

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME
WILDLIFE MANAGEMENT BRANCH
NONGAME BIRD AND MAMMAL SECTION

POPULATION, DISTRIBUTION, AND ECOLOGY OF ALEUTIAN CANADA GEESE
ON THEIR MIGRATION AND WINTERING AREAS, 1984-85

by

Paul S. Hofmann
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ABSTRACT

The 11th annual study of wintering Aleutian Canada Geese (*Branta canadensis leucopareia*) was conducted from 25 October 1984 to 5 May 1985. Migration and wintering areas near Crescent City, Colusa, El Sobrante, and Modesto-Los Banos, California were monitored. Reports were received from additional areas in Oregon and Mexico. The estimated peak fall population was 4200 and the peak spring count was estimated at 3800. Three hundred and ninety color-marked geese were seen 7150 times. Sixty-eight percent of the geese transplanted to Agattu Island in 1984 were seen in California. Adults of these transplants were observed at a higher rate (84%) than juveniles (59%). Eleven color-marked geese that were not recorded last year were seen this year. Ten of 20 color-marked geese banded on Chagulak Island were seen in California. Eighteen cases of Aleutian mortality were noted, nine of which involved birds that were shot. One hundred twenty-five Aleutians and eight Cackling Canada Geese (*B. c. minima*) were trapped and given identifying color-markers near Crescent City in the spring.

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INTRODUCTION

The history, population, current distribution, habits, and recovery program of Aleutian Canada Geese have been presented previously (Springer et al. 1978, Woolington et al. 1979, Woolington 1980, Martin et al. 1982, Yparraguirre 1982 and 1983). Developments in 1984 in the Aleutian Canada Goose recovery effort in the Aleutian Islands included (1) transplanting 88 birds from Buldir Island to Agattu Island; and (2) capturing, color-banding and releasing 20 birds on Chagulak Island, where breeding was first confirmed 2 years ago, in an effort to determine the movements of this small sub-population.

Major Aleutian Canada Goose use areas and Canada Goose hunting closure areas are shown in Figure 1.

OBJECTIVES

The objectives of this study were as follows.

1. Document the occurrence, movements, and habitat use of Aleutian Canada Geese.
2. Monitor population levels throughout the fall, winter, and early spring.
3. Document mortality.
4. Assess the success of the transplant efforts.
5. Capture, band, and color-mark additional geese.

METHODS

Historic Aleutian goose use areas were surveyed from fall to spring, and birds were censused by direct counts. Color-markers were read with the aid of 50- to 80-power Questar telescopes. Consistent with previous studies (Yparraguirre 1982, 1983; Nelson et al. 1984), color-markers that were recorded only once in the season were eliminated from final analysis because of the probability that they were made in error. Also consistent with previous reports, the term "released geese" refers to the reintroduced captive-reared or wild geese held in captivity for more than one year. The term "transplanted geese" refers to geese that were caught and moved from Buldir Island to Agattu Island without being held in captivity for more than two weeks. "Wild" banded geese refers to those birds cannon-netted, color-marked and released in the Crescent City, California, area.

Observations were made in the Crescent City area in the fall by study director Paul Springer starting on 16 October and by Eric Nelson of the U.S. Fish and Wildlife Service (USFWS). Colusa observations were begun on 25 October by study assistant Paul Hofmann. Mike Gregg joined the project in the Colusa area on 13 November. The San Joaquin Valley was monitored by Hofmann and Gregg from 18 December to 9 March. Hofmann, Gregg, Springer and Nelson all worked in the Crescent City area in the spring, the last observations being made on 5 May.



Figure 1. Major Aleutian Canada Goose use areas and closure zones, 1984-1985.

ACKNOWLEDGEMENTS

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RESULTS

Fall Migration Area

Oregon

Probable Aleutian Canada Geese were first seen flying in the Langlois area on 20 October. An estimated 1000 probable Aleutians were also reported flying south there all day on 3 November. A bird banded at Crescent City in spring 1984 was observed on 14 November in a corn field on the Sauvie Island Wildlife Area (WA) near Portland with 25 other birds thought to be Aleutians in a mixed flock including 350 Cackling Canada Geese. A lone Aleutian was seen on 17 November at the Coos Bay airport, and approximately 500 probable Aleutians were reported flying south in the Langlois area on about 18 November.

The "Aleutian-like" Canada geese (referred to in previous reports as intermediate Aleutian-Taverner's Canada Geese) that breed in the Semidi Islands and that winter in the Carl Hurliman pastureland at Pacific City were first observed on 28 October and stabilized at 92 beginning in early November. The birds roosted at night on Haystack Rock of the Oregon Islands NWR.

Crescent City Area

Several flocks of possible Aleutians were reported in the Crescent City area in mid October. The first sizable group of birds occurred on 3 November in the face of southerly winds and rain. Small flocks arrived all day, increasing the number there from 100 at dawn to 600 at dusk (Table 1). Additional birds arrived during the night until 1000 hrs. on 4 November when 1000 geese were present. Aleutians were first observed feeding on the state-owned properties at Lake Earl on 3 November.

Table 1. Peak weekly counts of Aleutian Canada Geese in the principal known migration and wintering areas, 1984-1985.

Date	Area				
	Crescent City (fall)	Colusa ^a	El Sobrante	Modesto- Los Banos ^a	Crescent City (spring)
October					
8-14	migrants reported	0			
15-21	15	360			
22-31	54	600			
November					
1-7	1000	800	0		
8-14	2100	1400			
15-21	2200	2100	38	250	
22-30	243	3000	3		
December					
1-7	70	4360	63	300	
8-14	70	3680	51	2000	
15-21	28	25	128	3000	
22-31		21	119	3640	
January					
1-7		25	124	4700 ^b	
8-14	2		112	3740	
15-21	31		140	3670	
22-31			110	3980	
February					
1-7		1	71	1800	
8-14			0	5600 ^c	
15-21			0	5900 ^c	132
22-28				5900 ^c	253
March					
1-7				5400 ^c	1000
8-14				176	3050
15-21					3350
22-31					3200
April					
1-7					3860
8-14					3270
14-21					3000
22-30					14
May					
1-7					0
23					2
July					
7					5
30					3

^aUp to 10 percent estimated to be subspecies other than Aleutians.

^bMixed with other Canada goose subspecies.

^cMixed flock of Aleutian and Cackling Canada geese.

Peaks of about 2100 were reached on 10 and 11 November and 2200 on 19 November. Over 900 birds apparently started to leave on the morning of 18 November but returned in flocks of varying size until 0900 hrs. A mass exodus began on the late afternoon of 20 November when the population of 1800 decreased to 236 the next morning. The number of Aleutian geese in the Crescent City area further dropped to 70 in the first half of December and 28 on 20 December (Table 1). Among the flock were two birds banded on fox-free Chagulak Island.

The birds roosted on Castle Rock NWR and fed in pastures adjoining Lake Earl which are managed by CDFG and CDPR (Figure 2). Initially, all used the McLaughlin Tract of the Lake Earl Wildlife Area (WA) between Lake Earl and Lake Talawa, but on 11 November some birds started grazing on the Lofton Tract on the southeast side of Lake Earl. From 24 November until the middle of December most of the birds present grazed in private flooded pasture on the Ferguson Ranch, one mile northeast of the Lofton Tract (Figure 2).

Colusa Area

Aleutian Canada Geese were first reported in the Colusa area on 16 October. About 330 geese were seen on 19 October and about 425 on 27 October (Table 1). Numbers of Aleutian geese rose steadily through November. The peak count in the Colusa area was on 30 November when 3380 small Canada Geese including a number of Cackling Canada Geese were seen, indicating about 3000 Aleutians. The peak fall count of 4200 for the entire Aleutian population occurred on 19 November when 2000 Birds were estimated at Colusa and 2200 at Crescent City.

On the morning of 11 December numerous small flocks of Aleutians flew south over the feeding site without landing. Departure of most of the birds apparently occurred then and on the following day. On the morning of 13 December only two flocks totaling 100 birds were seen, both high and flying south.

