

feeding in the hay fields near Dayton. One of this group was collected.

BRONZED GRACKLE. *Quiscalus quiscula aeneus*. During the first few days of July a few scattered grackles were seen about the ranch. On July 6 a juvenile specimen barely able to fly was collected near the ranch house. By July 21, flocks of grackles had begun to gather and were seen roosting about in the trees and feeding in the hayfields. These flocks grew steadily in size and on August 27 I estimated 500 birds seen in the vicinity of Dayton. Fifteen specimens of Bronzed Grackles were collected on July 6, 24, 26, and August 2 and 3. All of these turned out to be juvenile birds in various stages of molt.

WHITE-WINGED JUNCO. *Junco aikeni*. On August 12, a juvenile female specimen of this species was collected from a flock of Pink-sided Juncos (*Junco mearnsi*) in the Bighorn Mountains, twenty-five miles west of Dayton at an altitude of 9,000 feet. If this example represents a breeding record, as it seems to do, it is an extension of the breeding range of the species from the Bear Lodge Mountains in the northeastern corner of Wyoming.

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WATER BIRDS OF A VIRGINIA MOUNTAIN COUNTY

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A mountain county in Virginia seems an unpropitious place for the study of water birds. And it is true that as compared with the coastal regions of any of the Atlantic states or with the lake country of the north our water bird life is not large. But in the course of a considerable amount of field work, with special reference to water birds, I have been struck with the number both of species and individuals that can be found here. So little work has been done in this section during the migration period that the results of this field work may be of some interest.

The county on which this study is based is Rockbridge County, Virginia, and the data were gathered over a period of five years, from 1928 to 1933. Rockbridge County, taking its name from its famous Natural Bridge, is centrally located in the Valley of Virginia, just south of latitude 38°, and about two hundred miles from the coast and the great tidal waters of Chesapeake Bay. The northern boundary of the county is the watershed between the Shenandoah and James River systems; the eastern is the crest of the Blue Ridge; while the western runs along the top of some outlying ridges of the Alleghenies.

The altitude at Lexington, the county seat, is 1,000 feet, most of the valley land running from 800 to 1,500 feet. The mountains generally reach an altitude of something over 3,000 feet, some points in the Blue Ridge rising to 4,000 feet. One can pass in an air line distance of seven miles from an elevation of 750 feet at Balcony Falls Gap to 4,000 at the peak of Thunder Hill. The eastern half of the county, from the foot of the Blue Ridge westward beyond Lexington, is rolling hill country, while the western half is very rugged, with high hills, mountain ridges, and isolated peaks. The fauna of the valley floor is Carolinian, while that of the higher foothills and mountain areas covers the extremes of the Alleghanian zone. One would expect to find the Canadian zone in areas above 3,500 feet, but since these areas only occur as islands and there are no high coniferous forests no Canadian birds have been found breeding within the county.

Rockbridge County has but one large river, the James, which cuts across its southeastern corner. Most of its territory is drained by the North River, a small tributary of the James, with two branches, the South River, flowing at the foot of the Blue Ridge, and the North River proper, or Maury River, coming out of Goshen Pass in the Alleghanies and flowing east through the center of the county. The county is abundantly supplied with small streams, all of which are swift and rocky, with only occasional stretches of quiet, deep water. There are no natural lakes. The Adcox Knob Lake, from which Lexington gets its water supply, is an artificial lake high up in the mountains covering about fifteen acres and surrounded by woods. The caretaker tells me that flocks of ducks stop on it at times, but the only birds that I have found on my occasional visits are Pied-billed Grebes. Cameron's Pond, three miles north of Lexington, is a shallow marshy stretch of water of three or four acres, varying greatly in size according to the wetness of the season. It is surrounded by open pasture, except for a willow thicket at one end. There are no houses near. I have driven an automobile within a few feet of the water's edge and watched ducks feeding a hundred yards away, sometimes forty to sixty individuals and as many as six species at once on this tiny pond. Big Spring Pond, seven miles west of Lexington, is slightly larger, with long finger-like reaches stretching away from the main area. It is fed by large springs. The water is from two to five feet deep, grown up except in the center with cat-tails, *Nymphaea*, *Bidens*, and other water plants. At the ends there are thickets and patches of open woods. For the rest it is surrounded by pasture and bordered by a farm yard. In spite of the fact that the farm house is situated on the hillside only fifty yards

from the water ducks come to the pond rather freely. Most of my water bird records have been made at Big Spring and Cameron's Pond.

