hawk flew into a low tree only a few feet away, waited for me to leave, and then returned to the carcass immediately.

Alexander Wetmore (in litt.) comments that this is the first report of such predation that has come to his attention; in fact he has seldom found one of these tinamous killed by any predator, and then apparently by some mammal. In Wetmore's Panama book (1965, Smithsonian Misc. Coll. 150: 219) he lists the food of this hawk as small mammals, reptiles, frogs and large orthopterans. He says that he has never seen it pay much attention to birds and that small birds do not seem troubled by the hawk's presence. Slud (1964, Bull. Amer. Mus. Nat. Hist. 128: 63) regards it as chiefly a snake eater. Brown and Amadon (1968, Eagles, hawks and falcons of the World, vol. 2, London, Country Life Ltd., pp. 553–554) say snakes and lizards are preferred prey, but report a recently fledged toucanet being taken. Since, elsewhere, the tinamou is hunted extensively by man, Wetmore comments, "I wonder whether possibly the regular human intrusions in the area, common to both hawk and tinamou, may have brought some change in wariness in the gamebird."—DONALD W. LAMM, *7622 East Nasumpta Drive, Tucson, Arizona 85715.* Accepted 14 Nov. 73.

Seabird mortality in a storm.—From 1967 through 1972 we studied the ecology of Gull Island, Witless Bay, Newfoundland (47° 15′ N, 52° 46′ W). The number of Herring Gulls (*Larus argentatus*) and Black-legged Kittiwakes (*Rissa tridactyla*) on the island increased markedly during this time, the gulls from 2,033 pairs in 1969 to 2,663 pairs in 1972, the kittiwakes from 6,977 pairs in 1969 (counted in late May/early June, little loss of nests to storms was noted throughout the summer, the cliffs being checked daily between 14 May and 3 August) to 10,140 (± 5%) pairs in 1971 (data from Maunder and Threlfall 1972, Auk 89: 789; Haycock 1973, unpublished M.Sc. thesis, St. John's, Newfoundland, Memorial Univ.). While no

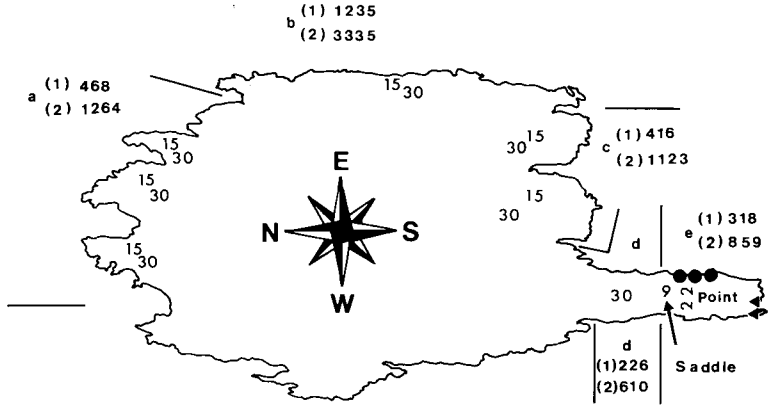

Figure 1. Gull Island, showing regions referred to in text and number of Herring Gull nests (1) and estimated number of eggs (2) in each area in 1972. ●, region where Black-legged Kittiwake nests were washed away. ▲, region where Razorbills (3 pairs) and Common Murres (4 pairs) lost eggs. Figures on island refer to height (m) above sea level.

formal count was made in 1973 the number of gulls nesting in the various parts of the island (Figure 1) appeared as great as in the previous year. By the first week in June, Herring Gull chicks were hatching in large numbers in the colony and most kittiwakes had laid their eggs.

Between 16–17 June a storm that developed off the eastern seaboard of the United States intensified in the New Brunswick/Nova Scotia region and deposited 3.8 cm of rain in the St. John's, Newfoundland area on the 17th and 1.8 cm on the 18th. Average maximum wind speeds rose to 61 kph (ESE) with gusts to 77 kph, on the 18th. This period of heavy rain and high wind was accompanied by low temperatures (maximum 7.2–6.7°C, 17–18 July respectively; minimum 1.7–0.6°C). The bad weather was caused by a low pressure zone that brought in its wake extremely heavy seas. SIG wave data charts (Dept. Environment, Meteorological Serv., Torbay Airport, St. John's, Newfoundland) show the average wave height in the Avalon Peninsula region the night of the 18th was approximately 7.5 m, rising to 10 m on the 19th and dropping to 4.5 m by early on the 20th.