Because it appeared that large numbers of Aleutians would remain in the Sacramento Valley past the end of the scheduled Canada Goose hunting closure on 14 December, the CDFG on 10 December extended the closure but reduced it in size. This closure was lifted on 22 December when no Aleutians could be found. Subsequent observations revealed a flock of 21 Aleutians on 29 December and a flock of 25 on 4-5 January.

The Aleutians in the Colusa area originally fed primarily in harvested corn fields on the Steidlmayer property and roosted in the Butte Sink (Figure 3). From 6 through 11 November the geese fed and roosted in rice stubble on Wilbur Farms. On 12 November they began to feed again in harvested corn fields adjacent to Steidlmayer's. On 19-23 November at the request of the landowner the geese were hazed out of these fields which had been planted to winter wheat. After being hazed the geese again fed in rice stubble on Wilbur Farms from 24 to 28 November. On 29 November the geese began feeding in Steidlmayer's harvested corn fields just north of Highway 20. They continued to feed in these fields until 11 December when they began to leave for the San Joaquin Valley.

Nine of the geese color-banded on Chagulak Island were seen at Colusa.

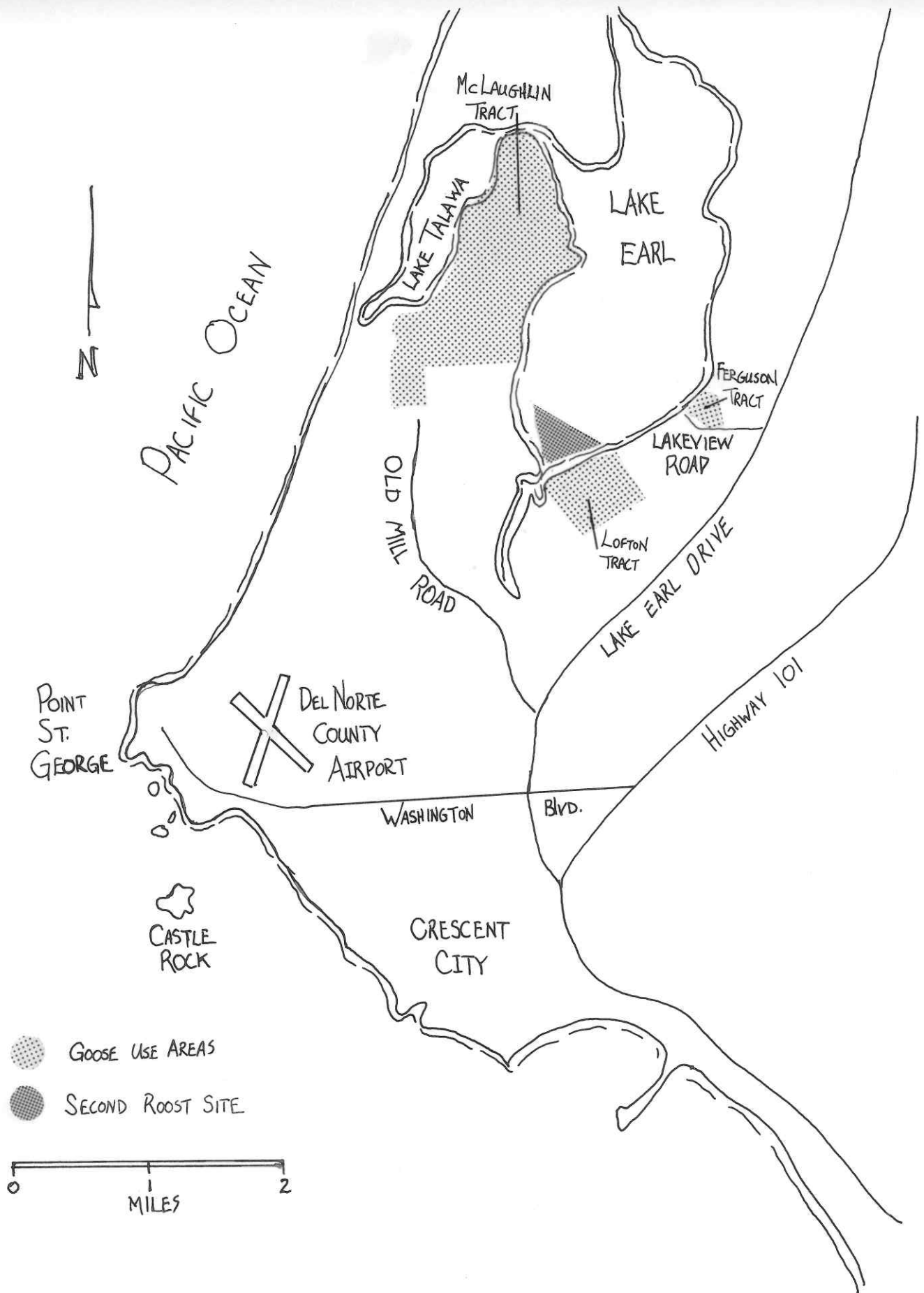


Figure 2. Aleutian Canada Goose use areas near Crescent City, California, 1984-1985.

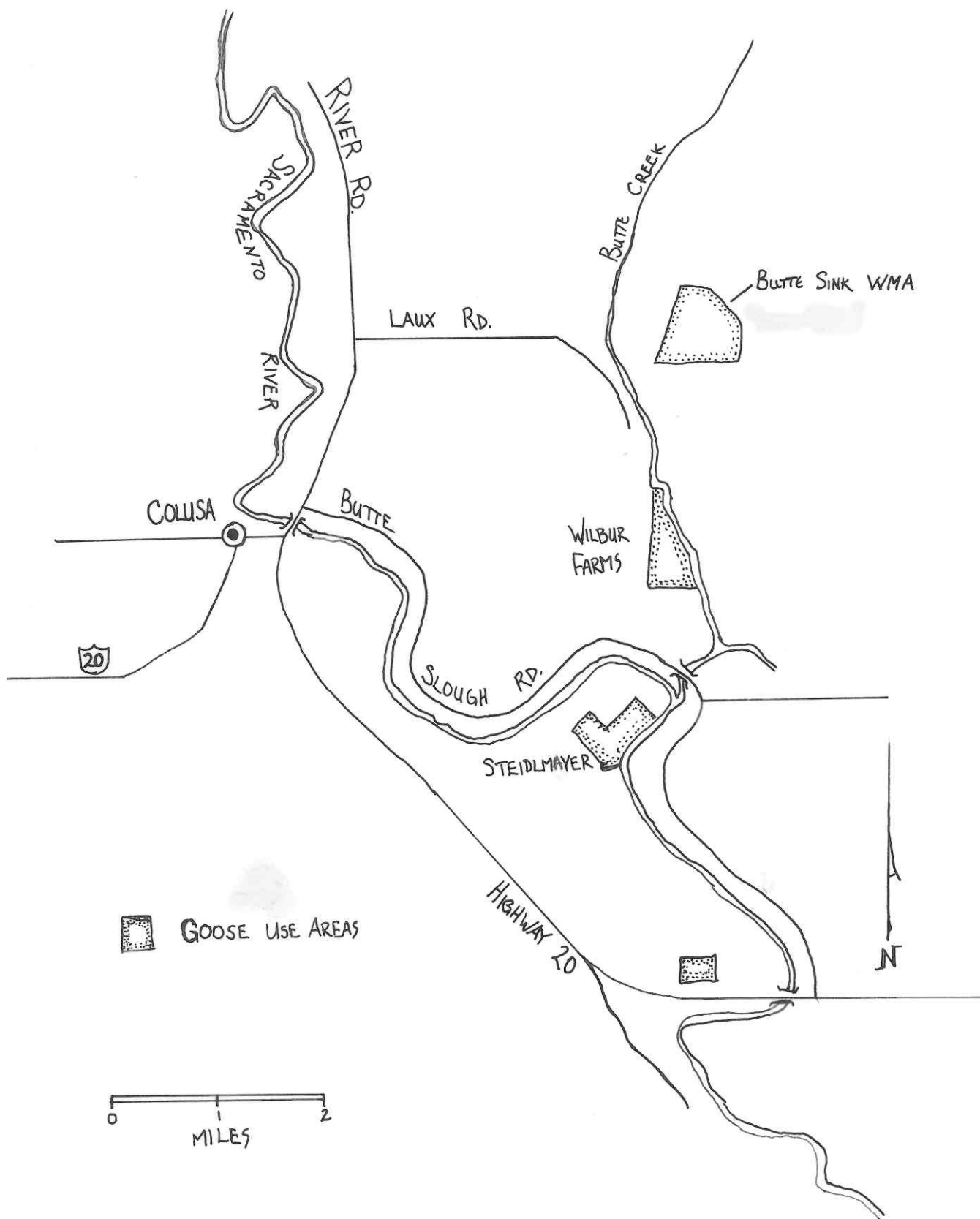


Figure 3. Aleutian Canada Goose use areas near Colusa, California, 1984-1985.

