

Report  
CWS-2-44

CANADIAN WILDLIFE SERVICE

BIOLOGICAL RECONNAISSANCE OF LANDS  
ADJACENT TO THE ALASKA HIGHWAY IN  
NORTHERN BRITISH COLUMBIA AND THE  
YUKON TERRITORY

By

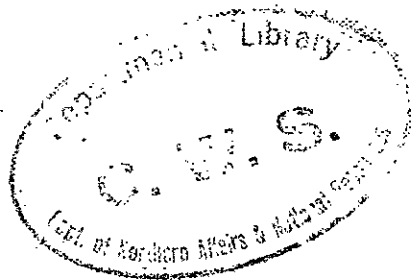
C.H.D. Clarke

1943 - 1944

CANADIAN WILDLIFE SERVICE

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By

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Following an exchange of notes between the Governments of Canada and the United States the military authorities of the United States initiated and brought to completion during 1942-43 the construction of an all-weather gravel-surfaced road from the end of the Peace River Railway line at Dawson Creek, B.C., through northern British Columbia and Yukon Territory, to Alaska. From Dawson Creek the road passes through settled country to the Peace River near the mouth of the Pine River. Crossing the Peace, it follows a route through the foothills of the northern Rockies to the Prophet River, the course of which it follows approximately until the Muskwa River is reached near the old settlement of Fort Nelson and the new airport and settlement of Muskwa. From Muskwa the road, instead of skirting the Rockies to the Liard River, follows a course directly through them. The Liard River is crossed above the Canyon, near the Hot Springs. The benches of the north side of Liard River are then traversed all the way to the Lower Post near the mouth of Dease River. A branch connects with Watson Lake airport and the main road continues across the upper Liard River and up the valley of the Rancheria River into and across the Cassiar Mountains. At the summit of this range the continental divide is crossed, and the road continues through a more or less mountainous terrain to Teslin and Whitehorse. From Whitehorse the route is up the Takhini-Dezadeash Valley, which lies in a dry parkland, to the foot of the St. Elias Range, and thence northward along the west side of Kluane Lake, and across the Donjek and White Rivers to the Alaska boundary.

In addition to the main highway there are branch roads providing access to a number of airports along the way, a triangle route connecting Carcross with Whitehorse and the main road, a cut off road from the Dezadeash Valley over the Chilkat Pass to Haines, Alaska, and lastly a road from a point east of Whitehorse to Norman Wells, Northwest Territories, serving an oil pipeline project of a magnitude equal to the main highway itself.

Previous to the construction of the highway, rail, air, and water routes were the principal means of travel. The air route to Alaska was served by airports at Nelson (Muskwa), Watson Lake, and Whitehorse. Nelson was reached in winter from Fort St. John and in summer by water from Fort Simpson, Northwest Territories. Watson Lake was served by the Stikine-Dease water and road route which reached the Liard River at the Lower Post. Whitehorse was the centre of an old developed area and Yukon Territory was served by the White Pass and Yukon Railway and a network of tote roads and the Yukon waterway, for which the rail terminus was the base. Except along major water routes and existing roads, the country touched by the highway was comparatively inaccessible and a primitive economy prevailed.

The sudden turn of events which has made the whole region accessible has raised a number of questions relating to wildlife which could be answered only by a field investigation.

The reconnaissance carried out in 1943-44 can be looked on as a necessary first step, involving the maximum effort that the circumstances permitted. Furthermore, there has been established jointly with the United States a program for studying and analysing the resources of a large region, including all of northern British Columbia and the Yukon, Alaska, and a portion of Alberta and the Northwest Territories, with a view to their orderly development. This is known as the North Pacific Planning Project. It becomes necessary in this scheme to know the present distribution and numbers of various species of wildlife and the conditions under which they have lived and the changes undergone since the region was discovered. The relationship of wildlife to the development of the region may then be evaluated.

It should be recalled that the land for a mile on each side of the road has been reserved, and in Yukon Territory no hunting is allowed in this strip. There has likewise been established in the Kluane Lake and St. Elias Mountain region of Yukon Territory an extensive reserve for investigation as to its suitability for national park purposes. Still other areas, e.g. in the Haines Road section of British Columbia and in the McArthur Mountains of the Yukon have been at various times suggested as desirable for national parks. The party had then to consider the proposed parks, the region served by the road, and the North Pacific Planning area, particularly the Yukon Territory.