A visit to the island 21 June 1973 revealed few live Herring Gull chicks and many dead ones killed by the storm. Kittiwake nests had been washed away, up to approximately 12 m above normal high water mark, while Razorbill (*Alca torda*) and Common Murre (*Uria aalge*) eggs were washed away on the region of the island known as "The Point" (Figure 1). The latter two species relaid by early July.

W. White, a commercial inshore fisherman since the late 1920s from the outport of Witless Bay approximately 4.8 k west of Gull Island, reported finding, on the day after the storm, "large numbers" of Herring Gull and kittiwake chicks dead on the beach in Witless Bay and approximately 30 adult kittiwakes and 40 Leach's Storm-Petrels (*Oceanodroma leucorhoa*) entwined and drowned in his gill nets that were set off the island. While Common Murres and to a lesser extent Common Puffins (*Fratercula arctica*) and Razorbills are commonly caught in the gill nets it is extremely rare to catch kittiwakes or petrels. On 3 July 1973 an examination of approximately 185 m of rocky beach at Bear Cove, near Witless Bay showed 5 dead Herring Gull chicks (downy, feathers only just starting to merge), 1 chick and 36 adult kittiwakes, 5 adult puffins, and 2 Thick-billed Murre (*Uria lomvia*)—all of which probably perished in the storm.

A second visit was made to Gull Island on 2 July 1973 to count surviving Herring Gull chicks and to obtain an estimate of the storm-caused mortality (Table 1). It appeared unlikely that more than 250–300 chicks would survive to leave the island in late July-early August, or approximately 9–10% of the estimated number of chicks fledged in 1972. Similar losses were noted by Tuck (pers. comm.) on

TABLE 1

DISTRIBUTION AND NUMBERS OF HERRING GULL CHICKS, GULL ISLAND, 1972 AND 1973

Region	Estimated no. chicks hatching, 1972[1]	No. chicks after storm, 1973[2]
a	921	350+
b	2431	211
c	819	90
d	445	9
e	626	18

[1] Average number eggs/nest 2.7, hatching success 73% (Haycock, ibid.).
[2] Number before storm approximately same as in 1972.

Crow Island near Ferryland (47° 01′ N, 52° 53′ W), a low-lying island approximately 0.8 k offshore, where 1,912 Herring Gull nests were counted on 27 May 1973, and where less than 400 chicks were counted on 3 July.

The Herring Gulls in areas c, d, and e (Figure 1) nest on rocks only a few meters above sea level and with little shelter from the elements. Mortality in these areas was probably caused by the rain, low temperatures, and the high waves that swept right across the region known locally as "The Saddle." In area b, the densest gull concentration on the island, the nests are well above sea level, but shelter for chicks scarce, so mortality was probably due mainly to the rain and low temperatures. During heavy rains streams develop and gradually become rushing torrents capable of washing small chicks over rocks and cliffs into the sea. In area b at least 27 Common Murre eggs and one Razorbill egg were washed off ledges during the storm. The eggs were not taken by gulls, for no broken eggshells were left on the cliff tops. Area a is a region of deeply incised coves where the gulls tend to nest well above sea level and where trees and ferns reach almost to the cliff tops. Thanks to the available shelter here, the mortality was much less than in the other regions (Table 1).

After the storm many pellets regurgitated by adult gulls (Herring and Great Black-backed, *Larus marinus*) contained the remains of Herring Gull chicks. On 21 June dead chicks were in evidence all over the areas examined (c, d, e). By 2 July only a few were seen, while on 18 July only two long-dead chicks were seen in areas b, c, d, and e. Apparently the adult gulls scavenged upon their dead offspring.

Great Black-backed Gulls, which nest mainly on "The Point" in a grassy meadow in the highest region, appeared to be unaffected by the storm. Montgomerie (pers. comm.) reported little effect of the storm on Herring Gulls on either Green or Great Island (which together with Gull Island constitute the Witless Bay Sea Bird Sanctuary). On both the latter islands the gulls nest out of reach of the highest waves and among large tussocks of grass (the remains of ancient puffin colonies) under which they can shelter. Tuck (pers. comm.) noted the loss of all Black-legged Kittiwake nests up to a height of 15 m above sea level on the seaward-facing side of Green Island, and recorded similar losses on Offer Lawn Island (46° 52′ N, 55° 37′ W), Placentia Bay, where he counted 200 nests on 5 June, of which only 5 remained on 20 July. Apparently kittiwakes are particularly affected by summer storms, especially where they nest in low-lying marginal seaward-facing sites, such as two gulches on Funk Island where all the nests are regularly destroyed (Tuck pers. comm.).