Elsewhere in California

Aleutian geese were first observed at the East Bay Municipal Utility District (EBMUD) property near El Sobrante on 21 November when 38 were recorded (Table 1).

The first reports of Aleutians in the Modesto area were of 200-300 on the Mapes Ranch on 21 November (Table 1).

Wintering Areas

Oregon

Eight Aleutians were observed in a harvested sweet corn field on the Sauvie Island WA on 17 December, and 10 were seen in permanent green pasture on 8 January.

The Semidi Island "Aleutian-like" Canada Geese were not present at their usual foraging site in the Hurliman pasture or elsewhere in the Nestucca Valley on 4 and 6 December. When they were reobserved on 9 December, only 84 birds were present. These birds were observed throughout the rest of December and during the entire months of January and February.

Crescent City

On 11 and 17 January, two and 31 birds, respectively, were seen on the Lake Earl WA, but none were observed during the remainder of the month.

El Sobrante Area

Aleutian geese were seen primarily in grassland on the Nunes Ranch, with smaller numbers in an adjacent pond. The population ranged from the 40's to the 60's in the first three weeks of December and generally from about 100 to the 120's through late January (Table 1). A peak of 140 birds was noted on 15 January. The last birds were observed on 5 February. No Aleutians were seen on San Pablo Reservoir and Briones Reservoir.

Possible Aleutians were observed at a stock pond and adjacent grassland near the Calaveras Reservoir. A mixed group of 59 which also included Taverner's (*B. c. taverneri*) and Cackling Canada Geese was seen on 3 January. Observations on 24 January revealed 60 Taverner's Canada Geese and five birds that resembled Aleutians. Further study will be needed to confirm if actual Aleutians are using this area.

Modesto-Los Banos Area

Flocks of 300 and 600 geese, consisting mostly of Aleutians, were reported on the Mapes and Bogetti ranches along the San Joaquin River west of Modesto on 2 and 8 December, respectively (Table 1). An increase to 2000 was noted on 12 December, including 1900 on the Deniz Dairy just south of the Bogetti Ranch. Many of the banded geese had been seen two days earlier in the Colusa area. They were accompanied by a Barnacle Goose (*Branta leucopsis*) that had been with the Aleutians at Colusa from 7-10 December. It was last seen with the Aleutians on 23 December.

Major use areas from 12-27 December were on the Mapes Ranch, Bogetti/Deniz properties and on Island Dairy west of Deniz Dairy (Figure 4). Several thousand Aleutians were observed on 24 December northeast of the confluence of the San Joaquin River and Merced River in Merced County. From 27 December through the first week of January most of the geese fed just south of the Modesto oxidation ponds night roost area. Main goose use during mid-January was centered in the Bogetti/Deniz/Island Dairy areas. The birds used Island Dairy until the 15th, and about 500 birds frequented Deniz's and Bogetti's through the month. Some Aleutians were seen at various locations to the south as far as the Merced River area between 2 and 30 January. From 19 January to 3 February the principal feeding areas were located just north of the oxidation ponds. Well over 3000 Aleutians were present, but occurrence of other subspecies, primarily cacklers, precluded obtaining precise counts.

On 3 February the geese were hazed from fields of sprouting winter wheat at the request of the landowner. The birds were not relocated that day and did not use the oxidation ponds that night. Searches of the Los Banos area, North and South Grasslands, and Twitchell Islands in the Sacramento-San Joaquin Delta area during the next four days failed to locate the main flock or the roost area. However, scattered flocks were seen in some of the former use areas. The roost site was located on 9 February at the Salinas Gun Club, about five miles southeast of Gustine in the North Grasslands Water District. Reports from duck club operators there and in the vicinity indicated that the Aleutians had probably been using the area from at least 6 February and possibly earlier, in company with Greater White-fronted Geese (*Anser albifrons*) and Snow Geese (*Chen caerulescens*). Some Aleutians started to roost again at night at the oxidation ponds on 13 February.

On 10 February, about 900 Aleutians fed in a harvested corn field located about four miles east of Patterson at the intersection of Paradise and Pomelo roads. On 13 February over 2000 Aleutians began using this field. Aleutians fed in this area almost exclusively until they left the San Joaquin Valley. Approximately 5000 small Canadas used these fields in early March, with cacklers predominating as the number of Aleutians diminished. Aleutian numbers dropped to an estimated 1430 on 1 March and 1070 on 5 March. On 8 March, three flocks of Aleutian-like geese totaling 176 birds were seen flying north along the San Joaquin River. Numerous flocks of geese of various species were reported flying high over the Faith Ranch in a northwesterly direction on the evening of 8 March. The last Aleutians observed consisted of two flocks totaling 120 birds flying north over the Faith Ranch on the morning of 9 March. Three of the geese banded on Chagulak Island were seen.

Most fields used by the Aleutians had been in corn last summer. Heaviest use occurred in shredded but not disked corn fields. Continued dry weather permitted early disking and planting of small grain crops. Some use was made of fields planted to winter wheat.

Other Areas

Reports were received of an apparent immature Aleutian goose seen at Tijuana Slough, Imperial Beach, San Diego County, California on 11 and 13 December and on 10 January in company with three to four Great Basin Canada Geese (*B. c. moffitti*).

