

THE AUK

A QUARTERLY JOURNAL OF ORNITHOLOGY

VOL. 65

JULY, 1948

No. 3

BIRD DISTRIBUTION ALONG THE PEACE, SLAVE AND LITTLE BUFFALO RIVERS OF CANADA

BY STEPHEN W. EATON

Plate 10

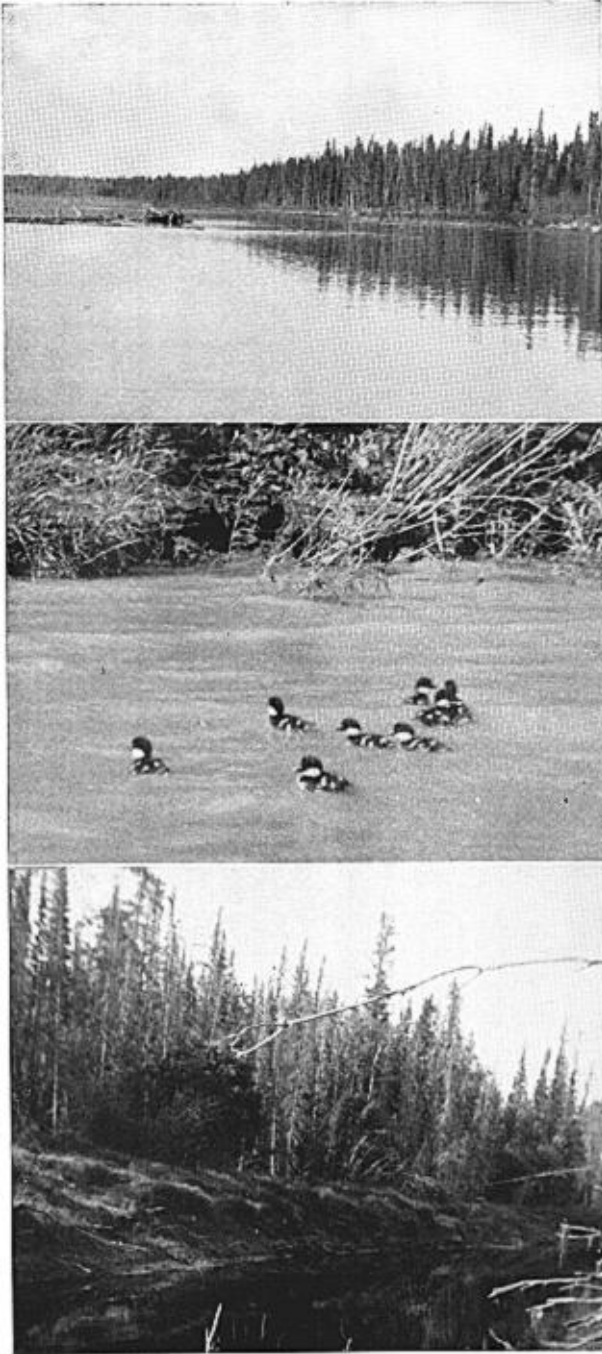
BOREAL America may be divided into three large hydrographic regions—a region tributary to Hudson Bay, the Yukon drainage, and the huge Mackenzie River system. The latter region will be discussed in this paper.

On June 15, 1940, H. O. Palmer, Jr., of Geneva, New York, and I started from Peace River, Alberta, on a canoe trip down the Peace, Slave and Little Buffalo rivers to Great Slave Lake in the Northwest Territories of Canada (*see* Text-fig. 1). Notes were kept on numbers of birds seen and heard along these rivers and will be summarized below.

