

rhynchos), American Golden-eye (*Glaucionetta clangula*), Spotted Sandpiper (*Actitis macularia*), Alder Flycatcher (*Empidonax traillii*), Olive-sided Flycatcher (*Nuttallornis borealis*), Least Flycatcher (*Empidonax minimus*), Red-eyed Vireo (*Vireo olivaceus*), Tennessee Warbler (*Vermivora peregrina*), Northern Water-thrush (*Seiurus noveboracensis*), and White-throated Sparrow (*Zonotrichia albicollis*).

It is interesting to analyze these data as to the zoogeographic origin of the species observed. Using Ernst Mayr's (1946) data on the probable geographic origins of North American families and sub-families of birds, it was found that of the 89 species seen within the area under discussion, 43% were of an unanalyzed element, 19% of Pan-boreal, 23% of Old World, 23% of North American, and 10% of South American origin.

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*Laboratory of Ornithology**Cornell University**Ithaca, N. Y.*OBSERVATIONS ON CERTAIN BIRDS OF THE REGION
OF KODIAK, ALASKABY JOSEPH C. HOWELL¹

KODIAK ISLAND lies in the Gulf of Alaska less than 100 miles south of the base of the Alaskan Peninsula. The 58th parallel, north, marks its latitude. Its greatest distance across is about 80 miles. The field work upon which this paper is based was limited to a coastal strip along the northeast shore of the island near the town of Kodiak, and bounded by Larson Bay to the northwest and Middle Bay to the south-

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east. At no time did the writer reach a point more than 30 miles distant by road from Kodiak.

This portion of Kodiak Island can be described as follows. The irregular coast line is characterized by many bays and numerous points of land. Low mountains or hills are never more than a mile or two inshore from the coast. At a few places the hills run right down to the sea, and the action of the tides has cut under the hills to form cliffs that may be as much as 100 feet in height. At other places the streams have formed broad, level valleys known locally as "flats." These flats are sometimes covered by the tides for distances of a mile or so inland, and such parts of the flats are without trees. Most of these streams are wooded from their brink back to the hills that hem them in, rarely more than half a mile on each side. In late June the snow line extends down to about 1500 feet. As the majority of the mountains rise to 2000, and some to 4000, feet most of them have considerable snow on their tops. The timber grows in the valleys and on the slopes up to a height of about 800 feet. Bushes (alder and birch) rise farther up on the slopes than the trees and attain an altitude of about 1500 feet. Above the bush line the mountains are not bare of vegetation, for wherever they are free of snow there are grasses, tiny alpine flowering plants, and mosses. The mountains have steep slopes.

The streams are clear (except following prolonged rains), and at their mouths rarely exceed 100 feet in width. Some tumble abruptly into the sea, but the larger ones have extensive flood plains, or flats. These plains are sometimes a mile or more in width. Near the sea the streams tend to meander. The flats support a dense growth of green grass. Normally these flats are above the high tide mark and serve as a nesting site for Savannah Sparrows and occasionally for Least Sandpipers. Usually about a mile back from the mouth of the streams their tributaries have been dammed up by beavers, so that there are a series of small ponds. These ponds mark the farthest outpost of the willows and poplars.

The vegetation of the stream beds inland from the flats area consists of numerous thickets of poplars, alders, and willows. The poplars are the tallest, some of them attaining a height of fifty feet. The willows and alders are rarely more than 15 feet in height. As the level areas of the stream beds give way to the slopes of the hills, the vegetation changes to patches of tall, broad-leaved grass, and other patches of elder and raspberry; both of these vegetation types are often mixed. Also on the slopes are occasional thickets of a small birch, which has a dark bark, and a few viburnums. On the drier parts of the slopes are extensive areas where roses are the predominant plant. Conifers

are very scarce over most of this area, but there are a few stands of spruce on the east shore of Middle Bay and near Larson Bay. The tallest of the spruce are 70 feet in height.

Frequent field trips were taken between April 22 and July 9, 1944, when freedom from military duties permitted. The species listed are but a part of those that occur on the small section of the island which was studied. The field work was hampered by a total lack of ornithological literature, no means or permission to collect specimens, and by not having binoculars. Subspecific names have been used only where there is no species name available. The field work was carried out at, or near, a relatively few stations which are located as follows: Larson Bay, 10 miles northwest of the town of Kodiak; The Old Woman, a low mountain eight miles southeast of Kodiak; Bell's Flats, a large area of flats, almost two miles across, 12 miles southeast of Kodiak; Double Island, a quarter of a mile offshore from Bell's Flats; Happy Beach, 20 miles southeast of Kodiak; and Middle Bay, 25 miles southeast of Kodiak. These distances are all by road and are not airline distances.