In 1943 the writer was one of a party under James Smart, Controller, National Parks Bureau, the other members being H.L. Holman, District Forester (Calgary) and F.H.R. Jackson, Park Warden. This party was able to travel the whole road to the end of construction on both the Alaska Military Highway and the Haines Road, to spend July in the Kluane Reserve, and to travel to Dawson by the Lewes and Yukon River route, returning to Whitehorse by air via McQuesten. In 1944 the writer carried out independent field work, ably assisted by T.M. Shortt of the Royal Ontario Museum of Zoology, Toronto. The party travelled by truck from Edmonton to Whitehorse and then carried out fieldwork in the British Columbia section of the Haines Road, the Yukon section of the Haines Road, and the Alaska Boundary section of the main highway. Returning to Whitehorse the party travelled by boat to Dawson where it was able to arrange extensive field work by motor and team as far east as the Gravel Lake area. On the return to Whitehorse by air the party touched at both McQuesten and Mayo and flew over the McArthur Range.

### Description of the Region

A brief consideration of the topographic, climatic, and vegetational characteristics of the region is necessary to give the setting. It is realized that the topography, geology, and vegetation are all receiving or have received study from scientists, versed in these particular fields, some of whom participated in the recent surveys and will report or have already reported in detail. The writer's chief concern with mountains, forests, rivers, and lakes is in their effect on the numbers and distribution of wildlife, and whether or not they possess scenic or recreational values which make it necessary to consider their possibilities as national parks or special reserves, and likewise make necessary an assessment of the wildlife from the same point of view.

The whole North Pacific area in the Yukon and northern British Columbia is predominantly mountainous. There is a section around Fort Nelson that lies in the Mackenzie Lowlands and

conditions characteristic of the Mackenzie Lowlands extend up the Liard River. Luxuriant forest growth may be particularly mentioned in this connection. There is also in British Columbia a considerable extent of foothills. The mountains are by no means a continuous system. On the west there are the Coast Mountains extending west to the Chilkat Pass and the region immediately west of Whitehorse. The St. Elias Mountains, containing the highest peaks in Canada, are an entirely separate entity, but replace the Coast Mountains on the northwestward and are separated from them by a narrow gap drained by the branches of the Alsek River. On the east are the Rockies, through which a channel has been cut by the Peace River. The Rockies, in the strict sense of the term, disappear at the Liard River. North of the river their place is taken by the Mackenzie Mountains, once thought to be a continuation of the Rockies. Geologically, they are almost unknown, but they are as rugged as the Rockies and by their position have a similar climatic effect. The Mackenzie Mountains dwindle away between the Yukon and Porcupine Rivers. The gap between the Mackenzie Mountains and the Rockies is wide enough to have a profound influence on zoogeography.

Southwest of the Mackenzie Mountains is the Pelly Range. Southwest of this again, across the upper Liard, is the Cassiar Range. These interior ranges are not so rugged as those of the periphery. Between the Cassiar Mountains and the Coast Range the country is quite broken but there are wide valleys and a series of very large lakes. West of the Pelly Range is the Yukon Valley. The immediate Yukon drainage area, constituting the region drained by the smaller tributaries and the lower reaches of the principal tributaries, is a greatly eroded plateau. There are wide valleys, lakes of fair size, and some of the residual mountain groups form minor ranges of some importance. Taken all in all it will be seen that especially where the highway traverses it, Yukon Territory is mountainous. In few places is it possible to get completely away from mountains.

The climate is comparatively cold over the whole region, being, naturally, most moderate in the lowlands and most severe in highlands. There is a north-south gradient reflected to a certain extent in the altitude of timber-line but it is of much less importance than might be expected. The isothermal lines in western North America run sharply north-westerly. In the valleys short of actual Arctic conditions the frost-free period is at least long enough to permit gardening.

Rainfall is light. The moisture laden winds from the Pacific are chilled by the Coast and St. Elias Ranges and lose most of their moisture content. The region immediately east, or northeast, of these ranges is very dry. Carcross and Telegraph Creek are settlements in this dry belt. Conditions near the St. Elias Range are dry, but are complicated by the Alsek gap. The Champagne area is very dry. Eastward moisture increases, and the interior ranges do not seem to have a significant dry east side. There are dry slopes, here and there among them. At the same time they are not so wet but that species like the mountain sheep, with a preference for dry areas, may find range here and there throughout. The same is true of the west slope of the Mackenzie Mountains and apparently also of the west slope of the northern Rockies. These mountains constitute, however, a second moisture barrier, and dry conditions are found on their east slopes. This is particularly noticeable in travelling east on the highway from Trout Creek and Muncho Lake to the valley of Toad River and its tributaries. The Toad Valley is dry and obviously furnishes excellent winter range for big game.