Surprisingly small places are utilized here by water birds during the migrations. I have known ducks and grebes to spend the night on the city reservoir, which is merely a concrete basin some thirty yards in diameter, set on an open hilltop near a highway. In spite of the small number of suitable places I have listed twenty kinds of ducks. Marshy spots are very scarce in a region like this and mud banks not at all common, consequently fewer species of shore birds have been recorded. We have only one resident water bird, the Killdeer, and only four summer residents of which I am sure, the Great Blue Heron, Green Heron, Upland Plover, and Spotted Sandpiper. The Pied-billed Grebe, Bittern, and Woodcock possibly breed very sparingly. This paper presents data on fifty species of water birds, all but one of which I have personally observed. The list follows:

COMMON LOON. *Gavia immer immer*. Rare transient. Mr. Chas. O. Handley, who was a student at Washington and Lee University at Lexington from 1919 to 1921, saw one on North River, May 8, 1921. One was shot on the same river about 1890. An injured bird was brought to me on December 13, 1932. It died a few days later after being liberated at Big Spring.

(I have seen a mounted specimen of a Red-throated Loon (*Gavia stellata*) in winter plumage which had been taken near Covington, in the adjoining county of Alleghany. On April 14, 1933, from the top of Jump Mountain (3,190 feet) I saw a flight of seventeen loons. They were too high overhead for me to be certain about the species but appeared small enough for *stellata*).

HORNED GREBE. *Colymbus auritus*. Uncommon transient. Mr. Handley tells me that a dead bird of this species was found on April 11, 1920. I saw four in bright breeding plumage at Cameron's Pond, April 13, 1928; one in winter plumage on North River, December 24, 1929; two in breeding plumage at the city reservoir, March 31, 1933; and one in gradually deepening breeding plumage at Cameron's Pond, March 24 to April 13, 1933.

PIED-BILLED GREBE. *Podilymbus podiceps*. Fairly common transient, in spring, March 19 to May 18; in fall, September 1 to November 17. I saw twenty-one together at Adcox Knob Lake, September 17, 1928. Prof. R. S. Freer, of Lynchburg, Va., and I watched a pair at Big Spring, April 3, 1931, in courtship antics, one in full breeding plumage with bill distinctly banded, the other still in the duller hues of winter. The fact that a grebe was seen there as late as May 18

makes me think they may have bred. At this season and later the growth of *Bidens* in this pond is so high as to make it almost impossible to locate nesting birds.

DOUBLE-CRESTED CORMORANT. *Phalacrocorax a. auritus*. Accidental. On April 30, 1924, a cormorant struck a high chimney on the campus of Washington and Lee University and fell, only slightly injured. It was kept alive for several days, some of the students fastening a cord to one of its feet and taking it to a nearby stream, where it dived for fish. It later escaped, was shot and brought back to the biological laboratory. It was preserved in alcohol but was later thrown away. I did not know of it until too late to see it. It was identified as a cormorant. There was some question at the time as to the species, but it was most likely, of course, *auritus*.

GREAT BLUE HERON. *Ardea h. herodias*. Uncommon summer resident March 2 to September. Seen mainly along North River and Buffalo Creek. I have no evidence of breeding. One bird has wintered each season from the fall of 1928 to the spring of 1932 in the neighborhood of Big Spring, which because of its springs never completely freezes over.

AMERICAN EGRET. *Casmerodias albus egretta*. Rare summer visitor. I had it reported to me by a good observer in the summer of 1929. I saw one at Big Spring on many occasions from July 26 to September 26, 1932; one at Roop's Pond, near Lexington, July 9, 1933; and two at Big Spring July 18, 1933.

LITTLE BLUE HERON. *Florida c. caerulea*. Fairly common visitor in mid-summer in the white phase, June 29 to September 5, mainly in early July, occurring usually in small flocks but sometimes as many as twenty together. I have seen them at Cameron's Pond and Big Spring, and they occur at other small ponds. They seem to be increasing in number, and during July, 1933, were abundant. I have seen no blue birds here.