Double Island was populated by a colony of a number of different species of seabirds, and to avoid the need to describe it when dealing with these species individually, a general description is given here. It was about 500 yards in length and it varied in width from 20 to 150 yards. Most of the island was about five feet above the high-tide level, but in places the edge of the island rose almost vertically from the sea to a height of 30 feet. The center of the island was comparatively open, being covered with grass, moss, and an occasional willow. Rather dense growths of raspberry, willow, and alder grew along the more elevated edges of the island.

All dates mentioned in the list of species that follows refer to the year 1944.

DOUBLE-CRESTED CORMORANT (*Phalacrocorax auritus*).—A few were seen during late April at Bell's Flats. Ten seen July 9, at Larson Bay.

MALLARD (*Anas platyrhynchos*).—Two were seen April 22, and three May 9, at Middle Bay. Three seen May 7, at Bell's Flats.

BALDPATE (*Mareca americana*).—Two were seen May 31, at Middle Bay, and one June 16, at Bell's Flats.

PINTAIL (*Anas acuta*).—Two were seen April 22, at Middle Bay, and two June 11, at Bell's Flats.

GREEN-WINGED TEAL (*Anas carolinensis*).—A male was seen May 27, and one June 13, at Bell's Flats.

GREATER SCAUP DUCK (*Aythya marila*).—From one to three were seen on six dates between June 3 and 20, at Bell's Flats.

AMERICAN GOLDEN-EYE (*Glaucionetta clangula*).—Four were seen April 30, and one May 7, at Bell's Flats.

BUFFLE-HEAD (*Glaucozetetes albeola*).—Two were seen April 30, at Bell's Flats.

HARLEQUIN DUCK (*Histrionicus histrionicus*).—A pair was seen May 31, and one bird seen June 9, at Middle Bay.

PACIFIC EIDER (*Somateria v-nigra*).—Seventy-five were seen June 11, at Double Island. Twenty-five nests were examined on this island; ten held eggs and 15 contained the remains of broken eggs, or were empty. The nests containing eggs held from one to six. Foxes were responsible for most of the predation and had scattered the remains of eggs to all parts of the island. The nest sites selected varied from the high-tide mark to the highest point on the island, but most of the nests were placed on ledges. No young were observed, but some nests held eggs that were well advanced in incubation.

RED-BREASTED MERGANSER (*Mergus serrator*).—Five were seen April 30, at Bell's Flats. Later they were seen at all areas visited, and throughout the period of my stay. A nest found June 11, on Double Island, held ten slightly incubated eggs. The nest was in a rather dense patch of raspberry, 20 feet from the edge. The nest was in a hollow excavated by the bird. It was composed of coarse dead grass and lined with much dark gray down which partially covered the eggs.

GOSHAWK (*Accipiter atricapillus*).—A nest found July 9, at Middle Bay, was 35 feet above the ground against the trunk of a spruce that was 70 feet in height. It held one large young which attempted to fly from the nest and managed to reach a point 100 feet from the nest before striking the ground. The young hawk still bore considerable down. The nest tree stood in the heart of a dense grove of spruce trees which was 10 acres in area.

AMERICAN ROUGH-LEGGED HAWK (*Buteo lagopus*).—One was seen June 9, at Middle Bay; another was seen June 10, at Bell's Flats.

BALD EAGLE (*Haliaeetus leucocephalus*).—One was seen April 22, near Middle Bay, beside a nest that was 45 feet above the ground in a poplar. An immature was seen April 30, at Bell's Flats. A pair of adults was seen July 9, at Larson Bay.

DUCK HAWK (*Falco peregrinus*).—One was seen May 23, at The Old Woman.

PTARMIGAN (*Lagopus lagopus*, or *L. rupestris*).—Four were seen May 23, at The Old Woman; two were males in white plumage, two were females in mottled brown plumage. These birds were found from an elevation of 1000 feet up to the top of all mountains visited. Three nests were found on June 25, at the top of a low mountain near Bell's Flats. All were in exposed areas which the wind had swept clear of snow, and on which small, open patches of dead grass and numerous jagged rocks provided the only cover. Below the nests stretched extensive snow fields, the larger ones being a mile or more in area. Two nests held the remains of eggs that had been destroyed by foxes. The third held eight fresh eggs.

BLACK OYSTER-CATCHER (*Haematopus bachmani*).—Five were seen July 9, at Larson Bay.

SEMIPALMATED PLOVER (*Charadrius semipalmatus*).—A nest containing three eggs was found on May 31, at Middle Bay. Two hollows which were unlined had been scooped out near by. The nest was in a small area of open gravel on a point that extended out into the bay. It was only three feet above the normal high-tide mark. On June 9, there were four eggs in the nest. An adult was seen June 11, at Bell's Flats.

WILSON'S SNIBE (*Capella gallinago*).—Two were seen May 7, and one was heard winnowing, June 25, at Bell's Flats.