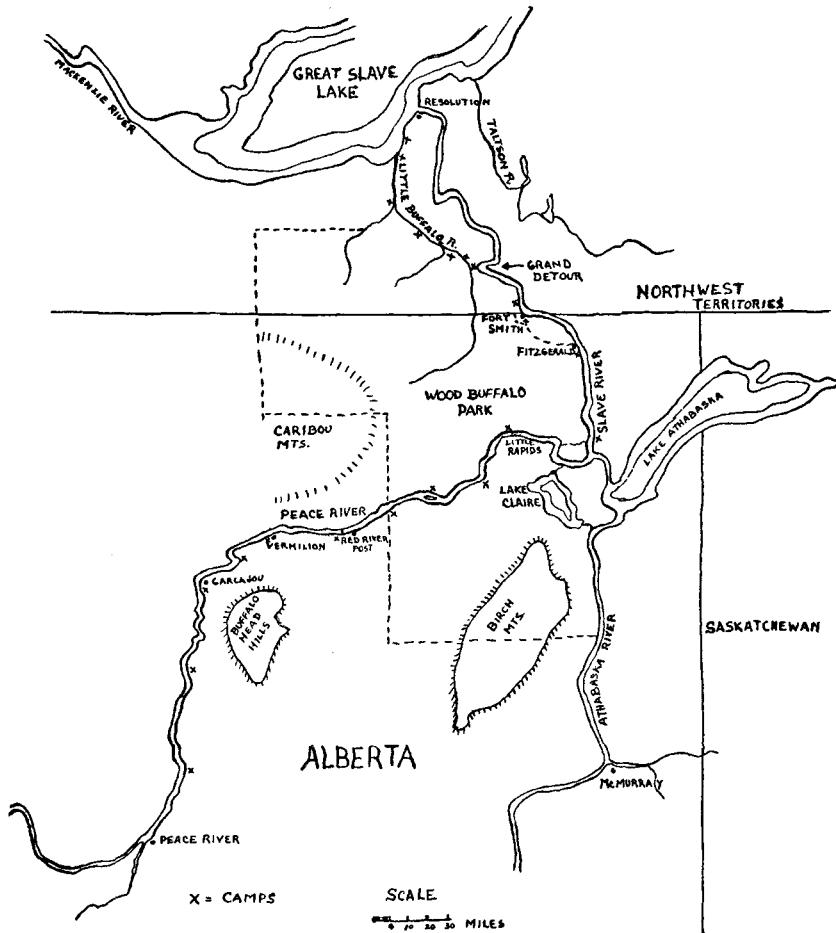
Since the turn of the century several ornithologists have investigated the Athabaska-Mackenzie Region. Outstanding contributions to the understanding of the avifauna of this area were made by Preble (1908), Seton (1908), Harper (1925), and Soper (1942). These men traveled down the Athabaska and Slave rivers to the Great Slave Lake area. Our route in 1940 differed in that we took the Peace River from the village of Peace River, Alberta, and followed this to its confluence with the Slave River.

ITINERARY

We traveled by seventeen-foot canoe approximately 600 miles along these rivers to Fort Resolution, N. W. T. By paddling and drifting with a four to six-mile current we averaged about 50 miles a day and camped along the river banks at night. Three portages were made: the first, near Red River Post on the Peace River at Vermilion Falls; the second, at Fitzgerald on the Slave River around



(Top) SCOW CHANNEL, ONE OF THE RIVERS CONNECTING THE PEACE AND SLAVE RIVERS. (Middle) DOWNY YOUNG AMERICAN GOLDEN-EYES ON THE PEACE RIVER, JUNE 20, 1940. (Bottom) LITTLE BUFFALO RIVER, ABOUT 100 MILES SOUTH OF GREAT SLAVE LAKE.



TEXT-FIGURE 1.—Route down the Peace, Slave and Little Buffalo rivers.

Smith Rapids; and the third, from the Slave River west to the Little Buffalo River.

To run the Peace River required about two weeks, and we made our first camp on the Slave on July 1. From the mouth of the Peace on the Slave River to Grand Detour we spent three days in travel and the rest of the week in camps under spruce along the river banks. At Grand Detour on the Slave River, July 9, we cached our canoe and hiked about ten miles west through spruce-birch-poplar forest and wet prairie country to the Little Buffalo River. Here we constructed a raft of dead spruce which carried us about 100 miles downstream to Great Slave Lake. We accomplished this in about a week,

and from the mouth of the little Buffalo hiked 16 miles along the southern shore of Great Slave Lake to Fort Resolution. 'The Prospector,' a diesel ship, was docked here on its way upstream, so we took passage on it back to Fort Smith, stopping at Grand Detour to pick up our canoe. From Fitzgerald we took the 'Radium Queen,' another diesel ship, up the Slave and Athabaska rivers to McMurray, Alberta, arriving there on July 23.