EASTERN GREEN HERON. *Butorides v. virescens*. Common summer resident, March 22 to October 21. I found a nest with two eggs, May 20, 1927, in an apple orchard a mile from the nearest stream; a nest with four eggs, June 28, 1932; and other nests with young late in June.

AMERICAN BITTERN. *Botaurus lentiginosus*. Uncommon transient in spring. Eight records, April 1 (1933) to May 18 (1931). It is possible that this last date may indicate a breeding bird.

COMMON CANADA GOOSE. *Branta c. canadensis*. Rare transient, formerly common. Flocks are not infrequently heard passing over, but I have only two recent records of their stopping. I saw three at

Big Spring, March 30, 1931. One of these was noticeably smaller than the other two, apparently small enough to be a Hutchins's Goose (*B. c. hutchinsi*). They were within a stone's throw of the farm house but did not appear very restless, not even taking flight when I exposed myself to view. The caretaker at Adcox Knob Lake reported fourteen on November 19, 1931.

COMMON MALLARD. *Anas p. platyrhynchos*. Common winter visitor, October 3 to April 8, less common in mid-winter. Although not so common as several other ducks, this is the most generally distributed of the ducks that occur here.

RED-LEGGED BLACK DUCK. *Anas r. rubripes*. While it is usually too difficult to distinguish this subspecies from the next in the field, I have felt certain of seeing this form in one or two cases, particularly an apparently crippled bird that I watched for a long time from cover at very close range at Big Spring on April 4, 1930. The bright coral legs and yellow bill were clearly seen in bright sunlight.

COMMON BLACK DUCK. *Anas rubripes tristis*. Common transient, October 29 to December 24, and March 5 to April 13. I have a record for February 1, 1930, but no January records. I also have records of a crippled bird on May 27 and 31, 1930. On July 2, 1930, I saw two standing on a rock in Buffalo Creek that showed no signs of being crippled. When I stepped out of the automobile they rose rapidly and flew away at high speed.

GADWALL. *Chaulelasmus streperus*. Rare transient. Two males and a female were seen at Big Spring, along with three Black Ducks, on various occasions from November 25 to December 30, 1929; a female at Cameron's Pond, October 31, 1932; and a pair at Cameron's Pond, November 7, 1932.

BALDPATE. *Mareca americana*. Uncommon transient. I have five spring records, March 11 to 28, including a flock of eight males in very bright plumage and six females at Cameron's Pond, March 11, 1930; and a male, with crown strongly tinged with buff, along with two females at Big Spring, March 20, 1931; also one fall record of a female at Big Spring from October 27 to December 2, 1930.

AMERICAN PINTAIL. *Dafila acuta tzitzihoa*. Uncommon transient. I have six spring records of some eighteen birds, February 20 to April 6; also one fall record of a female brought to me on November 13, 1928, a male having been shot at the same time.

GREEN-WINGED TEAL. *Nettion carolinense*. Transient, fairly common in spring, March 16 to April 18; scarce in fall, three records, October 31 and November 1 and 3, all in 1932.

BLUE-WINGED TEAL. *Querquedula discors*. Transient, common in spring March 20 to May 12; one fall record, a female at Big Spring, October 1, 1931. They occur on the rivers as well as on the ponds. I have seen as many as twelve in a flock.

SHOVELLER. *Spatula clypeata*. Transient in spring, uncommon, nine records of some sixteen birds, March 23 to April 8; one fall record, a male at Cameron's Pond, November 12 and 14, 1932.

WOOD DUCK. *Aix sponsa*. Rare transient in spring. Mr. Handley saw a male fly up from the ground on the bank of North River some time in the spring of 1922. I have seen the following at Cameron's Pond: a female, March 8, 1930; a pair, April 4, 1930; a pair, April 14, 1930.

LESSER SCAUP. *Nyroca affinis*. This is our commonest duck, occurring mainly in spring, March 11 to May 4; one fall record, a male at Cameron's Pond, November 12 and 14, 1932. I saw a male on June 10, 1929, and a pair on June 13, 1929, which were probably cripples although they could fly well, and another male on July 6, 1929, that was still badly crippled. These late birds were at Cameron's Pond.

REDHEAD. *Nyroca americana*. Rare transient. A male seen at Cameron's Pond and on North River from March 20 to April 6, 1929. It was very tame, swimming in the river without noticing cars passing on a highway not over thirty yards away. A female was seen on May 2, 1932.