GREATER YELLOW-LEGS (*Totanus melanoleucus*).—Two were seen May 9, at Middle Bay.

LEAST SANDPIPER (*Erolia minutilla*).—Four were seen May 9; five, May 31; three, June 9; and three, July 7, at Middle Bay. One of the three seen on July 9 flew like an immature bird. One was seen June 13, at Bell's Flats.

GLAUCOUS-WINGED GULL (*Larus glaucescens*).—Ten were seen May 7, at Bell's Flats; 200 on June 11, at Double Island; 100 on July 7, at Middle Bay; and 100 on July 9, at Larson Bay. A colony of 100 pairs was examined on Double Island on June 11. Most of the nests were placed on ledges of the low cliffs along the edges of the island. About half of the nests held eggs, usually two or three, but one nest held four. No young were observed.

PACIFIC KITTIWAKE (*Rissa tridactyla*).—A colony of 250 pairs was examined on Double Island on June 11. The nests were placed on the level, grassy, central area of the island. Many nests were empty, but the majority held two or three eggs. The closest nests were three feet apart.

ARCTIC TERN (*Sterna paradisaea*).—Three were seen offshore from The Old Woman, on May 19. A colony of 100 pairs was found on Double Island on June 11. The nests were scattered over most of the island in isolated groups of two to thirty nests. A few nests were in the debris which marked the high-tide limit, but most were in the low-lying center of the island. Many of the nests were in rather dense grass that was a foot and a half in height. A number of the nests were empty, or held a single egg; the majority held two eggs, and only four nests held three eggs. No young were seen. The nests were always at least three feet apart.

ALEUTIAN TERN (*Sterna aleutica*).—A colony of 50 pairs was nesting on Double Island on June 11. The observations recorded under the Arctic Tern apply also to this species. A number of individual nests of this species were singled out for observation and no constant differences were noted. No tendency for either species to become segregated from the other was observed; the nests of the two species were often no more than three feet apart. The scolding notes of the two terns are quite distinctive; that of this species is rolling and less harsh than the sustained note of the Arctic Tern. Both species of tern had their nests among those of the Pacific Kittiwake. Foxes had broken the eggs in many of the tern nests. One adult of this species was found dead beside a nest that had been broken up.

PIGION GUILLEMOT (*Cepphus columba*).—Two were seen June 9, at Middle Bay; 10 were seen June 11, at Happy Beach; 15 on June 11, at Double Island; and 15 on July 9, at Larson Bay.

AMERICAN HAWK OWL (*Surnia ulula*).—A female was shot by a serviceman on June 6, at Bell's Flats. It had three yolks in the ovary enlarged to an eighth of an inch in diameter.

BELTED KINGFISHER (*Megasceryle alcyon*).—One was seen May 31, at Middle Bay. A single bird was seen June 3, 6, 10, and 19, at Bell's Flats.

DOWNY WOODPECKER (*Dendrocopos pubescens*).—Two were seen April 30, at Bell's Flats; one was seen May 9, at Middle Bay; five were seen June 13, at Bell's Flats. A nest containing one fresh egg was found June 13, at Bell's Flats. It was 15 feet up in the dead top of a poplar.

VIOLET-GREEN SWALLOW (*Tachycineta thalassina*).—Five were seen May 9, at Middle Bay; one pair was seen to drive a chickadee from a nest cavity in which the chickadee had an almost completed nest. This swallow was seen in numbers up to 15 individuals at all localities visited.

AMERICAN MAGPIE (*Pica pica*).—A common species in all of the wooded valleys. A nest containing four fresh eggs, and another nest just completed but empty, were found at Bell's Flats on April 30. A nest containing five eggs was found at The Old Woman on May 23.

RAVEN (*Corvus corax*).—From five to twenty individuals were seen almost daily. They were seen at all localities visited and frequented all types of habitats from the rocky beaches to the tops of the snow-covered mountains. Two young ravens were seen on June 16, 50 feet up on the face of a cliff that rose 75 feet above the sea at Happy Beach. The young were not observed to fly and it is probable that they were from a nest on this cliff. This species was not particularly wary here.

NORTHWESTERN CROW (*Corvus brachyrhynchos caurinus*).—Fifteen were seen April 22, at Middle Bay; one was seen June 27, at The Old Woman; 10 were seen July 9, at Larson Bay.

BLACK-CAPPED CHICKADEE (*Parus atricapillus*).—Seen in small numbers in all of the wooded valleys visited. One was flushed from a nest cavity it was excavating in a poplar at Bell's Flats on May 7. A nest, almost completed, was found at Middle Bay on May 9. A nest containing nine fresh eggs was found 15 feet up in a cavity in the dead top of a poplar at Bell's Flats on June 3. Another nest containing nine eggs was found at Bell's Flats on June 13.

BROWN CREEPER (*Certhia familiaris*).—Two were seen at Bell's Flats on June 13.

