1,784	14	1	17		32	2	44	2	53	
Totals	4,483	15	21	56	130	222	5				
Percent by Column		7	10	25	58	100		7	10	25	58

Recoveries in Lower 48 by Flyway

	Pacific	Central	Miss.	Atlantic
Canvasback	3	1	2	1
Greater Scaup	58	2	17	43
Lesser Scaup			1	1
Common Goldeneye	1			1

Greater Scaup and Old Squaw have been banded in Alaska in any substantial numbers.

It was concluded that the size of the lake plus the quality of the weather made banding at Takslesluk Lake a chancy thing and the project has not been repeated since 1965.

### Results

We now have 222 recoveries from the Takslesluk banding through nine years for the '63 banding, 8 years for the large '64 catch and 7 years for the '65 birds. More recoveries of course will continue to come in in small numbers but we have learned a lot from the present data and it is appropriate to summarize it now by species.

### Pintail

Although pintails are tied for second most common duck in this area our trapping effort was not directed at dabbling ducks and only six were caught, all in 1964. We have had no recoveries from these birds and can draw no conclusions.

### Canvasback

Canvasbacks are regularly seen on the big lakes near Takslesluk but air surveys indicate they make up a very small percentage of Yukon Delta ducks. They are more common in the forested Interior valleys to the east where they make up approximately 2 % of the duck population. We do not know if canvasbacks actually nest on the tundra or are here merely as a non breeding segment of the population. Of the 50 birds banded, 39 were males and 11 females. The seven recoveries are shown in Table 3 and Fig. 1.

This is a 2% direct recovery rate and a 14% total recovery rate. The distribution is interesting with 3 going to the Pacific Flyway, 2 to the Mississippi and one each to the Central and Atlantic Flyways. Banding in

Fig. 1. LOCATION OF RECOVERIES  
(except Greater Scaup and Old Squaw)