PHYSIOGRAPHY OF REGION

From Peace River, Alberta, the Peace River flows almost due north as far as Carcajou and Fort Vermilion, cutting quite deeply into the Alberta Plateau, perhaps some 200-500 feet in some areas. Along the river banks there is a small wooded area, 100-500 yards in width, between the river and the older cut, consisting of spruce, poplar, willow and alder. There are few islands in this stretch of the river, and above the river-break are extensive prairies.

At Fort Vermilion the river turns and flows eastward, dropping gradually off the Alberta Plateau to the alluvial lowlands where the Peace, Slave and Athabaska rivers meet in a low delta country of many lakes and rivulets. Many forested islands characterize this stretch of the river. Near Red River Post, navigation is interrupted by Vermilion Falls, and below this is another small rapids called Little or Boyer Rapids, which we were able to navigate because the water was at a high stage.

The Slave River, from the junction with the Peace, runs northward to Great Slave Lake. Forests border the river, and numerous wooded islands are encountered. At Fitzgerald begin about 16 miles of rapids, and one is obliged to portage to Fort Smith before continuing downstream. From Smith the Slave River flows northwestward in a rather irregular course for about 175 miles to Great Slave Lake.

The Little Buffalo River is a clear, brown-water stream a few miles west of the Slave. It runs through alluvial soil for most of its length before entering Great Slave Lake about 16 miles southwest of Fort Resolution. Mixed woods of white spruce, poplar and birch border the stream.

METHODS OF OBSERVATION

No birds were collected on our expedition as we were not equipped with shotguns nor collecting permits; however, birds mentioned were properly identified to species. From the canoe we were able to hear birds singing along the banks, and with the aid of our binoculars could observe birds flying over the river-break. We usually made

short excursions from our camp sites in the morning before continuing downstream. (See Text-fig. 1 for camp sites.) The numbers of birds listed in Tables 1 and 2 are mostly the actual numbers of individuals

TABLE 1
DISTRIBUTION OF DUCKS AND GEESE ALONG THE PEACE, SLAVE
AND LITTLE BUFFALO RIVERS IN JUNE AND JULY

	June 15 to 30		July 1 to 8		July 9 to 18
	Peace River		Slave River		L.B.R.
	Peace R. Alba. to Ft. Vermilion	Ft. Vermilion to Slave River	Junction with Peace River to Fitzgerald	Fitzgerald to Grand Detour	On L. B. River
	200 mi. Ad. Yg.	175 mi. Ad. Yg.	60 mi. Ad. Yg.	40 mi. Ad. Yg.	100 mi. Ad. Yg.
Canada Goose.....	1 1	40 ¹ 0	0 0	0 0	6 13
Mallard.....	75 0	300 ² 0	17 0	50 0	12 0
Amer. Baldpate.....	50 0	9 0	1 0	3 0	3 0
Green-winged Teal.....	0 0	0 0	0 0	6 0	0 0
Blue-winged Teal.....	6 0	0 0	0 0	0 0	0 0
Scaup, sp.....	0 0	0 0	0 0	2 0	0 0
Amer. Golden-eye.....	50 13	24 7	23 0	15 0	0 0
Buffle-head.....	0 0	0 0	1 0	1 0	1 6
Ruddy Duck.....	0 0	5 0	0 0	0 0	0 0

¹ 40 flock flying upstream June 29.

² 300 in one flock above Vermilion Falls.

seen or heard, but some of the larger figures are estimates made at the end of each day's travel.

OBSERVATIONS

Immediately below are notes on a few species which we thought of interest, and in Tables 1 and 2 may be found a complete list of species observed.

PIED-BILLED GREBE, *Podilymbus podiceps*.—We saw two on July 8 in a slough near Grand Detour on the Slave River.

WHITE PELICAN, *Pelecanus erythrorhynchos*.—On the Peace River, 10 miles upstream from Little Rapid (Boyer Rapids), we saw two flying towards Lake Athabaska, June 28.