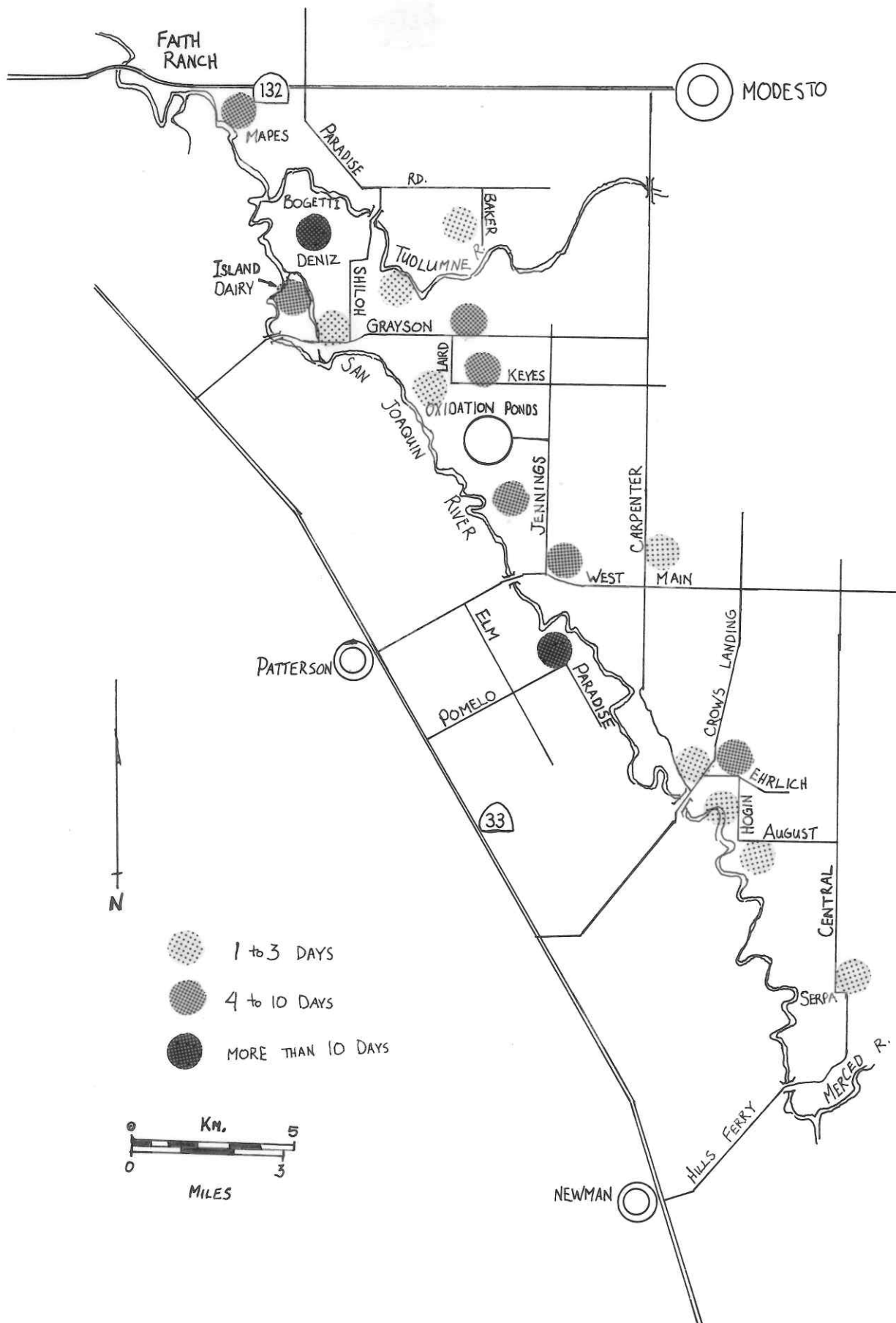


Figure 4. Location and duration of Aleutian Canada Goose feeding sites in the San Joaquin Valley, California, 1984-1985.

An Aleutian banded as an adult on Buldir Island and transplanted to Agattu Island on 4 August 1982 and an unbanded bird were shot out of a flock of 12-16 at San Quintin Bay, Baja California, Mexico on 15 December.

Spring Migration

Crescent City

No Aleutians were seen in the spring in the Crescent City area until 15 February when 48 birds were observed on Castle Rock. This number increased to 253 by the end of the month (Table 1). Because they were able to find sufficient food on the island then, they remained there the entire day. On 2 March, 200 apparent Aleutians were reported flying low over fields west of Arcata and north of Humboldt Bay, headed toward Crescent City. On the following morning about 750 birds were observed roosting on Castle Rock. Some flew at times to the Lofton Tract to feed, but most returned to Castle Rock. New arrivals from the south accounted for a total of 850 birds at the end of the day. On 4 March, birds flew to both the McLaughlin and Lofton tracts. The number of geese increased to 1800 on 8 March, and 2940+ on 10 March when some also started feeding on the Ferguson Ranch. Numbers remained steady at about 3000-3100 from 13 March to 4 April although a slight increase seemed to occur on 21 and 24 March. Accurate counts were complicated by poor weather, large flocks of up to 1000 birds at a time, and the use of a second roost site along the lake shore at the Lofton Tract from about 26 March through 10 April (Figure 2). Peak counts occurred on 5 and 6 April when an estimated 3700-3800 Aleutians were present. The geese started departing thereafter, but an increase was noted on 14 April. Most of the birds had left by 18 April. A few birds apparently summered on Castle Rock.

Primary feeding areas were on the McLaughlin and Lofton tracts, although low precipitation and heavy cattle grazing had reduced their attractiveness to the geese. As a result, up to 750 birds fed during the latter part of March on the less heavily grazed Ferguson Ranch until the rising lake level flooded the pasture and forced most of them out. Up to 50 Cackling Canada Geese were present with the Aleutian flock.

Oregon

From 2-8 March, five to 12 Aleutians were observed on the Sauvie Island WA in company with other Canada Geese, mostly cacklers but also Dusky (*B. c. occidentalis*) and Lesser Canada geese (*B. c. parvipes*) at times. On 12 March a flock composed of 66 Aleutians only was observed on the wildlife area in a sedge-reed/canary grass wetland.

The Semidi Island "Aleutian-like" Canada Geese were still present in the Pacific City area on 5 March. No birds were seen in the pasture on 12 and 20 March, but 52 reappeared on 21 March, and 20 were located the same day on the southwestern island of the Three Arch Rocks NWR. The last observation was of 15 on 28 March on Three Arch Rocks.

A flock of about 60 probable Aleutians was observed flying south over the lower Elk River floodplain on 13 April. Aleutians were seen on coastal islands during an aerial survey on 16 April as follows: Face Rock near Bandon - 150, Hunter Rock near Cape Sebastian - 35, island near Crook Point south of Pistol River - 90, Whalehead Island north of Cape Ferrello - nine, and Goat

Island NWR near Brookings - 48. Other observations of probable Aleutians were 70 flying north over Bandon on 18 April, and 125 flying south between Coos Bay and Reedsport in the fog on 23 April. A second aerial survey on 26 April revealed the following numbers of probable Aleutians: Table Rock near Bandon - 13, Face Rock - 14, Island Rock south of Port Orford - 12, Hunter Island near Cape Sebastian - five, and Goat Island NWR - 30. Also, on the latter date probable Aleutians were observed flying with Dusky Canada Geese around Haystack Rock NWR. It is thought that all the Semidi Island "Aleutian-like" Canada Geese had left by then as none had been observed on Haystack Rock or in the Pacific City pastures during five visits between the last sighting on 26 March and the last trip to the area on 11 April.

Trapping

One hundred thirty-eight Aleutians and eight cacklers were captured between 20 March and 14 April in 11 shots of five cannon-nets placed at seven sites on the McLaughlin and Lofton Tract (Table 2). Of these, 121 new Aleutians were given metal and color leg-bands, one Aleutian had its worn metal leg-band and its missing color leg-band replaced, once Aleutian had its worn color leg-band replaced, and two Aleutians originally given only metal leg-bands were given color leg-bands. No capture myopathy was sustained.

Band Observations

From October 1984 through April 1985, 390 color-marked geese were sighted 7150 times in migration and wintering areas (Table 3).

Sightings of Released and Transplanted Geese

Five (24%) of the 21 adult guide birds and two (13%) of the 15 hatching-year young successfully transplanted from Buldir Island to Agattu Island in 1979 were seen again this winter. These seven birds were the same individuals of that release which were seen last year.

Only 17 (28%) Aleutians from the 1980 release of 60 and two (1%) of the 1980 transplant of 186 were seen in 1984-85, down from 21 (35%) and three (2%), respectively, from last year (Table 4).

Of the 362 geese released on Nizki Island in 1981, only nine (2%) were seen this year, two less than last year (Table 5).

Two hundred and eighty-six Aleutians were released on Agattu Island in 1982, of which only 13 (5%) were seen this year (Table 6). This is down from 19 (7%) seen in 1983-84. Of the 135 geese transplanted also in 1982, 39 (29%) were seen this year (Table 6), 11 (8%) fewer than last year (Table 6). Even fewer geese were seen from the 1983 transplant. Only 29 (28%) of the 105 geese transplanted in 1983 were seen this winter, down from the 48 (46%) observed the previous winter (Table 7). None of the four juveniles that were recaught during the trapping program at Crescent City in spring 1984 and that had frayed primaries indicative of interrupted initial development were seen in 1984-85, but one adult that had been observed with frayed primaries at Colusa but not at Crescent City in spring 1984 was seen in 1984-85.