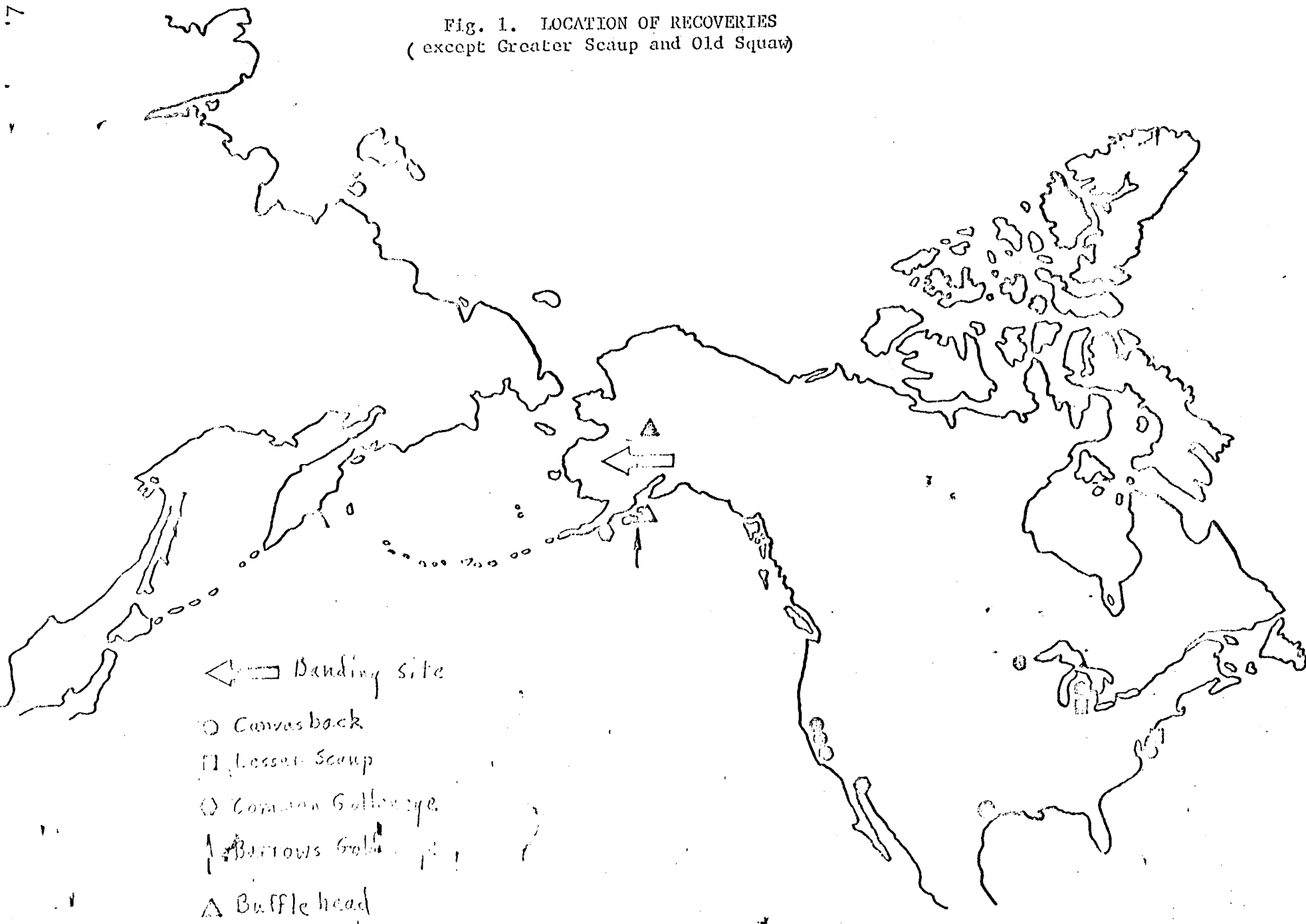




Table 3. Cuyahack Recoveries.

Year of Recovery	1st	2nd	3rd	4th	5th	6th	Total
Place and Sex of Recoveries	Minn. F	Tex. M	Calif. M	Calif. M		Mich. M	7
		Md. M	Calif. F				

the Interior indicates this to be typical distribution for Alaskan canvasbacks. The sample of course, is too small to provide firm conclusions.

### Greater Scaup

Greater scaups are the most common duck distributed throughout the Delta area. They are found in substantial numbers in all the western and northern tundra areas of Alaska and make up more than 90% of the scaup population of the tundra with Lesser scaup contributing less than 10%. In the Interior forested valleys the reverse is true with Greater scaup making up something less than 10% of the scaup population, although they have been found in small numbers wherever banding has been done. More than half the ducks caught at Takslesluk Lake were Greater scaup and of these 96% were males and only 4% (99) were females. Of the 170 recoveries only 4 were females thus there is not sufficient data to analyse distribution by sex. We assume the low number of females caught indicates most of them were still occupied with broods on smaller ponds.

Distribution of recoveries is shown in Tables 2 and 4 and Figure 2. The birds appear to be using wintering areas along the Atlantic and Pacific coasts in about equal numbers with just a trace going to the Gulf of Mexico. The Great Lakes area seems to be an important way point for the eastern population and they may linger in this area for some time. The large recovery rate at the banding site indicates a special situation there not faced by most scaup populations. There is intensive spring shooting by Eskimos in this area and they have continued to drive ducks at the banding site. Bands recovered by Eskimos in this area are normally kept but not normally reported. During the summer of 1970 an Eskimo was hired by the Alaska Department of Fish and Game to pay \$100 each for fish tags received in the villages. Through a misunderstanding he also bought some 45 bird bands, 18 of which were from Greater scaup recovered at Takslesluk Lake in