Changes in the behavior of the Herring Gulls were also noted after the storm. They became less aggressive and tended to roost in large numbers in a grassy region just north of "The Saddle." By 24 July many of the gulls seemed to have left the area, Montgomerie (pers. comm.) reporting that large concentrations of gulls were congregating around Great Island, approximately 7.5 k south of Gull Island. Every day after the storm 200 to 300 kittiwakes loitered in the water near the fish processing plant at Witless Bay, this being unusual behavior so early in the breeding season. These were probably birds that had lost nests in the storm too late for them to renest.

It may well be that the storm in June also affected the productivity of gull colonies on the west coast of the province. An aerial survey on 29 August 1973 from St. Paul's Inlet (44° 45′ N, 57° 55′ W) to St. John Bay (50° 50′ N, 57° 05′ W), revealed that of more than 8,000 Herring Gulls and Ring-billed Gulls (*Larus dela-*

warensis) tallied fewer than 4% were birds of the year, at a time when this age class should form a large part of the population (Tuck pers. comm.).

Thus storms can have dramatic effects on the breeding success of a gull colony. Tuck (1960, Canadian Wildl. Serv. Monogr. No. 1) noted similar results for murres and various other bird species. Kennedy (1970, Brit. Birds 63: 401) reviewed works relating to the direct effects of rain on birds, noting that the most important direct effect is the wetting of plumage and possible death from hypothermia; chicks probably suffering to a greater extent than adult birds.

Thanks are due to the National Research Council of Canada for the grant (NRCC-A3500) awarded to the senior author that funded the fieldwork.—WILLIAM THRELFALL, ELDON EVELEIGH, and JOHN ERNEST MAUNDER, *Department of Biology, Memorial University of Newfoundland, St. John's, Newfoundland, Canada.* Accepted 16 Nov. 73.

Record confirmed of Bahama Woodstar in Florida.—We reported a Bahama Woodstar (*Calliphlox evelynae*) at Lantana, Florida, 26 August through 13 October 1971 (1972, Amer. Birds 26: 52). At that time, there was reservation by some about the identification. Colored slides taken of the bird at roost were subsequently examined by James Bond and Frank B. Gill, who confirmed the initial identification. This is the first record of this species in the United States.

We thank James Bond and Frank B. Gill for their assistance.—HOWARD P. LANGRIDGE, *421 West Ocean Avenue, Lantana, Florida 33462*, and PAUL W. SYKES, JR., *U.S. Fish and Wildlife Service, Patuxent Wildlife Research Center, Field Station, P. O. Box 2077, Delray Beach, Florida 33444.* Accepted 20 Nov. 73.

Turkey Vultures thermal soaring into opaque clouds.—Shortly before 1100 on 21 October 1973 near the lighthouse at Cape May Point, New Jersey, we twice watched a group of 18 Turkey Vultures (*Cathartes aura*) rise aloft within a thermal in a compact, milling "kettle" beneath a cumulus cloud. Within a few minutes the vultures reached the bottom of the cloud and quickly disappeared from view completely amid the opaqueness of the cloud (rather than behind a lateral projection of it). A few minutes later, as the cloud finally disintegrated, the vultures gradually became visible again as they began a slight glide downward toward another thermal bubble where they repeated the procedure. We estimate that the vultures were at an altitude of between 2500 and 3000 feet when they entered the clouds.

Griffin (1973, Proc. Amer. Philos. Soc. 117: 118) summarized the current limited status of our knowledge of oriented bird migration in opaque cloud layers and reported only a small number of direct observations of the phenomenon. Additional records of Broad-winged Hawks (*Buteo platypterus*) thermal soaring into, or gliding from, opaque cloud layers are presented and discussed in the senior author's forthcoming book "Autumn hawk flights" (1974, New Brunswick, New Jersey, Rutgers Univ. Press).—DONALD S. HEINTZELMAN, *629 Green Street, Allentown, Pennsylvania 18102*, and ROBERT MACCLAY, *625 Schuylkill Street, Cressona, Pennsylvania 17929.* Accepted 26 Nov. 73.