Of the 88 geese transplanted in 1984, 60 (68%) were seen this year (Table 8). Survival of adults (84%) was better than that of juveniles (59%).

Table 2. Summary of Aleutian Canada Goose trapping near Crescent City, California, 1985.

Date	Number of birds captured				Recaptures	Other subspecies	Total
	Males		Females				
	SY	ASY	SY	ASY			
20 Mar.	6	6	3	3	3		21
25 Mar.	3	1	3	3	2		12
28 Mar.	2	3	1	1			7
30 Mar.	10	2	5	5	1		23
2 Apr.	1		1	2	1		5
6 Apr.		1	2	1	2		6
7 Apr.	5	7	2	6	4		24
12 Apr.	1		1		3		5
14 Apr.	1	4	1	4	1	8 cacklers	19
Total	31	35	22	33	17	8 cacklers	146

Table 3. Monthly sightings of color-marked Aleutian Canada Geese in major use areas, 1984-85.

Area & status	Numbers sighted							Total	
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Individuals	Sightings
Crescent City (fall)									
Wild		131	1					132	492
1979 Transplant		4						4	18
1980 Release		1						1	6
1980 Transplant		7						7	43
1981 Release		5						5	22
1982 Release		7						7	22
1982 Transplant		22						22	95
1983 Transplant		20						20	86
1984 Transplant		37						37	194
1984 Chagulak		2						2	8
Colusa									
Wild	15	141	160					183	887
1979 Transplant		5	5					6	30
1980 Release	1	1	2					2	6
1980 Transplant	2	12	10					14	71
1981 Release		2	6					7	20
1982 Release		10	11					12	54
1982 Transplant	7	24	37					37	243
1983 Transplant	2	17	22					23	124
1984 Transplant	3	42	44					49	281
1984 Chagulak	3	8	5					9	48
El Sobrante									
Wild			1	1				1	17
1981 Release		1	2	2				2	24
1982 Transplant			1	1				1	11
1984 Chagulak		3	8	8				8	123
Modesto-Los Banos									
Wild			164	158	157	39		191	1055
1979 Transplant			7	6	7	4		7	92
1980 Release				1	1			1	3
1980 Transplant			15	16	10	4		17	80
1981 Release			5	7	8	1		8	44
1982 Release			10	8	8	3		12	53
1982 Transplant			27	31	31	7		36	200
1983 Transplant			22	21	24	6		27	133
1984 Transplant			42	40	40	12		51	284
1984 Chagulak			1	2	3			4	15

Table 3. Monthly sightings of color-marked Aleutian Canada Geese in major use areas, 1984-85.
(continued)

Area & status	Numbers sighted							Total	
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Individuals	Sightings
Crescent City (spring)									
Wild						178	170	186	1147
1979 Transplant						7	6	7	52
1980 Release						1	2	2	10
1980 Transplant						16	13	16	99
1981 Release						7	7	8	45
1982 Release						10	9	10	53
1982 Transplant						32	32	34	304
1983 Transplant						27	27	27	228
1984 Transplant						42	46	48	332
1984 Chagulak						0	0	0	0
Yearly Totals									
Wild								210	3598
1979 Transplant								7	192
1980 Release								2	25
1980 Transplant								17	293
1981 Release								9	155
1982 Release								12	182
1982 Transplant ^a								38	853
1983 Transplant								29	571
1984 Transplant ^b								56	1087
1984 Chagulak								10	194
Grand total								390	7150

^aDoes not include 1 shot @ San Quentin.

^bDoes not include 4 previously banded wild birds.

Table 4. Sightings and/or recoveries of Aleutian Canada geese released or transplanted on the Aleutian Islands in 1980.

Released geese	Number and percentage sighted and recovered				
	11/80-4/81	11/81-4/82	10/82-4/83	10/83-4/84	10/84-4/85
<u>20 May 1980 release at Amchitka</u>					
45 Patuxent-reared 1979 hatch	39 males 6 females				
46 Amchitka-reared 1979 hatch	24 males 22 females	1 (4%) 1 (5%)			
25 Northern Prairie-reared 1979 hatch	11 males 14 females				
2 Wild-caught females					
<u>12 August 1980 release at Agattu Island of 1980-hatched birds reared at Amchitka</u>					
33 "Golden" birds released with parents or foster parents	9 males 24 females	5 (56%) ^a 8 (33%) ^b	2 (22%)	1 (11%)	
7 Females released without parents or foster parents		4 (57%) ^a	1 (14%)	1 (14%)	2 (29%) 1 (14%)
<u>12 August 1980 release at Agattu Island of parents or foster parents (golden birds) of 33 young</u>					
3 Older wild-caught males		1 (33%)	1 (33%)	1 (33%)	
3 Older Patuxent-reared females					
<u>12 August 1980 release at Agattu Island of two (2) 1979-hatched Patuxent-reared females</u>		1 (50%)			
<u>21 August 1980 release at Buldir Island of birds from Amchitka</u>					
12 Amchitka-reared 1980 hatch males		6 (50%)	2 (17%)	1 (8%)	1 (8%) 1 (8%)
8 Older Patuxent-reared males		1 (13%)			
186 Grand Total released geese	Grand Total	28 (15%)	6 (3%)	4 (2%)	3 (2%) 2 (1%)
<u>Transplanted Geese</u>					
<u>15-17 August 1980 transplant of birds from Buldir Island to Agattu Island</u>					
49 1980-hatched young	22 males 27 females	15 (68%) ^a 21 (78%)	9 (41%) 14 (52%)	8 (36%) 12 (44%)	7 (32%) ^a 9 (33%) 5 (23%) 8 (30%)
8 Adult females		5 (63%) ^a	5 (63%)	4 (50%)	4 (50%) 3 (38%)
3 Adult males		3 (100%) ^a	1 (33%)	1 (33%)	1 (33%) 1 (33%)
60 Total transplanted geese	Total	44 (73%)	29 (48%)	25 (42%)	21 (35%) 17 (28%)

^aOne bird was shot.

^bFour birds were shot.

Table 5. Sightings and/or recoveries of Aleutian Canada geese released on Nizki Island on 16 August 1981.^a

		Number and percentage sighted and recovered			
		11/81-4/82	10/82-4/83	10/83-4/84	10/84-4/85
15 Older wild-caught "golden" males		9 (60%)	3 (20%)	4 (27%)	4 (27%)
15 Older captive-reared "golden" females		2 (13%)			
80 1981-hatched "golden" birds	38 males ^b	4 (11%) ^c			
released with parents or	42 females	7 (17%) ^d	1 (2%)		
foster parents					
1 Older wild-caught male - Buldir and Amchitka					
1 Older wild-caught female - Crescent City		1 (100%)			
103 Patuxent-reared 1981-hatched birds	51 males	13 (25%) ^d	3 (6%) ^e	1 (2%)	1 (2%)
	52 females	12 (23%) ^c	2 (4%)	2 (4%)	2 (4%)
51 Northern Prairie-reared 1980-	30 males		1 (3%)	3 (10%)	1 (3%)
hatched birds	21 females	1 (5%)	1 (5%)	1 (5%)	1 (5%)
69 Patuxent-reared 1980-hatched birds	47 males				
	22 females				
11 Older Northern Prairie-reared birds	6 males				
	5 females				
9 Older Patuxent-reared birds	6 males				
	3 females				
7 Older Amchitka-reared birds	3 males				
	4 females				
362 Total	Total	49 (14%) ^f	11 (3%)	11 (3%)	9 (2%)

^aThe 103 Patuxent-reared 1981-hatched birds were shipped from the Patuxent Wildlife Research Center; all the rest of the birds were shipped from the Northern Prairie Wildlife Research Center.

^bOne more bird (not included in total) was found dead on Nizki after being released.

^cTwo birds were shot.

^dThree birds were shot.

^eOne bird was shot

^fTen known banded birds were shot. In addition, four or more birds whose band numbers are not known were shot.