Fig. 2. LOCATION OF GREATER SCAUP RECOVERIES

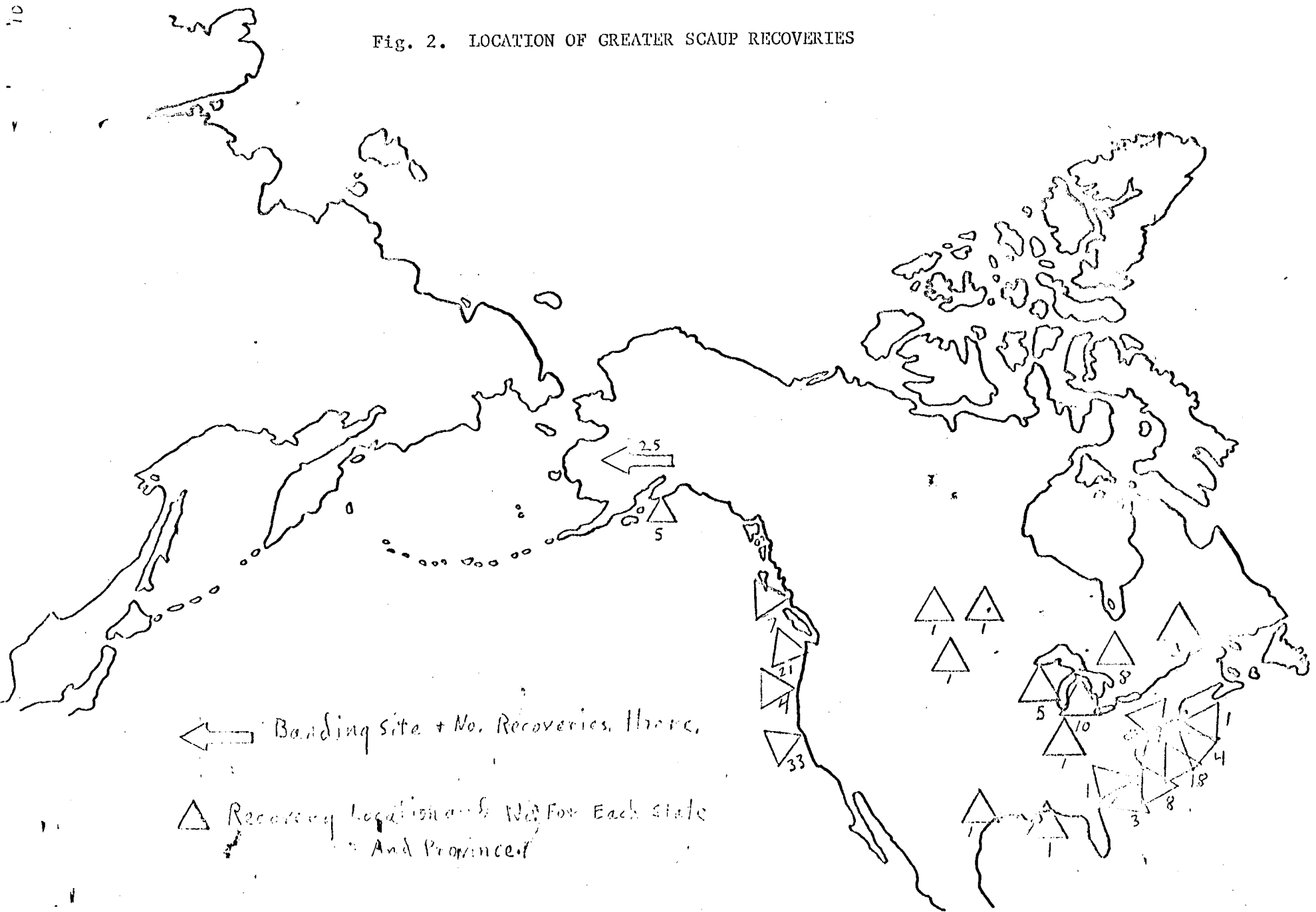


Table 4. State or Province of Greater Scaup recoveries.