CANADA GOOSE, *Branta canadensis*.—We saw a flock of forty geese flying upstream over the Peace River a few miles above Little Rapid on June 29. About 40 miles upstream from Great Slave Lake, along the Little Buffalo River, on July 16, we saw a goose and gander with three young. The young were about one-fourth the size of the adult birds. When the birds saw us they 'ducked' for the bank and swam downstream close to the farther shore. One adult was leading the group, then followed the three young, and the other parent brought

TABLE 2
DISTRIBUTION OF BIRDS (EXCLUDING ANSERIFORMES) ALONG THE
PEACE, SLAVE AND LITTLE BUFFALO RIVERS

	Zoogeographic Origin ¹	June 15-30		July 1-8		July 9-18
		Peace R.		Slave R.		On
		Peace R, Alba. to Ft. Vermilion 200 mi.	Ft. Vermilion to Slave R. 175 mi.	Junction with Peace R. to Fitzgerald 60 mi.	Fitzgerald to Grand Delour 40 mi.	Little Buffalo River 100 mi.
Red-throated Loon	PB					1
Pied-billed Grebe	ua					2
White Pelican	ua		2			
Goshawk	ua			1		1
Sharp-shinned Hawk	ua			1		1
Red-tailed Hawk	ua		1	9		
Swainson's Hawk	ua	2				
Bald Eagle	ua	1			1	
Marsh Hawk	ua			1		
Osprey	ua					1
Duck Hawk	ua			1		2
Pigeon Hawk	ua		1			
Sparrow Hawk	ua	15	10			3
Ruffed Grouse	OW		2	10		
Sora Rail	ua		1			2
Killdeer	ua	4	5			
Wilson's Snipe	ua					1
Solitary Sandpiper	ua	4	2			4
Spotted Sandpiper	ua	150	100	50	50	35
Yellow-legs sp.	ua					1
Bonaparte's Gull	ua			10		
Arctic Tern	ua				2	
Black Tern	ua	3				
Long-eared Owl	OW				1	
Horned Owl	OW		1	5	5	4
Richardson's Owl	OW				1	4
Night Hawk	ua	75	5			
Kingfisher	OW	1		4		
Yellow-shafted Flicker	ua	5			2	
Pileated Woodpecker	ua	2	4		10	
Yellow-bellied Sapsucker	ua		2	2	2	1
Downy Woodpecker	ua		1	2	3	
Arctic Three-toed Woodpecker	ua		2			
American Three-toed Woodpecker	ua		1			
Eastern Kingbird	SA	10		5	5	
Eastern Phoebe	SA			10	1	
Yellow-bellied Flycatcher	SA		2			
Alder Flycatcher	SA	100	75	20	10	
Least Flycatcher	SA	150	85	50	20	
Olive-sided Flycatcher	SA	75	60	10	5	
Tree Swallow	OW	25	30	2	4	6
Bank Swallow	OW	50	75	50		
Cliff Swallow	OW	300	50	75		
Canada Jay	OW		6		2	5
Northern Raven	OW		3	1	7	4
Crow	OW	10				10

¹ PB—Pan-Boreal; ua—unanalyzed; OW—Old World; SA—So. Amer.; NA—No. Amer.

TABLE 2 (cont.)