Table 6. Sightings and/or recoveries of Aleutian Canada geese released or transplanted on Agattu Island in July-August 1982.

Geese released on Agattu on 6 August 1982		Number and percentage sighted and recovered		
		10/82-4/83	10/83-4/84	10/84-4/85
46 captive breeding group	21 males 25 females	2 (10%) 2 (8%)		
41 paired birds (non-foster parents)	20 wild males 21 captive-reared females	7 (35%)	2 (10%)	2 (10%)
44 paired birds (foster parents)	20 wild males 1 captive-reared male 23 captive-reared females	8 (40%) ^a	4 (20%) ^b	3 (15%)
155 1982-hatch goslings reared with wild male and captive-reared female foster parents.				
Reared at Northern Prairie				
13-23 days old when released ^b	6 males 7 females	2 (33%) 1 (14%)	1 (17%)	1 (17%)
29-44 days old when released	34 males 33 females	11 (32%) 7 (21%)	6 (18%) 1 (3%)	5 (15%)
49-59 days old when released	28 males 38 females	1 (4%) 1 (3%) ^b	1 (4%) ^b	
Reared at Patuxent				
44 days old when released	1 male 1 female	1 (100%) 1 (100%)	1 (100%)	1 (100%)
63-78 days old when released	5 males 2 females	4 (80%) 2 (100%)	2 (40%) 1 (50%)	1 (20%)
286 Total released geese ^c	Total	50 (17%)	19 (7%)	13 (5%)
Geese transplanted from Buldir to Agattu on 29 July-4 August 1982				
27 adults	10 males 16 females 1 unsexed	9 (90%) 13 (81%) 1 (100%)	5 (50%) 10 (63%) 1 (100%)	4 (40%) ^b 7 (44%) 1 (100%)
108 1982-hatched young	49 males 59 females	33 (67%) ^e 38 (64%) ^f	15 (31%) 19 (32%)	11 (22%) 16 (27%)
135 Total transplanted geese ^d	Total	94 (70%)	50 (37%)	39 (29%)

^aTwo birds were shot.

^bOne bird was shot.

^cDoes not include five goslings with metal leg bands only.

^dDoes not include two previously color-banded adult birds and one metal-banded young bird transplanted at the same time.

^eOne other bird died on Agattu, probably in 1982 after the transplant.

^fThree birds were shot.

Table 7. Sightings and/or recoveries of Aleutian Canada geese transplanted on Agattu Island in July-August 1983.

<u>Geese transplanted</u>		Number and percentage sighted and recovered	
		<u>10/83-4/84</u>	<u>10/84-4/85</u>
28 Adults ^a	12 males	9 (75%)	4 (33%)
	16 females	14 (88%)	11 (69%)
77 1983-hatched young	37 males	13 (35%)	5 (14%)
	40 females	12 (30%) ^b	9 (22%)
<u>105 Total transplanted geese</u>	<u>Total</u>	<u>48 (46%)</u>	<u>29 (28%)</u>

^aDoes not include three previously banded birds also used in the 1982 transplant.

^bOne bird was shot.

Table 8. Sightings of Aleutian Canada Geese transplanted on Agattu Island in July-August 1984.

<u>Geese transplanted</u>		<u>Number and percentage sighted and recovered 10/84 - 4/85</u>
32 Adults	- 16 males	13 (81%)
	16 females	14 (88%)
56 1984-hatched geese	- 22 males	12 (55%) ^a
	<u>34 females</u>	<u>21 (62%)^b</u>
88 total transplanted geese		Total 60 (68%)

^aOne bird was shot.

^bTwo birds were shot.

Interestingly, apparent survival of birds banded before 2 August 1984 was much better (84%) than of birds banded on 2 August (50%) (Table 9). This was evident in both adult and juvenile geese. The lower resighting of birds banded on 2 August was probably because they were transported further and held in cages longer than those birds captured earlier.

Eleven color-marked geese that were not recorded last year were seen this year. Three of the geese had been banded at Crescent City, one in 1982 and the other two in 1983. None had been recorded after banding until this year. Of the eight remaining geese, six were from the 1983 transplant. The other two were birds released on Agattu Island in 1982. One of these birds had been seen twice in 1982-83 but not in 1983-84. We saw it 12 times in 1984-85. The other bird had never been sighted in California before. It was seen six times this year.

Seventy-seven of 91 wild geese banded at Crescent City in 1984 were seen this year, showing an over-summer survival of at least 85%.

Ninety-seven (78%) of the wild geese banded at Crescent City in 1985 were seen in the field prior to their spring departure.

The 10 banded "Aleutian-like" Canada Geese among the 23 banded in the Semidi Islands in 1980 and 1981 that had been seen in the Pacific City area during the winters of 1981-1983 were seen there again this winter.

Migration

Most (61%) of the color-marked geese were first seen at Crescent City in the fall, whereas almost all of the others were first seen at Colusa (Table 10). Only about one percent of the geese were first seen at El Sobrante or the Modesto area.

Most (87%) of the color-marked geese were last seen at Crescent City in the spring (Table 11). The second highest number last seen was in the Modesto-Los Banos area (8%). One notable exception was that five of the Chagulak Island birds were last seen at El Sobrante, whereas the other four were last seen in the Modesto-Los Banos area. No Chagulak Island birds were definitely seen at Crescent City in the spring. One may have been observed on 28 March but the sighting could not be confirmed.

Most (81%) of the color-marked geese were last seen in April (Table 11). Other than the spring sightings at Crescent City, most final sightings of color-marked geese occurred in December (4%) and January (4%).

Injury and Mortality

Eighteen cases of Aleutian Canada Goose mortality were recorded this year (Table 12). Nine of these birds were shot (five illegally within an area closed to Canada Goose hunting), and six others probably died from avian cholera. One bird was reported to have flown into a fence, and two others died from unknown causes.

A banded Aleutian that limped, was missing feathers around the neck, and had a bleeding neck wound was observed in the El Sobrante area on 18 December. This

Table 9. Sightings of Aleutian Canada Geese transplanted in 1984 and banded before and on 2 August 1984.

Age/Sex	Geese banded before 2 August 1984		Geese banded on 2 August 1984		Total	
	Number banded	Number seen in Calif.	Number banded	Number seen in Calif.	Number banded	Number seen in Calif.
Adult male	12	10	1	0	13	10
Adult female	10	10	6	4	16	14
Total adults ^a	22	20 (91%)	7	4 (57%)	29 ^a	24 (83%)
Juvenile male	9	6	13	6	22	12
Juvenile female	12	10	22	11	34	21
Total juveniles	21	16 (76%)	35	17 (49%)	56	33 (59%)
Overall total	43	36 (84%)	42	21 (50%)	85	57 (67%)

^aDoes not include 3 previously banded birds.

Table 10. Number of color-marked geese by location of first sighting, 1984-85.

Area	Wild	1979 ^a	1980 ^b	1980 ^a	1981 ^b	1982 ^b	1982 ^a	1983 ^a	1984 ^a	1984 ^c	Total ^d
Crescent City (fall)	132	4	1	7	5	7	22	20	38	2	238 (61)
Colusa	76	3	1	10	2	5	15	6	17	8	143 (37)
El Sobrante	0	0	0	0	2	0	1	0	0	0	3 (1)
Modesto-Los Banos	2	0	0	0	0	0	0	2	1	0	5 (1)
Crescent City (spring)	0	0	0	0	0	0	0	1	0	0	1 (<1)
Total	210	7	2	17	9	12	38	29	56	10	390

^aTransplant.

^bRelease.

^cChagulak.

^dPercentages are shown in parentheses.

Table 11. Number of color-marked geese by location and month of last sighting, 1984-1985.

Location	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Total ^a
Crescent City (fall)		8						8 (2)
Colusa			5					5 (1)
El Sobrante				7				7 (2)
Modesto-Los Banos			11	7	9	2		29 (7)
Crescent City (spring)						27	314	341(87)
Total ^a		8 (2)	16 (4)	14 (4)	9 (2)	29 (7)	314 (81)	390

^aPercentages are shown in parentheses.

