SIMPSON, S., AND J. J. GALBRAITH. 1905. An investigation into the diurnal variation of the body temperature of nocturnal and other birds, and a few mammals. J. Physiol., 38:225–238.

WETMORE, A. 1921. A study of the body temperature of birds. Smithsonian Misc. Coll. 72:1–51.

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A NORTHERLY WINTERING RECORD OF THE ELF OWL (*MICRATHENE WHITNEYI*)

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Ligon (Misc. Publ., Mus. Zool., Univ. Michigan, No. 136, 1968) investigated the winter range of the Elf Owl in México, chiefly by playing sound recordings of their calls at various point of suitable habitat from Arizona to Guerrero. Wintering Elf Owls were recorded at localities from the Sierra del Sur in central Guerro, east to northern Oaxaca, west to southwestern Michoacan, and north to the edge of the Mexican Plateau near Cuernavaca, Morelos. Negative results were obtained at one locality on Nayarit and two coastal localities in Sinaloa.

On the night of 10–11 January 1971, Ely collected an adult male Elf Owl (NOF 3007) 11 mi. N of México Highway 15 on the Consala Road in central Sinaloa. This locality (about 65 mi. SE of Culiacan) is more than 500 mi. NW of the nearest reported wintering locality.

The bird was mist-netted in second-growth thorn forest near a harvested corn field. It was retained alive and taken to Tucson, Arizona. It appeared to be in good health and fed freely on insects given it on the nights of 12–13 and 13–14 January, but suddenly fell dead from its perch late on the night of 13–14 January. Upon skinning the specimen, Crossin noted a circular area about 10 mm in diameter on the lower stomach. The area was a dark bluish-green in color and resembled dermal tissue which has received a severe bruise. The cause of the affliction was not determined, but may possibly have resulted from the intake of some chemical poisoning during feeding. The owl might have been afflicted before its capture, which could account for its wintering far north of the recorded winter range.

Insects and other arthropods appeared to be abundant at this locality and Ridgway's Whip-poor-will (*Caprimulgus ridgwayi*), also a nocturnal insect feeder, was collected here. Although not a requisite for winter roosts (Ligon, op. cit.), large cacti (*Lemaireocereus*) with woodpecker holes were present nearby. Future investigation of the coastal Sinaloa locality is needed to determine if the specimen collected represents an isolated, aberrant individual or whether the area serves as a regular wintering site for the Elf Owl.

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DIE-OFF OF COMMON MURRES ON THE ALASKA PENINSULA AND UNIMAK ISLAND

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This paper reports on massive mortality in a pelagic population of Common Murres (*Uria aalge*) in Bristol Bay during April 1970. The first evidence of mortality appeared on 23 April when local residents found three weakened Common Murres and brought them to the Aleutian Islands and Izembek Refuge headquarters at Cold Bay, located near the tip of the Alaska Peninsula (fig. 1). Other murres soon were found on land, and it became apparent that the previous day's storm had blown many birds inland from the Bering Sea. The next day Ken Manthey, an Alaska Department of Fish and Game biologist conducting stream surveys from a helicopter, reported hundreds of dead and dying birds along the Bering Sea beach in the vicinity of the Black Hills, 50 miles north of Cold Bay. Later reports from the helicopter crew related an oil slick, dead sea otters with oil on their fur, and a herd of 450 lethargic hair seals. Believing that a major oil spill had occurred, an aircraft was chartered the following morning at Cold Bay to investigate. About 60 miles of coastline north of Cold Bay were inspected. Dead Common Murres were strewn along the beaches, and weak or ill birds were staggering about on the sand and floundering in offshore waters. Trails in the sand showed that after washing ashore many waddled short distances and collapsed. A curious, discontinuous black sheen was noted along the high tide line in some areas. The recent storms obviously had churned up a tremendous surf, for debris was piled high up on the beach and was deposited 1000 ft up some streams. No oil or aberrant sea mammals were seen. Subsequent efforts were directed toward determining the extent and causes of the observed mortality.

AERIAL COUNTS

Aerial surveys were conducted by Alaska Fish and Game biologists enroute to Cold Bay from Kodiak Island on 25 April. They crossed the Alaska Peninsula near Port Heiden and encountered increasing numbers of dead murres from Ilnik Lake southward. Aerial counts were taken randomly for 1-min intervals, representing 2-mile samples of beach, as the plane's speed was approximately 120 mph. Total counts of dead birds from one geographical location to another were computed from averages at different locales. Between Ilnik Lake and Izembek Bay the number of dead and dying murres on 20 counts ranged from 2 to 415 per mile of beach and averaged 91 (table 1). Dead murres declined significantly south of Moffet Point, the beginning of the Izembek National Wildlife Range.