Pacific Flyway			Central Flyway			Miss. Flyway			Atlantic Flyway		
	No.	Percent		No.	Percent		No.	Percent		No.	Percent
Alaska	30	18	Sask.	1	1	Ont.	8	5	Que.	3	2
B.C.	7	4	Man.	1	1	Mich.	10	6	R.I.	1	1
Wash.	21	12	Mont.	1	1	Wisc.	5	3	Conn.	4	2
Ore.	4	2	Tex.	1	1	Ill.	1	1	N. Y.	18	11
Calif.	33	19				La.	1	1	Md.	8	5
									Va.	3	2
									N.C.	1	1
									N.J.	8	5
Total	95	56*		4	2		25	15		46	27

\*Percentage totals calculated from recovery totals.

Origin of 5 bands recovered at banding trap.

N. Y. 4

Va. 1

July 1969. An additional 7 recoveries have been reported from the vicinity over the years. Thus of the 30 Alaskan recoveries only 5 were from birds that had left the breeding grounds.

Greater scaup are common in eastern Siberia and have been heavily hunted there (Dement'ev et. al. 1967) but the lack of recoveries indicates Alaskan birds do not normally go there.

Recoveries are complete now through the 9th season for birds banded in 1963 and the 7th season for those banded in 1965. The direct recovery rate was 1.3% and total recovery rate to date 7.4%. As only birds having completed one full migration were banded the low recovery rate is not surprising.

In Table 5 recoveries from Pacific Coast States are compared to those east of the Continental divide to determine if survival characteristics are similar for birds going either way. For the western birds the yearly recovery rate was greatest the first two seasons and tapered off consistently. The eastern recoveries were slightly less than the western during the first 5 years then peaked the 6th year and remained higher than the western rate from then on. This unusual pattern is unexplained and may result from peculiarities of the hunting season or merely from too small a sample. It does appear that the eastern population is more heavily hunted during migration and the western population after they reach the wintering areas. In spite of different mortality patterns the net result is nearly equal with a total recovery rate of 3.27% from the east and 3.05% from the west.

#### Lesser Scaup

Lesser scaup are on the edge of their breeding range at Takslesluk Lake being much more typical of the Interior forest habitat. Of 31 banded, only 2 were recovered, a direct recovery from Michigan and an indirect recovery from North Carolina. These are not surprising recoveries as we know from banding in the Interior that Alaskan Lesser scaup use all four flyways. Recoveries from over 33 thousand Lesser scaup banded in Alaska show a

Table 5. Scaup Recoveries by years from Banding date.  
(Recoveries away from banding site)

		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	Total Recoveries	Number Banded	Recovery Rate
East	63	2	2	0	2	0	1	0	2	1	10	177	
	64	12	9	7	3	7	16	8	0	0	62	1,979	
	65	1	1	0	0	0	1	0	0	0	3	138	
Total		15	12	7	5	7	18	8	2	1	75	2,294	3.27
% Total Recovery		10.3	8.3	4.8	3.5	4.8	12.4	5.5	1.4	.7	51.7		
West	63	3	1	1	1	0	0	1	0	0	7	177	
	64	11	15	10	10	7	5	2	0	0	60	1,979	
	65	2	0	0	0	1	0	0	0	0	3	138	
Total		16	16	11	11	8	5	3	0	0	70	2,294	3.05
% Total Recovery		11.0	11.0	7.6	7.6	5.5	3.5	2.1			48.3		
Total Both		31	28	18	16	15	23	11	2	1	145	2,294	6.32
Total % of Both		21.3	19.3	12.4	11.0	10.4	15.9	7.6	1.4	.7	100		

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distribution of 20% to the Pacific Flyway, 12% Central Flyway, 40% Mississippi Flyway, 9% Atlantic Flyway, 10% Canada and 9% Latin America. (King & Lensink 1972)

One recovery was made at Takslesluk Lake in 1964 of a male Lesser scaup banded from a huge congregation of molting scaup on Ontig Lake in Interior Alaska in July 1963.