The vegetation of the entire area is that of the northern coniferous forest, with local patches of grassland and transitional poplar forest in the driest areas. In the Peace River area and in the region west of Whitehorse pocketed by the Coast Range, St. Elias Range, and some of the residual Yukon mountains, the grassland is quite extensive. The tundra formation is found on mountain peaks everywhere and a considerable area in the St. Elias Range lies above the limits of vegetation - a world of snow and ice.

The predominant tree species are white spruce, lodgepole pine, alpine fir, and balsam and aspen poplars. White spruce characteristically occupies the best sites and exhibits the best growth. Its stands make up most of the commercial timber of the region. Lodgepole pine stands are widespread and in some places predominate. Poplars are chiefly found at lower levels and in dry regions. Poplars, white spruce, and lodgepole pine exhibit phenomenal growth in the Liard Valley. Tamarack is very locally distributed and is not seen in the highway area west of the eastern limit of the granites of the Cassiar Range. Black spruce is likewise local in distribution. Alpine fir is found generally at high altitudes and forms extensive stands in suitable places. Lodgepole pine stands disappear at the level of the Pelly River but individual trees occur as far north as Flat Creek. The cedars, firs, etc., of central British Columbia drop out well south of this region and the Alaskan coastal forest penetrates into Canada only in the Klehini Valley. A distributional anomaly is found in the St. Elias Range, where, on the Canadian side, only white spruce and the two species of poplar are found, with black spruce just touching the northeastern border. It is especially interesting to note that lodgepole pine, so abundant at Whitehorse and Carcross, does not cross the parkland to the west. White spruce does make this crossing, in the valleys of the Takhini and Dezadeash Rivers. One notes as a possible zoogeographical barrier the obvious existence in recent times of large lakes across the front of the St. Elias Range, formed by the damming of the Alsek River by glaciers. Another interesting feature of the Yukon landscape is a bed of quite recent volcanic ash extending from the Mount Natazhat region, where Hayes (1892) thought it originated, to an undetermined distance east of the Lewes River. Along the highway it ends abruptly at White River.

### History of the Region

The region of northern British Columbia and the Yukon first became known to fur traders working westward from the Athabaska-Mackenzie system, into which much of it drains through the Liard. Alexander Mackenzie explored the Peace River in 1792; his map shows that posts had been established close to the present British Columbia boundary before his visit. He continued next year to the Pacific. The Peace River basin was thenceforward a well-travelled route, and was used by the North West and Hudson's Bay Companies to service trading posts west of the Rockies in a region that they called New Caledonia. The North West Company also used the Liard and Fort Nelson Rivers at an early date; the Hudson's Bay Company had no posts in these remote areas until after the union, Fort Halkett, on Smith River being established in the first decade. In 1840 Robert Campbell made his way into what is now Yukon Territory, previously touched only by the explorations of Franklin on the Arctic Coast and Bell on the Peel River. Campbell discovered Frances Lake and the Pelly River in 1840. In the following year he went down the Pelly to the Yukon. In 1848 Fort Selkirk was founded, only to

be looted by Chilkat Indians in 1852. The Hudson's Bay Company then abandoned its establishments in the Yukon. In 1875 Fort Halkett was abandoned, after trading had started on the Stikine River.

The next event in the history of the region was the advent of prospectors. After the impetus of the gold rush in the Cariboo and Omineca regions had slackened it was only natural that prospectors should go farther afield, and the Cassiar was the next gold field to develop. Curiously enough although gold had been washed on the Stikine before 1872, the real discovery was made by men who came from the Mackenzie. In 1875 the whole upper Liard basin was being prospected and there were 1,100 white miners in the country. The next move in the mining industry was towards the Yukon. Another party of prospectors working from the Mackenzie had reached the Yukon in 1873; trading on the upper Yukon recommenced about the same time and the number of prospectors gradually increased. The first prospectors, Harper, McQuesten, Mayo, and others, went into trading, but in 1882 a party of miners came over the Chilkoot Pass. There were quite likely unrecorded travellers directly from the Cassiar. Discovery of gold on the Fortymile in 1886, gave the population a big boost, and the Klondike discovery of 1897 brought men into the country from the four corners of the world. For about ten years the Yukon was a busy place, but the excitement died down and the population dwindled until 1942 when the Alaska Military Highway brought a return of boom days.