Table 12. Known Aleutian Canada Goose mortality, 1984-1985.

Date	Number of birds	Location	Band status	Cause of death
<u>1984</u>				
15 Dec.	1	San Quintin, Mexico	1127-01232, '82 transplant	Shot
	1	San Quintin, Mexico	Unbanded	Shot
20 Dec.	1	Deniz Dairy, Ca.	1127-04711, '84 transplant	Shot, illegally
	1	Deniz Dairy, Ca.	1127-04706, '84 transplant	Shot, illegally
	1	Deniz Dairy, Ca.	Unbanded	Shot, illegally
24 Dec.	1	4½ mi NW of Newman, Ca.	1127-04734, '84 transplant	Flew into fence
27 Dec.	1	College City, Ca.	1127-04699, '84 transplant	Shot
29 Dec.	1	4½ mi NW of Newman, Ca.	Unbanded	Shot, illegally
<u>1985</u>				
5 Jan.	1	East Bay Mun. Util. Dist	Unbanded	Unknown
7 Jan.	1	Modesto Oxidation Ponds, Ca.	1067-21127, Crescent City '84	Unknown
18 Jan.	1	Yolo Bypass, Ca.	1127-10283, '83 transplant	Shot
21 Jan.	1	Modesto Area, Ca.	Unbanded	Shot, illegally
25 Jan.	1	Modesto Oxidation Ponds, Ca.	Unbanded	Prob. avian cholera
28 Jan.	1	Modesto Oxidation Ponds, Ca.	Unbanded	Prob. avian cholera
29 Jan.	1	Modesto Oxidation Ponds, Ca.	Unbanded	Prob. avian cholera
29 Jan.	1	Modesto Oxidation Ponds, Ca.	887-21559, Buldir '79	Prob. avian cholera
1 Feb.	1	Modesto Oxidation Ponds, Ca.	Unbanded	Prob. avian cholera
5 Feb.	1	Modesto Oxidation Ponds, Ca.	Unbanded	Prob. avian cholera
Total	18			

bird was last observed on 15 January. Its fate is unknown. It was transplanted as a juvenile from Buldir Island to Agattu Island in 1982.

Two poachers were apprehended on 20 December after shooting three Aleutians and three Cacklers at Deniz Dairy within the area closed to Canada Goose hunting. Two of the Aleutians were banded juveniles that had been transplanted from Buldir Island to Agattu Island in August 1984 and had been last seen in the Modesto area on 12 December. Each poacher was fined \$100 in state court.

An Aleutian goose banded as a juvenile on Buldir Island in August 1984 and transplanted to Agattu Island dies after it was reported to have flushed and flown into a fence near the Serpa Ranch northeast of the confluence of the San Joaquin and Merced rivers on 24 December. It had been last seen in the area on 22 December. An unbanded adult Aleutian was shot on 29 December at the same location, which is inside the area closed to Canada Goose hunting.

One banded goose was found shot, with a broken wing, on 27 December near College City, Colusa County. This goose was a juvenile that had been banded in July 1984 on Buldir Island and transplanted to Agattu Island. It had been seen this fall at Crescent City and Colusa and also in the San Joaquin Valley as late as 22 December.

A headless, light-breasted goose was found at the Nunes pond at EBMUD on 5 January. It was thought to be an Aleutian Canada Goose.

One Aleutian banded as an immature at Crescent City in March 1984 was found dead at the Modesto oxidation ponds on 7 January. Cause of death is unknown.

Poachers shot two Canada Geese on 15 January at Island Dairy within the area closed to Canada Goose hunting and escaped with the birds by boat without being apprehended. Although the subspecific identity of the birds is not known, an estimated 60 percent of the birds in the flock were Aleutians.

A possibly crippled Aleutian with a red leg-band indicating capture at Crescent City was flushed on 16 January at Bogetti's before the number could be read. The bird flew low across the field and could not be relocated.

One color-marked Aleutian was shot in the Yolo Bypass, Yolo County, California, on 18 January. This goose had been banded as a juvenile bird on Buldir Island in July 1983 and was transplanted to Agattu Island. It had been seen in the Colusa area as late as 10 December.

An unbanded Aleutian with a broken wing was seen north of the Modesto oxidation ponds on 21 January, but was not observed subsequently. Shooting had been observed in the area, which is closed to Canada Goose hunting, at the time the bird was seen.

Because of possible avian cholera at the Modesto oxidation ponds roost site, dead birds of all species were picked up once or twice daily from 23 January through 10 February. One hundred seventy-one waterfowl and four gulls were picked up, 35 of which were geese (Table 13). Six of the geese were identified as Aleutians, one of which was banded on Buldir Island in July 1979. The badly scavenged remains of six small Canada Geese were also found during this period but no subspecific identification was possible.

Table 13. Dead birds collected at the Modesto oxidation ponds during an avian cholera outbreak, 23 January to 10 February 1985.

Species	Number
Geese	
Canada Goose	
Great Basin	11
Taverner's	2
Cackling	7
Aleutian	6
Unidentified small subspecies	6
White-fronted Goose	2
Snow Goose	1
Total geese	35
Tundra Swans	3
Ducks	
Mallard	4
Northern Pintail	5
American Wigeon	1
Gadwall	2
Northern Shoveler	11
Canvasback	13
Lesser Scaup	2
Ring-necked	1
Ruddy	56
Total ducks	95
American Coots	38
Gulls	4
Total birds	175

A sick adult Aleutian goose that had a shot pellet at the base of the wing and neck and that had been last seen in the Colusa area on 3 December was found on 3 February at the Delevan NWR within the area closed to Canada Goose hunting. It was nursed back to health and released on McLaughlin Pond on the Lake Earl WA on 29 March. On 8 and 9 April it was seen a short distance away in a pasture at the edge of Lake Talawa (an arm of Lake Earl), feeding with other geese. It was a captive-reared bird released on Buldir Island in 1980 and had been seen every winter since then.

DISCUSSION

Fall Migration

The Aleutian geese seen at the Sauvie Island WA on 14 November constituted the second fall record there. Previously, on 27 November 1983, a captive-reared bird released on Agattu island was shot there out of a flock of eight. The timing of the fall observations of Aleutian geese at Sauvie Island, Coos Bay, and Langlois corresponded well to that of Aleutians at Crescent City and suggests that more birds than formerly thought may be migrating south along the Oregon coast.

The 92 "Aleutian-like" Canada Geese in the Pacific City area constituted a sizable increase over the peak of 78 observed there last year.

The fall migration of Aleutians through the Crescent City and Colusa areas was similar to last year (Nelson et al. 1984). As during last year, over 50 percent of the peak fall count occurred in the Crescent City area and about 60 percent of color-marker first sightings occurred at Crescent City. Almost all color-markers not seen at Crescent City in the fall were seen at Colusa. Only about two percent of the bands were first seen elsewhere. The combined peak of 4200 was 400 more than that of last year (Nelson et al. 1984). Although Aleutians had used the Ferguson Ranch pastures during the two previous springs, this was the first year they had been observed there in the fall.

Again, following past patterns, the Aleutians left the Colusa area in the second week of December. One difference this fall was the generally dry conditions in the Butte Sink. This was probably why the geese did not use the 833 Reclamation District fields as in past years. The geese preferred to roost on or near water and the 833 was dry for most of the fall.

One other result of the dry weather was that it permitted farmers to work their fields long into the fall. This created some problems as planted winter wheat sprouted in the disked corn fields. At the farmer's request, geese were hazed from seven fields over the winter. Discussion with farmers pointed out another factor to be considered in the future. The success of the Aleutian Canada Goose project has increased the population to about 4000. Most farmers felt little concern when only 500 to 1000 geese were present. But that quickly turned to alarm as several thousand geese moved into their fields. The expanding goose population will probably cause more depredation problems in the future as more geese need more fields in which to feed.