#### Common Goldeneye

The status of Common goldeneyes in Alaska is not well understood. They can not be reliably separated from Barrows goldeneyes on air surveys and the females of the two species are almost identical making them difficult to identify unless in hand. In addition to the 108 birds banded on this project only 31 Common goldeneyes have been banded in Alaska. We have only 2 recoveries away from the banding site, both from Takslesluk Lake. One recovery in January 1967 from Chignik Lagoon on the south side of the Alaska Peninsula and one in the same month from Salton Sea California. This doesn't tell us much because either one could have been an accidental wanderer and both are within the published winter range for the species (Gabrielson & Lincoln 1959).

Of the 108 birds caught 43 were males and 65 were females. As Common goldeneyes normally nest in trees and there are no trees in the banding area one can only assume that there is a molt migration of a non-breeding portion of the population to tundra areas. Goldeneyes in small numbers are regularly noted in various parts of the Yukon Delta.

#### Barrows Goldeneye

Only six males of this species were caught and one was recovered in November 1965 on Kodiak Island. Recoveries from birds banded in the Interior indicate this is within the expected winter distribution of the species.

### Bufflehead

Buffleheads are another common Interior forest breeding species that would seem to be out of place on the treeless tundra. They are not known to nest except in holes in trees and although recorded in summer occasionally in the Aleutians are not known to nest there. Of the 204 birds banded only 6 were females and none of them were recovered. Of the 7 recoveries, four were at the banding site in subsequent years, one was in May in Interior Alaska near McGrath, one was in December near Kodiak and one only was a direct recovery in December from 20 kilometers N.W. of Petropavlovsk, Kamchätka U.S.S.R.

Buffleheads are listed as common winter birds in the Aleutians and other Bering Sea Islands including the Russian Commander Islands where they are considered stragglers (Gabrielson & Lincoln 1959) (Dement'ev et. al. 1967) the Russian recovery, the first from mainland Asia, extends the edge of the known Bufflehead range by about 500 miles.

### Old Squaw

Old squaw are typically a tundra nesting species, however, they are regular spring migrants throughout the Interior portions of the Yukon drainage. A few remain in the Interior through the summer. Of the 1,840 Old squaw banded in Alaska over the years 1,784 were captured at Takslesluk Lake. The rest were taken incidental to other banding at scattered locations in numbers of 10 or less at any given time and place. Only one recovery has resulted from banding elsewhere. One of 10 Old squaw banded at Tetlin in 1961 was returned from the Kamchatke Peninsula in 1969. Of the Takslesluk birds only one was recovered in North America away from the banding site, a male that was shot in September near Coronation Gulf on the Arctic coast of Central Canada. The rest of the recoveries, 14, were from Bering Sea and



U.S.S.R. Table 6 gives the exact location of all these recoveries which are generally located on Figure 3. The indications are that Alaskan Oldsquaw winter in Bering Sea and the Sea of Ohotsk. Pairing takes place evidently on the wintering area and males follow females to nesting areas throughout the eastern portion of Siberia and Arctic portions of western Canada and Alaska. There may be an important migration route up the Yukon River valley for birds headed for western Canada. No wintering in North American waters except Bering Sea is indicated.

The recovery rate is low by American standards for hunted species even considering the recoveries at the banding site at 1.8% but we can't feel this reflects mortality rates that are comparable to birds harvested in North America. The evident end of foreign recoveries in the 4th season and at the banding site in the 6th season could reflect a rather heavy unreported or natural mortality rate.