RING-NECKED DUCK. *Nyroca collaris*. Uncommon transient, nine records of twenty-eight birds in spring, March 18 to May 2; three fall records, a female brought to me from Buffalo Creek on November 25, 1929, a female at Cameron's Pond on October 31, 1932, and a male on North River, December 12, 1932.

CANVAS-BACK. *Nyroca valisineria*. Rare transient, one female at Cameron's Pond, March 24, 1933.

AMERICAN GOLDEN-EYE. *Glaucionetta clangula americana*. Uncommon transient. Five records: a male found dead at Cameron's Pond, March 18, 1929; a male in North River, April 3, 1930, swimming near a much travelled road and but little disturbed by the passing cars; a female at Big Spring, December 22, 1932; a male, March 21, 1933; a female, April 21, 1933.

BUFFLE-HEAD. *Charitonetta albeola*. Rare transient. Three records, a female, April 15, 1929; a female, March 23, 1932; and a young male, March 28, 1932; all at Cameron's Pond.

OLD-SQUAW. *Clangula hyemalis*. Rare transient. One record, a

male with molt to summer plumage incomplete, April 14 and 15, 1929, at Cameron's Pond.

RUDDY DUCK. *Erismatura jamaicensis rubida*. Uncommon transient, four spring records and one fall record, all in female or immature plumage: Big Spring, November 17, 1930; Reservoir, November 11 and 12, 1932; Cameron's Pond, November 8 and 10, 1932, November 21, 1932, and April 3, 1933.

AMERICAN MERGANSER. *Mergus merganser americanus*. Rare transient. An adult female was brought to me by a hunter on January 14, 1930, and I have the skin. He said that he had shot three out of a flock of a dozen, all of which resembled this one. On January 5, 1933, I saw a male on James River at Snowden, just outside the county.

HOODED MERGANSER. *Lophodytes cucullatus*. Fairly common transient in spring, March 17 to April 21, occurring in pairs and small flocks at Cameron's Pond, Big Spring Pond, and on North River.

NORTHERN CLAPPER RAIL. *Rallus longirostris crepitans*. Accidental. A very unusual record is that of a specimen of this salt water bird which was found dead, hanging on a barbed-wire fence, on a country road near Lexington, about November 1, 1928. The feathers were very much soiled but the body was mummified and without odor, as it had dried out in the wind and sun. It was identified by Mr. J. H. Riley and Dr. C. W. Richmond of the U. S. National Museum, where I deposited the specimen. I believe this is the only record of this species at any distance from the salt marshes. For a fuller account *cf.* the *Auk*, XLVI, January, 1929, page 106.

VIRGINIA RAIL. *Rallus l. limicola*. Rare transient. I saw one in dull plumage at Big Spring Pond, September 26, 1932, and what was probably the same bird on October 1. I do not see why this bird should be so rare here.

SORA. *Porzana carolina*. Common transient, in spring from April 13 to May 27, and in fall from August 29 (and probably earlier) to October 29, at Cameron's Pond and Big Spring. It was scarce in the spring of 1931 and 1932, and absent in the fall of these years and in the spring of 1933. On June 9 and July 7, 1930, I heard rails at Big Spring which sounded like this species but of which I could not get sight.

FLORIDA GALLINULE. *Gallinula chloropus cachinnans*. Rare transient. Three records. One was captured by a negro boy near East Lexington, May 1, 1927, and brought to the biological laboratory of Washington and Lee. I saw one on April 19 and 25, 1929, and another on May 3, 1932, both at Big Spring. I have heard sounds at the same place in summer that suggest this bird.

AMERICAN COOT. *Fulica a. americana*. Fairly common transient, in spring from April 4 to May 6, in fall from October 9 to November 14. One winter record of two birds on December 5, 1932.

SEMIPALMATED PLOVER. *Charadrius semipalmatus*. Rare transient in spring. I saw one on May 12 and 15, 1929; six on May 13, 1932; three on May 14, 1932; one on May 17, 1932, all at Cameron's Pond.

KILLDEER. *Oxyechus v. vociferus*. Resident, common in summer, fairly common in winter. They raise two broods, as I have seen downy young on May 25 and on June 27.