	Zoogeographic Origin	June 15-30		July 1-8		July 9-18
		Peace R.		Slave R.		L.B.R.
		Peace R. Alba.	Ft. Vermilion	Junction with Peace R. to Fitzgerald	Fitzgerald to Grand Detour	On Little Buffalo River
		to Ft. Vermilion 200 mi.	to Slave R. 175 mi.	60 mi.	40 mi.	100 mi.
Black-capped Chickadee.	OW	4				
Hudsonian Chickadee...	OW				2	
Red-breasted Nuthatch..	OW	3			4	
House Wren.....	NA	15	2	1	2	
Robin.....	OW	10		10	2	
Hermit Thrush.....	OW	10		2	4	
Olive-backed Thrush....	OW			25	10	
Ruby-crowned Kinglet..	OW	3			1	
Red-eyed Vireo.....	NA	100	75	50	30	
Black and White Warbler	NA	5	10	4	2	
Tennessee Warbler.....	NA		1	100	75	
Yellow Warbler.....	NA	30	10	10	15	
Magnolia Warbler.....	NA		1		1	
Cape May Warbler.....	NA		4			
Black-throated Green Warbler.....	NA	10		2	5	
Bay-breasted Warbler...	NA				3	
Northern Water-thrush..	NA	75	15	20	30	
Western Yellow-throat..	NA	10				
American Redstart.....	NA	5	10	3	5	
Red-winged Blackbird...	SA			10	15	
Bronzed Grackle.....	SA				4	
Western Tanager.....	SA	1		10	5	1
Rose-breasted Grosbeak.	OW		4	2	4	
Purple Finch.....	OW		2	1	3	
White-winged Crossbill..	OW		30		15	
Savannah Sparrow.....	NA			1		
Vesper Sparrow.....	NA			4		
Junco.....	NA		1	2	3	
Chipping Sparrow.....	NA		5	4	6	
Clay-colored Sparrow...	NA				1	6
White-crowned Sparrow.	NA	1				
White-throated Sparrow.	NA	25			12	
Swamp Sparrow.....	NA					2
Song Sparrow.....	NA	5		5	5	

up the rear—a perfect line of file. The adult birds extended their necks and held them horizontal to, and just above, the surface of the water. A few hours later, farther downstream, we flushed this same family from the grass bordering the stream. The two adults splashed and thrashed towards us on the water, then one flew off downstream. The other flapped along the surface of the water but was not able to get into the air. The three young dived on reaching the water and were not seen again. On this same day (July 16) we saw what was probably a combination of two families of geese in one flock—four adult birds and ten young which latter were about three-fourths the size of the adults.

BUFFLE-HEAD, *Glaucionetta albeola*.—On July 14 we saw a female with a brood of six young on the Little Buffalo River about 50 miles upstream from Great Slave Lake. A family of four Great Horned Owls was annoying the ducks but apparently was unsuccessful or was not interested in capturing them as we saw the same family of ducks for the next two days just ahead of our raft on the river.

RUDDY DUCK, *Oxyura jamaicensis*.—On June 27 we saw a male in nuptial plumage (sky-blue bill, chestnut back and white cheeks) on the Peace River a few miles below Red River Post.

SWAINSON'S HAWK, *Buteo swainsoni*.—We saw this hawk twice soaring over the river-break on the Peace River between Peace River, Alberta, and Fort Vermilion during the week of June 15–21.

SPOTTED SANDPIPER, *Actitis macularia*.—We found a nest with four eggs on July 5 amongst driftwood on the shore of the Slave River about eight miles below Fort Smith.

LONG-EARED OWL, *Asio otus*.—Along the west bank of the Slave River, a few miles below Fort Smith, we saw a bird of this species perched in some alders bordering the river.

DISCUSSION OF TABLES

From a glance at Table 1 it is evident that not many ducks or geese appear on the large rivers of this region during at least part of the nesting season (June and July). The only concentration of ducks was noticed on the Peace River just above Vermilion Falls near Red River Post. This flock of about 300 Mallards appeared to be males in eclipse plumage taking advantage of the broad, quiet stretch of water above the falls. A few American Golden-eye females were seen with broods (*see* Plate 10) on the Peace and Slave rivers near the banks. The female Buffle-head with six young on the Little Buffalo was the only other duck seen which took its young to the rivers. Several female American Baldpates and Mallards were seen on the rivers, but no young. On the Peace River we saw an old goose with one gosling, and again on the Little Buffalo, three family parties were encountered.

Table 2 gives one the impression that there are fewer flycatchers, warblers and sparrows along the Little Buffalo River than along the Peace and Slave rivers. This may be the case, but also the lateness of the season must be taken into account. Perhaps similar numbers of these birds were present along the Little Buffalo River but were not singing and hence not noticed.

The typical birds along the Peace, Slave and Little Buffalo Rivers were American Baldpate (*Aythya americana*), Mallard (*Anas platy-*

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-

¹ Contribution No. 17, Department of Zoology and Entomology, University of Tennessee, Knoxville.