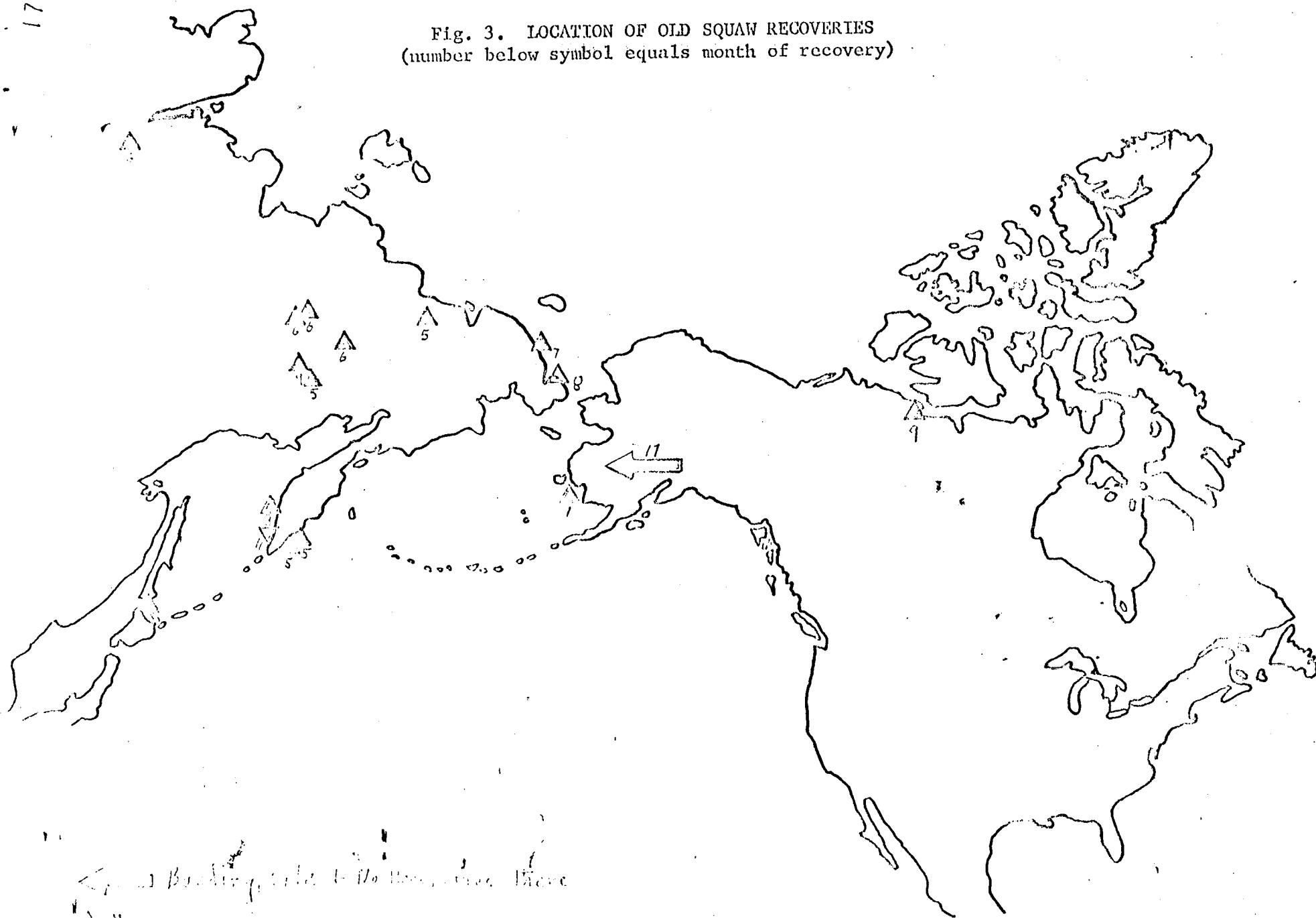
The sex ratio of the catch is rather interesting with 61% being females (Table 7). Males appear to be more apt to be recovered by hunters, however, recoveries at the banding site are nearly at the same rate indicating females may suffer natural mortality that compensates for reduced hunting mortality.

### Discussion

The Takslesluk banding produced some firm new information on waterfowl that molt on the Yukon Delta as well as indicating some rather fascinating questions that can only be answered by further work.

The Greater scaup distribution to two coasts of the continent seems rather well defined for the first time. A brand new concept of Oldsquaw distribution from a major North American breeding area is outlined. Interesting recoveries of Common Goldeneye and Bufflehead indicate distribution of these species may be more widespread than previously supposed.