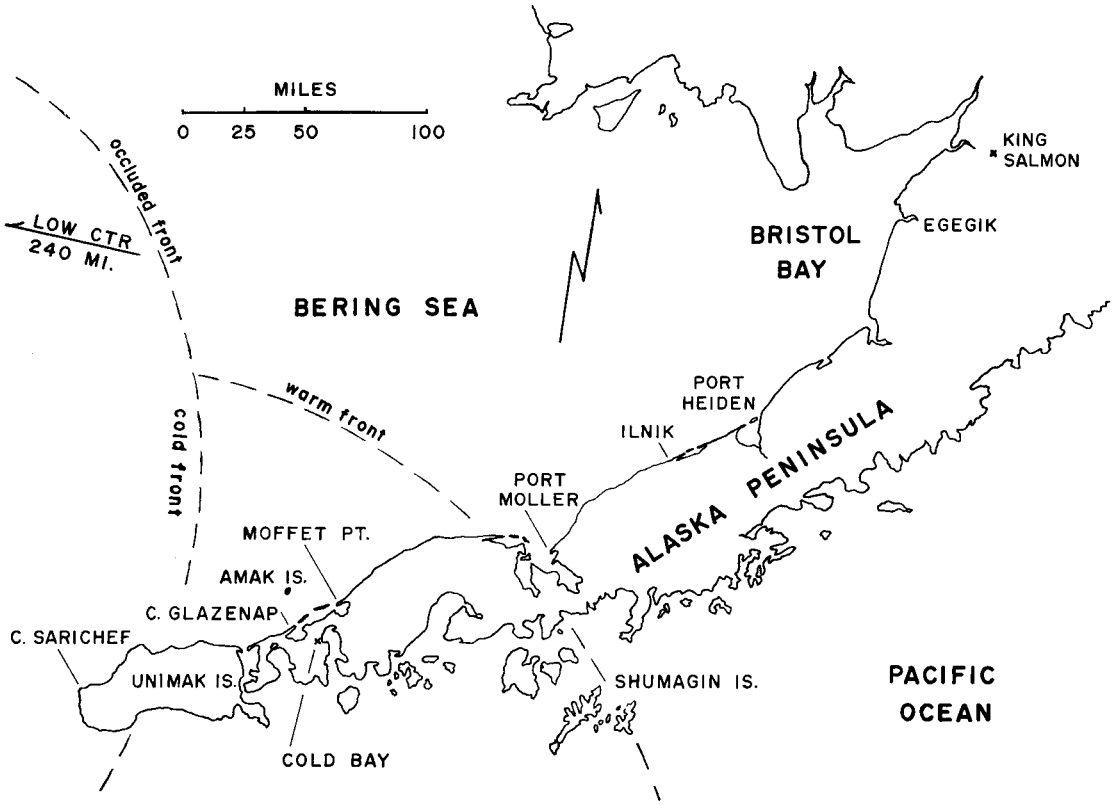

FIGURE 1. Alaska Peninsula and Unimak Island with surface weather on 22 April 1970.

Twenty-five aerial segments were examined on 26 April along the shore line of Izembek Lagoon; dead murres ranged from 0 to 60 and averaged 17 per mile. Numerous dead murres were concentrated by winds and tides in certain coves in the lagoon. Mortality south of Izembek Bay from Cape Glazenap to Cape Sarichef, the western terminus of Unimak Island, was similar to Izembek Bay; on 21 aerial samples dead murres varied from 0 to 100 and averaged 17 per mile of beach.

TABLE 1. Dead and dying birds counted on beaches between Ilnik Lake and Moffet Point on 25 April 1970 (survey by fixed wing aircraft).

Area	Birds per statute mile
Ocean River	100
Ocean River W	100
E of Cape Seniavin	58
W of Cape Seniavin	40
W of Cape Seniavin	88
Cape Kutuzof	2
Sandy River	21
Bear River	90
King Salmon River	175
Franks Lagoon	63
Port Moller Bay	415
Port Moller Bay	200
Sapsuk River	130
Salt Water Lagoon	80
Franks Point	45
Steelhead Creek	60
Cape Leiskof	63
Black Hills	35
Cathedral River	50
North Creek	12
Avg.	91.4

On 27 April, about 200 miles of beach between Port Moller and Moffet Point were resurveyed by helicopter. Visibility from the helicopter was much better than from the fixed-wing aircraft used in the same general area 2 days earlier, partly accounting for the higher counts on some of the same beaches surveyed on 25 April. The number of dead birds counted per mile of beach on the latter and more comprehensive census ranged up to 175 and averaged 67 (table 2), excluding Harbor Point where as many as 3400 per mile were concentrated by winds and tides (fig. 2). Dead murres were so numerous here that ground counts were required. Fewer live murres were noticed, and peak numbers evidently had already come ashore. After inspection of some beaches, it was obvious that tides had swept some birds back out to sea and others had been removed by foxes, eagles, and other scavengers.