VARIED THRUSH (*Ixoreus naevius*).—Two were seen on June 9, and four on July 7, at Middle Bay; two were seen June 13, and one was heard July 5, at Bell's Flats; five were seen July 9, at Larson Bay.

HERMIT THRUSH (*Hylocichla guttata*).—A common species which occurred in the valleys and on the slopes of the mountains up to 1500 feet. One was heard in full song at Bell's Flats on April 30. Two nests were found at Bell's Flats on June 8; both held four eggs, one set being a week advanced in incubation; the other was further advanced. A nest found at Middle Bay on June 9 was four feet up in a small spruce and held three heavily incubated eggs. A nest containing four eggs was found at Bell's Flats on June 10, another with four eggs on June 13, and a nest with five eggs on July 4.

AMERICAN PIPIT (*Anthus spinoletta*).—Frequently seen on the open, grassy slopes of the mountains above 1500 feet. The first observed were three seen at The Old Woman on May 23. A nest containing four eggs, which had been incubated about a week, was found at The Old Woman on June 17. The nest was 100 feet down from the crest of the mountain on a rather steep slope which was covered by a dense mat of dead grass. The nest rested in a cavity of sufficient depth to place the rim of the nest flush with the ground.

ORANGE-CROWNED WARBLER (*Vermivora celata*).—Sparsely, but regularly, distributed in the wooded valleys. None were positively identified until June 8, but it then became evident that their song had been heard earlier.

YELLOW WARBLER (*Dendroica petechia*).—A common species, evenly distributed throughout the valleys and on the slopes of the mountains up to 1500 feet. It was first identified on June 8. Four nests were found; all were in elder bushes. A nest holding four fresh eggs was found at Bell's Flats on June 19; later a fifth egg was laid. A nest containing three young about seven days old was found at Bell's Flats on July 4.

PILEOLATED WARBLER (*Wilsonia pusilla*).—The most numerous warbler. It was found in the valleys and on the slopes of the mountains up to 1500 feet. The habitat having the densest population was one in which areas of coarse green grass and thickets of raspberry, alder, and elder were interspersed. The species was first noted on June 3, when eight were seen at Bell's Flats. As many as 30 were seen in six hours in the field.

PINE GROSBREAK (*Pinicola enucleator*).—Most of the individuals were seen at

Middle Bay and Larson Bay, where there were stands of spruce, but some were seen in valleys where only deciduous trees (largely poplar and willow) grew. On June 9, at Middle Bay, a nest containing three fresh eggs was found. The nest was four feet above the ground in a small spruce. On July 7, at Middle Bay, both members of a pair were seen on the ground, each with nest material in its bill.

REDPOLL (*Acanthis flammea*).—Frequently encountered in the valleys and on the slopes of the mountains up to about 1500 feet. Five were seen at Bell's Flats on June 3. A nest containing four eggs about one week incubated was found at Bell's Flats on June 19. The nest was three feet up in an elder bush which stood in the heart of a dense patch of raspberry bushes.

SAVANNAH SPARROW (*Passerculus sandwichensis*).—Common in the moist, grassy areas, both in the valleys and on the slopes of the mountains up to about 1500 feet. The first recorded were three (all in song) at Middle Bay on May 9. A nest containing five fresh eggs was found at Middle Bay on June 9. The nest was in a tussock of grass in an open, swampy area over which stood a few inches of water. A nest holding four eggs that were about half incubated was found on a slope of The Old Woman on June 17. The nest was in an open growth of grass and moss at an elevation of about 1500 feet.

WHITE-CROWNED SPARROW (*Zonotrichia leucophrys*).—Common in the valleys and on the slopes of the mountains up to 1500 feet. Ten were heard singing at The Old Woman on May 23. A nest found on June 10 was just below the snow line on a slope of a mountain above Bell's Flats. The nest held five eggs which were far advanced in incubation. A nest containing four eggs was found on June 13, and another containing five eggs was found on June 19, both at Bell's Flats.

SONG SPARROW (*Melospiza melodia*).—This was the commonest species of land bird. It occurred in most of the habitats of the valleys and on the slopes of the mountains up to 1500 feet. The species was first noted on April 30, when five were seen (some were in song) at Bell's Flats. Eight nests were examined between May 31 and July 4. Three nests held five eggs, two held four eggs, one held three eggs, and two held young. All of the nests were on the ground. The earliest clutch of four was completed about May 20.

SNOW BUNTING (*Plectrophenax nivalis*).—Seen only on the top of a mountain near Bell's Flats. Here ten were seen on June 25. They were above the snow line near the crest of the mountain at an elevation of about 2500 feet. Numerous bare areas in the extensive snow fields were overgrown by low grass. In one of these a nest was found which contained five young three days old. The nest was in a crevice in some rocks that was too small to admit my hand until some overhanging moss was removed.

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