Fig. 3. LOCATION OF OLD SQUAW RECOVERIES  
(number below symbol equals month of recovery)



← Building site of the new house

△ M  
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Table 6. Old Squaw, Location of 16 Recoveries outside Alaska <sup>1/</sup>

Banding Location and Date		Location of Recovery and Date	
Tetlin	1961	524-1561 E	1969
Takslesluk	1964	463-1424 E	1965
Takslesluk	1964	685-1792	1965
Takslesluk	1964	632-1484 E	1966
Takslesluk	1964	631-1531 E	1968
Takslesluk	1964	685-1165	1967
Takslesluk	1964	662-1430 E	1968
Takslesluk	1964	530-1584 E	1965
Takslesluk	1964	585-1650	1967
Takslesluk	1964	530-1582	1968
Takslesluk	1965	720-1021 E	1966
Takslesluk	1965	645-1504 E	1966
Takslesluk	1965	662-1430 E	1967
Takslesluk	1965	672-1745	1969
Takslesluk	1965	682-1612	1968
Takslesluk	1965	541-1554 E	1967

<sup>1/</sup> One recovery is from a bird banded in 1961 at Tetlin Alaska 630-1430, the rest from Takslesluk Lake.

Table 7. Old Squaw Year of Recovery

Year Banded and Sex		Number Banded	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	Total
Recovered During Migration or Winter												
1963	M	6	0	0	0	0	0	0	0	0		
	F	7	0	0	0	0	0	0	0	0		
1964	M	553	3		1	4						
	F	820			1							
1965	M	130	2	1	1							
	F	268		1		1						
Total Male		689	5	1	2	4						12
Total Female		1,095		1	1	1						3

Recovered at Banding Area in Summer

1963	M	6										
	F	7										
1964	M	553				2	5	1				
	F	820					6					
1965	M	130						1				
	F	268				1		1				
Total Male						2	5	2				9
Total Female						1	6	1				8
Total All Male												21
Total All Female												11
GRAND TOTAL		1127	5	2	3	8	11	3				32

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Although the sample is small some information on mortality rates for Greater scaup and Oldsquaw indicate these species are not harvested heavily enough to cause concern for their welfare.

We have known for some time that Siberian nesting grounds provide birds for American hunters such as Snow geese (*Chen h. hyperborea*) Black brant (*Branta nigricans*) Pintail and others but this project gives the first evidence that North America is providing game birds for Russian use. This is a significant new illustration of the ultimate need for bird management cooperation and treaties with Russia. The 10% recovery rate by Canadians of birds from this American lake is somewhat of a switch from the normally held concept that Canada raises birds for American consumption but we do not raise anything for Canadians. We also learn for the first time what sort of kill results from Eskimo drives of molting ducks. Obviously the bulk of this harvest is of adult male Greater scaup and Oldsquaw of both sexes. There would appear to be no significant conflict between this Eskimo take and the hunters to the south. No indication of destructive over harvest or interference with the breeding population is shown and perhaps this type of Eskimo harvest is good resource utilization. It is unfortunate that it is contrary to the terms of the Migratory Bird treaties.

Several interesting questions emerge from the project. Why is this lake and region so popular with species which obviously have such different preferences the rest of the year? What is the reason that sex ratios are so different with both sexes of Oldsquaw and Goldeneye well represented and only males of Scaup and Bufflehead? Do these molting birds represent a portion of a local breeding population or have some of them made long mole migrations from other areas where they were raised? What is the appeal

of the tundra for the 3 species, the goldeneyes' and bufflehead that normally nest in holes in trees? What is the reason birds of the same species, that molt on the same lake disperse to opposite sides of the continent for the winter as do the canvasbacks and scaups? How do some scoup and canvasbacks manage the problems and hazards of a migration nearly twice the length of others of their kind?

We can only conclude that a great deal more work is needed with these tundra ducks which are of obvious value to such a diverse human population.

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