William Pinette, a Bureau of Commercial Fisheries pilot, surveyed beaches south of King Salmon on 26 April. Although no aerial counts were made, he encountered thousands of dead and distressed murres from Egegik Bay southward to Ilnik Lake. An oil sheen and windrows of starfish, clams, snails, scallops, and small fish also were reported, but subsequent observers saw only murres and no oil (Tremblay, Bureau of Sport Fisheries and Wildlife, pers. comm.). We were

FIGURE 2. Over 3400 dead murres per mile accumulated on beaches at Harbor Point in Port Moller Bay.

unable to assess the degree of mortality west of Unimak Island. Murres are common around Adak Island, but no dead ones were reported by Navy personnel.

Although previously reported, we never spotted oil anywhere during the 5 days of beach surveys. A Coast Guard C-130 aircraft detected three small oil slicks far out in the Bering Sea, but observers in a Coast Guard helicopter surveying coastal areas saw no oil. Also, contrary to earlier reports, we noted no abnormally behaving seals. Nothing unusual except for dead murres on the beaches was sighted at Amak Island, an important bazaar and sea lion colony 12 miles offshore of Izembek Bay.

GROUND COUNTS

On 28 April, four 1000-ft beach transects in different areas were marked to compare previous aerial counts with actual numbers of dead murres on a given stretch of beach. All dead birds were marked with red flagging tape to later determine if additional ones were washing ashore. Near Sapsuk River 67 were counted per 1000 ft, which is equivalent to 354 per mile, yet only 125 birds per mile were seen in this area the day before from the air. At David River, Franks Point, and Cathedral River the ground and aerial counts were 159 and 105, 227 and 78, and 322 and 68 birds per mile, respectively. While walking the beaches, we discovered many murres partly covered with sand and debris. Although ground checks were made a day after aerial counts, it became obvious that only about a third of the birds in these particular areas had been recorded from the air. The discrepancy between aircraft counts and actual numbers on the beach increased in areas where dead birds were more prevalent.

TABLE 2. Dead and dying birds counted on beaches between Moffet Point and Port Moller on 27 April 1970 (survey by helicopter).

Area	Birds per statute mile
North Creek	24
Cathedral River	68
Trader Mountain	86
Black Hills	58
Cape Leiskof	50
Steelhead Creek	50
Steelhead Creek	86
Franks Point	75
Franks Point	80
David River	105
David River	105
Sapsuk River	125
Nelson Lagoon Village	150
Kudobin Island	88
Cape Rozhnof	0
Cape Rozhnof	72
Herendeen Bay	0
Black Point	18
Deer Island	23
Deer Island	60
Deer Island	20
Point Divide	4
Sand bars (E of Pt. Divide)	65
Sand bars (E of Pt. Divide)	87
Sand bars (E of Pt. Divide)	175
Harbor Point (inside)	3400[a]
Harbor Point (outside)	1500[a]
Avg.	67.0

[a] Ground counts not included in computation of mean.

TABLE 3. Total estimated number of dead and dying birds on beaches between Ilnik Lake and Cape Sarichef.

Area	Approx. miles beach	Segments sampled[a]	Av. no. birds/mile counted from aircraft	Approx. no. observed on beach from air (av./mile × miles beach)	Adjusted total on beach (aerial total × 3)
Ilnik Lake to Port Moller	50	10	74	3,700	11,100
Port Moller, including Moller and Herendeen Bays, to Moffet Point	200	35	79	15,800	47,400
Moffet Point, including Moffet and Izembek Lagoons plus Kudiakof Islands, to Cape Glazenap	75	25	17	1,300	3,900
Cape Glazenap to Cape Sarichef	120	21	17	2,000	6,000
Totals	445	91	47	22,800	68,400

[a] Each segment sampled was approximately 2 miles long.

Very low aerial counts on narrow beaches were probably representative of actual numbers. Accurate counts were impossible on rocky beaches. The above transects were revisited on 18 May to check for additional dead birds; none were found, and most of the marked murres had disappeared.