Wintering Areas

Although the reason for the decline of the Semidi Island "Aleutian-like" Canada Geese in the Pacific City area from 92 to 84 is unknown, it is possible that the eight missing birds were shot, perhaps in the Netarts Bay area which the geese have used on occasion in past years and which is outside the present goose hunting closure zone.

The presence of apparent Aleutian geese at the Sauvie Island WA in December and January after all the migrant birds presumably had reached California suggest that some birds may have wintered in Oregon.

Two major differences between the wintering Aleutians in California this year compared to last year were the extended use of the Modesto oxidation ponds as a primary and secondary roost and the temporary feeding locations in the San Joaquin Valley. The frequently shifting feeding locations were due primarily to the early disking and planting of harvested corn fields, thus removing them as feeding fields, and the frequent hazing of geese from corn fields planted to winter wheat.

The most southerly feeding locations again this year were at Serpa's (Figure 4) although that area attracted geese only briefly until the fields were disked. Heaviest feeding this year occurred close to the Modesto oxidation ponds roost area. The geese did roost again during the first part of February on the Salinas Gun Club in the North Grasslands Water District. However, the whole population used this area only a short time before some began to roost again at the Modesto oxidation ponds.

The primary determinant of feeding location and winter distribution appeared to be the presence of corn fields and an absence of disturbances. We believe the geese would have stayed longer in the immediate area of the Modesto oxidation ponds if we had not hazed them from the fields.

Large numbers of Cackling Canada Geese fed again with the Aleutians this year, especially in late February and early March. Some subspecific segregation was apparent. The Aleutians tended to feed in distinct, small family groups scattered evenly in the field. The cacklers fed in dense flocks, forming almost solid masses with little evidence of family groups. When large numbers of both subspecies were in the same field, we saw dense masses of cacklers, with a sparser "halo" of Aleutians on the periphery.

In addition to the apparent Aleutian goose seen at Tijuana Slough this winter, 13 Aleutians were observed there previously on 7-14 November 1981.

The banded Aleutian goose shot on 15 December at San Quintin Bay, Baja California, Mexico had been seen during the previous two years at the usual sites at Colusa, Modesto, and Crescent City but had not been observed this year until it was killed. This is the first record of Aleutians in Baja, although three immatures were shot in Sonora, Mexico on 20 December 1975.

Chagulak Island Geese

Ten of 20 geese color-banded on Chagulak Island were seen this fall and winter. Of these, two were observed in the Crescent City area. All but one were observed in the Colusa area. The single exception was never seen after

leaving Crescent City. Eight of the nine remaining geese wintered in the El Sobrante area and left there in late January. Three of these birds were subsequently seen in the San Joaquin Valley on 11 February and two remained until 18-19 February. However, all were noticeably absent from Crescent City in the spring. This leads us to believe that part of the population of birds wintering in the El Sobrante area is bypassing Crescent City in the spring and to a large extent in the fall. Interestingly, three of the birds seen at the Sauvie Island WA on 12 March were color-banded on a leg, but unfortunately the numbers could not be read. However, the colors and leg of banding suggest that they may have been birds from the flock at El Sobrante. Since the Chagulak Island birds were present in the Colusa area in the fall, they were included in the fall peak count, but not in the Crescent City spring count. Their absence may contribute to the discrepancy between fall and spring counts, and the Chagulak Island birds may represent a relatively distinct population from the Buldir Island birds. In a similar manner the "Aleutian-like" Canada Geese from the Semidi Islands are known to winter only in the Pacific City area.

Spring Migration

As in the past years, Aleutians began to appear at Crescent City in mid-February. Most (87%) of the color-marked geese were seen in this area in the spring. This was more than the 84 percent seen during the past two springs (Yparraguirre 1983, Nelson et al. 1984).

The major difference this year was the confirmed use of a second roost site in the Crescent City area. This was the first time that geese were known to roost off Castle Rock, although the second roost site was used for only about two weeks.

Eight Cackling Canada Geese were cannon-netted near Crescent City and marked with plastic neck-collars. Their appearance with the Aleutians next year would indicate possible mixing of the subspecies. A marked bird observed with the Aleutian population this year in the San Joaquin Valley and at Crescent City had been banded as an adult male on the Yukon-Kuskokwim Delta on 25 July 1984.

The peak spring count this year was about 3800, 400 fewer than the fall peak of 4200. There are several possible explanations for the differences. First, the Crescent City area was apparently bypassed by the Chagulak Island-El Sobrante birds. This may account for upwards of 100 geese. Fall counts in the Sacramento Valley may be high due to the difficulty in separating Aleutians from the intermingling cacklers. The difference in fall and spring peaks may also be due to winter mortality. If it is assumed the color-banded birds are representative of the population, about 10 percent (not including the Chagulak Island-El Sobrante geese) did not return to Crescent City in the spring. If these missing bands represent mortality, 10 percent of the population of 4200 would represent 420 geese that died over winter. This would give a spring population of 3780, which is very close to what was observed. Another possibility is that a segment of the population is bypassing Crescent City. In our opinion, this segment would have to be separate from the Buldir Island geese. If this segment were from those at Buldir Island, it is likely that some would have received color-markers during the past capture and transplant programs. If these geese bypass Crescent City, they would not be last sighted there whereas the wild color-marked geese

originally banded in the spring at Crescent City would be expected to be sighted there. Therefore, if the bypassing segment was from Buldir Island, there should be a difference in location of last sightings between release-transplant birds and geese caught at Crescent City. However, there was no significant difference in the spring resightings at Crescent City of these two groups of birds ($\chi^2 = 0.0003$, $P > 0.99$ in 1985 and $\chi^2 = 3.47$, $P > 0.05$ in 1984). Another interesting aspect from this analysis is that once the transplanted geese reach California, their apparent winter survival is not significantly different from that of wild-banded birds.

Transplanted Geese

The 1984 transplant from Buldir Island to Agattu Island showed two differences in resighting rates. First, the number of adults resighted was significantly higher than the number of juveniles resighted ($\chi^2 = 4.96$, $P < 0.05$). Second, the number of geese resighted that were banded before 2 August 1984 (Deines 1984) was significantly higher than the number resighted that were banded on 2 August 1984 ($\chi^2 = 9.46$, $P < 0.005$). The principal factor appears to be that the geese banded on 2 August were held for a longer time in the field. The low resighting rate (50%) for this date clearly indicates that precautions are needed in the transplant operations.

The resighting in 1984-85 of 85 percent of the wild geese banded at Crescent City in 1984 was higher than the first-year resightings of 75 percent in 1983-84 and 78 percent in 1982-83 (Yparraguirre 1983). The average first-year resighting rate of these wild banded geese for the past five years was 78 percent.

RECOMMENDATIONS

1. Continue the existing Canada Goose hunting closures in California.
2. Acquire or otherwise preserve from disturbance and development the fields and wetlands of the Ferguson Ranch that are being used increasingly by the expanding population of Aleutian geese in both fall and spring.
3. Acquire or obtain leases on foraging areas in the Colusa and Modesto areas to reduce crop depredation and the need to haze birds from private cropland.
4. Initiate a banding and color-marking program at El Sobrante. The segment of the population that winters there and breeds on Chagulak Island apparently bypasses Crescent City in the spring and their relation to the bulk of the Aleutian population is not known.
5. Encourage the national wildlife refuges and state wildlife areas along the Aleutian migration routes to acquire Questar telescopes. Reports of color-leg bands without identifying numbers are frustrating and of little value. The use of these telescopes would benefit many ongoing projects and represents the most efficient means of collecting the desired data.
6. Continue winter ground monitoring and spring banding and color-marking. The spring wild-banded birds can provide a control for evaluating the success of the survival of transplanted geese.

7. Avoid capturing birds on Buldir Island under conditions that would cause them to be subjected to unduly long periods of stress before being transported back to the main camp and shipped to the transplant site.

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