AMERICAN WOODCOCK. *Philohela minor*. Uncommon transient, possibly remains occasionally to breed. Mr. Handley saw one, September 27, 1921. One was brought to me on November 15, 1928, that had been shot on a high wooded hill where a covey of Bob-white had been scattered. The hunter thought when he shot at it that it was one of the covey rising. I saw one one June 2, 1930, in a marshy spot near Lexington; one at Big Spring, September 14, 1931; two in a marsh near Glasgow on James River, September 28, 1931; and two on March 21, 1932, on a hill in thin woods.

WILSON'S SNIBE. *Capella delicata*. Common transient in spring, February 20 to May 7; uncommon in fall, September 14 to November 21. I have two winter records at Big Spring, January 13, 1930, and December 8, 1931.

UPLAND PLOVER. *Bartramia longicauda*. Fairly common transient, uncommon summer resident, from April 6 to July 23 (and possibly later). They were once common in this section, I am told, but now only a few small flocks are seen passing north in spring, and a few pairs remain to nest. This must be the extreme southern limit of its breeding range now. I saw a nest in a hay field, June 3, 1930, with four young just hatched and still about the nest. A farmer caught a half-grown young bird not far from this spot on June 21, 1933.

SPOTTED SANDPIPER. *Actitis macularia*. Common summer resident, April 25 to July 18 (and probably considerably later, for I have been able to do little field work in late summer). I have found young just from the nest from June 8 to July 2. I have seen the birds lead their young out into the grain fields some distance from water, the adults flying about over the young and alighting on fence posts and shocks of grain.

SOLITARY SANDPIPER. *Tringa s. solitaria*. Transient, common in spring, from April 6 to May 18, less common in fall from July 26 to as late as October 28.

GREATER YELLOW-LEGS. *Totanus melanoleucus*. Uncommon tran-

sient in spring, April 5 to May 14, mostly at Cameron's Pond, a few at Big Spring.

LESSER YELLOW-LEGS. *Totanus flavipes*. Common transient in spring, April 2 to May 17, mostly at Cameron's Pond—a few at Big Spring.

PECTORAL SANDPIPER. *Pisobia melanotos*. Rare transient. Prof. R. S. Freer, Mr. M. G. Lewis, and I saw five in a marshy place along the Lee Highway two miles south of Lexington, April 3, 1931. One of them, which already had a broken wing, I collected. I saw three at the same place on April 5 and 8, 1931.

LEAST SANDPIPER. *Pisobia minutilla*. Fairly common transient in spring, April 2 to June 13, all at Cameron's Pond.

SEMIPALMATED SANDPIPER. *Ereunetes pusillus*. Uncommon transient in spring. Five records: one, May 7, 1928; three, May 12, 1929; three, May 15, 1929; two, May 11, 1932; one, May 13, 1932, all at Cameron's Pond. I have taken specimens of the Least and Semipalmated Sandpipers in order to make identification certain. A small sandpiper seen on September 5, 1932, seemed to be this form rather than the Least.

RING-BILLED GULL. *Larus delawarensis*. Accidental. I collected an adult female at Big Spring, February 13, 1932, which was already crippled. It was in winter plumage and was very thin. It was feeding in shallow water. Several times, as it flew about the pond, it lit on the ice, and twice lit in the snow on a nearby hillside.

BONAPARTE'S GULL. *Larus philadelphia*. Rare visitor. Mr. M. G. Lewis, then of Lexington, saw one in adult breeding plumage at Cameron's Pond, April 29, 1928; and I saw another in adult breeding plumage at the same place and, curiously enough, on the same day in 1929. The latter bird stayed in the neighborhood for several days. I saw two adults in winter plumage resting on Maury River at East Lexington, January 8, 1932.

BLACK TERN. *Hydrochelidon nigra surinamensis*. Accidental. Mr. Handley saw one over Maury River near East Lexington, May 10, 1919; and I saw one in adult plumage at Big Spring, May 18, 1931.

NOTE: Since this paper was prepared I have recorded two additional species in Rockbridge County: an adult Black-crowned Night Heron, *Nycticorax n. hoactli*, seen at Cameron's Pond, April 10, 1934; and a Red-breasted Merganser, *Mergus serrator*, probably an immature male, shot at Goshen Pass, December 13, 1934, the head and wing of which were given to me.

LEXINGTON, VIRGINIA.