A prodigious effort would have been required to accurately correlate aerial counts with true numbers on the beaches in each area. Although aerial segments were randomly examined along the coast, distribution of dead murres was decidely clumped. The magnitude of ground counts depended on the particular strip of beach selected, and varying winds and tides constantly redistributed dead murres. Many more samples of beach were necessary to establish a relatively precise multiple to compensate for birds missed from the air. Nevertheless, we felt tripling the aerial counts produced the most realistic overall estimate. Our estimated total number of dead murres on the beaches between Ilnik Lake and Cape Sarichef is 68,000 (table 3). Actually probably over 100,000 murres died, as we did not count dead or dying birds offshore, nor did we include mortality noted by other observers north of Port Heiden.

WEATHER CONDITIONS

The period between 19 and 23 April 1970 was exceptionally stormy in the Aleutian Islands and Alaskan Peninsula. At Cold Bay, winds during this 5-day period averaged over 30 mph with gusts above 60 mph occurring daily. The mean wind velocity for the month of April is 18 mph. The most severe weather was experienced on 22 April when a deep low pressure cell (28.94 inches) moved through Bristol Bay from the Bering Sea toward the Gulf of Alaska (fig. 1). A warm front followed by a cold front, both associated with this low, moved rapidly up the peninsula. Westerly winds gusting to 84 mph at Cold Bay accompanied the fronts; sustained speeds of 55 mph for 1-min durations were recorded. Winds at Adak Island, 600 miles to the west, reached 104 mph. At Cold Bay the storm brought only 0.12 inches of rain, and temperatures averaged 35°F. Although this was an intense storm, foul weather characterizes the Aleutians.

LABORATORY FINDINGS

Postmortem examinations of murres sent to pathologists of the Bureau of Sport Fisheries and Wildlife in North Dakota and Maryland, Arctic Health Research Center in Fairbanks, California Department of Fish and Game, and the National Disease Laboratory in Iowa revealed no evidence that pathogenic microorganisms contributed to the die-off. Tests for toxins in intestinal fluids were inconclusive. An unanticipated discovery was the presence of small quantities of arsenic (2.77 ppm) in the livers of some specimens, but certain marine organisms upon which murres feed reputedly concentrate it (unpubl. rep., Bur. Sport Fish. Wildl.).

Sand and water samples plus murre feathers were subjected to gas chromatograph and infra-red scan analysis by the Federal Water Quality Administration's laboratory in Oregon. No petroleum products were found, and the black deposit along some beaches was magnetite. Traces (less than 1 ppm) of pesticide residues were discovered in murre tissues, but they were not suspected causes of death.

No foods were found in digestive tracts of any murres, but this is typical, since murres digest food very rapidly (Tuck, Can. Wildlife Serv., Ottawa, 1960). All laboratory specimens were emaciated and lacked subcutaneous, abdominal, and cardiac fat deposits. Weights of 15 Common Murres ranged from 570 to 833 g and averaged 703 g. Healthy murres off California average 950 g (Hunter, unpubl. lab. rep., California Fish & Game Dept.). Assuming the same mean weight of healthy murres in this region in April, the affected birds suffered more than a 25% weight loss. The weight decline, lack of body fat, and hemorrhaging of the intestines indicate starvation. Despite the lack of any identified toxins, the possibility of some toxicant contributing to starvation cannot be entirely discounted, especially since winds and currents could have carried rafts of murres long distances from the source of intoxication. Moreover, less than 2 months after the die-off, blobs of oil were found above the high tide line along miles of beach outside Izembek Lagoon.

CONCLUSIONS

Sustained inclement weather culminated by the violent storm on 22 April deposited murres on the beaches. According to Tuck (1960), murres are often cast ashore in Japan by winter gales where they perish, and he documents other wrecks of murres in North America and Europe. Mass mortalities among wintering murres also are mentioned by Dement'ev et al. (Birds of the Soviet Union, Vol. 2. Israel Progr. Sci. Transl., Jerusalem, 1968). The appearance of dead murres on beaches in this region has been recorded by Murie (Fauna of the Aleutian Islands and Alaska Peninsula. U.S. Fish Wildlife Serv., Washington, 1959). Reporting from Unimak Island in 1941, Beals

and Longsworth stated that between 2 and 4 April many sick and dead murres washed ashore. Strong winds and snow blew from the southeast the previous 3 days. They related that, according to residents, dead birds appear every spring, and in some years the beaches are black with birds.

Stormy weather undoubtedly disrupts feeding and probably blows pelagic birds away from concentrations of food they are utilizing. Assuming starvation caused by severe weather perpetrated the die-off, it is especially perplexing why only one species was affected. Of the hundreds of birds we examined on the beaches, all were Common Murres with the exception of two decomposed Crested Auklets (*Aethia cristatella*). Probably by late April, Thick-billed Murres (*Uria lomvia*) are migrating toward their more northerly breeding colonies and are not in this region. Besides differential distribution and abundance, disparate food spectra may account partly for the lack of mortality of other species.

Visits to the Shumagin Islands and Amak Island in June and July divulged saturated breeding colonies of Common Murres. Evidently the die-off was inconsequential with respect to the overall population in this area. In the future, the Alaska Peninsula and Aleutian Islands hopefully will receive additional aerial surveillance, especially after protracted severe weather. This should better illustrate the significance of weather-related mortality and further the scanty knowledge of the distribution and ecology of pelagic birds.

SUMMARY

Stormy weather prevailed in the Aleutian Islands and southern part of the Alaska Peninsula between 19 and 23 April 1970, climaxed by an intense disturbance with winds reaching 84 mph at Cold Bay on 22 April. Two days later reports from an aircraft north of Cold Bay indicated hundreds of dead and dying sea birds on the Bering Sea beach.

On 25 April, airborne observers from Cold Bay surveyed beaches northward up the peninsula while another aircraft from Kodiak Island flew southward to Cold Bay. Thousands of dead and distressed murres were observed along the beaches between Ilnik Lake and Moffet Point. Aerial reconnaissance widened, and for 5 days, counts were conducted, sampling roughly 450 miles of coastline. Mortality was restricted to Common Murres, and dead birds were sighted from Egegik Bay at the north end of the Alaska Peninsula to the western end of Unimak Island. Maximum concentrations of dead murres existed in the Port Moller area. Total mortality probably exceeded 100,000 murres. Contrary to early reports, we found no evidence of oil spills, or evidence that any other species of bird or mammal suffered during the period of mortality in murres.

No hydrocarbons were detected in murres or sand and water samples by six different laboratories. Tests for other toxins proved inconclusive, and there was no evidence of disease. All murre specimens were emaciated and considerably underweight. Although paradoxical that only Common Murres were affected, the die-off most likely resulted from starvation precipitated by severe weather.

ACKNOWLEDGMENTS

This investigation was a joint federal and state effort involving many individuals from several agencies: the U.S. Fish & Wildlife Service, Federal Water Quality Administration, Alaska Department of Fish & Game, Alaska Department of Health, and U.S. Coast Guard. We were assisted in obtaining field data at Cold Bay by Harvey Yoshihara, Alaska Fish & Game; Palmer Sekora, Bureau of Sport Fisheries & Wildlife; and Robert DeVol, Alaska Department of Health. James Bartonek, Bureau of Sport Fisheries and Wildlife Research Biologist in Fairbanks, furnished results from the six laboratories previously mentioned and provided pertinent literature and reports unavailable in Cold Bay. Valuable information and coordination were also received from Raymond Trembley, U.S. Game Management Agent in Anchorage.

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HOVERING BEHAVIOR BY HOUSE FINCHES

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This paper is concerned with an unusual situation in which House Finches (*Carpodacus mexicanus*) regularly drank from a standard hummingbird nectar bottle by hovering and inserting their bills into the spout. To my knowledge, this hovering behavior has not previously been reported. The study was carried out in Palos Verdes Peninsula, 30 miles SW of Los Angeles, California, and involved a total of 38 House Finches. Observations were usually made from 08:00 to 17:00 on a daily basis, from a blind or covered veranda, at a distance of 4 m from the feeder, with the aid of binoculars. The finches were observed from February to July 1969.

Initially, the House Finches were regularly seen feeding on a profusely bearing fig tree. The fruit supply was finally exhausted. Over a period of several months, the feeder regularly used by the resident population of Anna's (*Calypte anna*) and Allen's (*Selasphorus sasin*) Hummingbirds began to need more frequent refilling. It was then noticed that three finches were drinking from the feeder, one by perching on the spout (fig. 1) and the other two by actually hovering beneath the spout and inserting their bills into the nectar (fig. 2). As more finches became attracted to the nectar, it was apparent that the hovering finches were dominant over the perchers, as the latter would fly off the feeder at the approach of a hoverer. To determine whether perching finches could be made to hover, the feeder spout was greased with margarine to make perching more difficult. Finches that had previously perched and ones that first entered the area during the time when the spout was greased, learned to drink by hovering. One exception was a male which persevered in perching after repeatedly landing on the spout, thereby scraping off most of the grease.

The entire sequence of steps in the learning process was witnessed in four finches (one male, two females, and an immature). Eight other adult finches were observed in various stages of the learning process, prior to actually hovering. All finches followed virtually the same pattern in learning, typical of which is the

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