In the years after the Cassiar and Klondike gold rushes the population of northern British Columbia and Yukon Territory dwindled but, in spite of this, knowledge of the geography and resources of the country increased steadily. Government surveys, inaugurated by George M. Dawson in 1887, have contributed largely. Communications have also improved steadily, especially since the advent of aerial transportation, so that for a number of years the remotest areas have been reached by trappers, miners, and sportsmen with ease. These are all events that form part of the history of wildlife conservation in the region. Another factor was the establishing of police service in 1894 on the Yukon River. This was gradually improved and involved enforcement of game laws. In course of time the administration of the British Columbia game laws penetrated to the remotest corners. The most important development there was the registration of trap-lines which was nearing completion in the northern area in 1932. (Van Dyk 1933).

### Native Inhabitants

The natives of the region are all of Athapaskan stock with the exception of the Tlingits of Teslin and Carcross and the mixed Stick Indians of southern Yukon.

In the Peace River area are the Beavers whom Mackenzie (1801) shows to have lived once farther east. North through the mountains live the related Sikanni whose headquarters were in the Liard Valley. The Dease Lake area is the home of the Tahltans and the upper Liard of the Kaska. All these people are hunters, living in a good game country, rich in furs. Across southern Yukon lived the Tutchone Nahannis (Osgood 1936). Their headquarters seems to be near the Mackenzie Mountains, but they extend westward; and the "Copper" (White River) Indians whom the party met at Kluane Lake speak a dialect that would be understood perfectly on Great Slave Lake. On the lower Yukon and Porcupine Rivers we find other Athapaskan groups, including the Kutchin or Loucheux and the Tanana.

Southwestern Yukon is occupied by people of Tlingit and mixed Tlingit speech. The Tlingit Indians are the predominant race of the Alaska Panhandle and have a typical coastal salmon culture. Only in Yukon do they penetrate inland. The Teslin and Carcross areas are occupied by Taku Tlingit who are fairly recent immigrants from Juneau. There are two totems represented, namely, Wolf and Crow, and these are also the totems of all the Tlingit and mixed Tlingit people in Yukon. The Tatshenshini River area of British Columbia used to be inhabited by Chilkat Tlingit, but they have been absorbed by the mixed Stick Indians of the Champagne-Klukshu settlement and there are now no dwellings below Dalton Post. Even at Dalton Post the old village of Utsikatan (Wesketahin on maps) is unoccupied, though the salmon fishery of Village Creek and Village Lake is used by the people of Dalton Post.

Further inland are Indians whose speech and organization is basically Tlingit, but contains many words and elements of inland origin. At the time when John Dalton was exploring the country (Glave 1892, Ogilvie 1897) they had settlements at Aishihik and Hootchi Lakes, but it is assumed that the latter or both groups are merged in the present Champagne settlement. In the old days they hunted moose, and other game north of the Takhini-Dezadeash parkland as far as the Lewes River. They served as intermediaries in the fur trade between the Athapaskan people beyond them and the Chilkats whom they met every year near the present site at Dalton Post. They also had, and still have, the use of Unahini Creek for their salmon fishery and were largely dependent on dried fish for their food supply. Their country was only fair as game country. On occasion they may have hunted sheep as far as Kluane Lake but such excursions involved the risk of encounters with the "Copper" Indians. Serious warlike adventures to the north involved the participation of the Chilkats, and in 1898 the flag of the Fort Selkirk post, taken in 1852, was still in possession of the Chilkat Chief at Haines (Jarvis 1899). The non-Tlingit words used at Klukshu as heard by the writer seem not to be derived from the eastern Athapaskan people now bordering them on the north. An example of speech mixture is the name of the grizzly bear. The few remaining Chilkats at Klukshu insist that it should be called "hoots", the Tlingit name, but the common name is "shr zhu", meaning "big bear". Jarvis (1899) gives 150 as the number of Indians at Dalton Post in 1898. It is impossible to say just what settlements were involved. The present Klukshu-Champagne-Dalton Post group numbers less than 100. They look not unlike Eskimos, and have a similar straightforward and outspoken manner. They also resemble Eskimos in their readiness to acquire and operate mechanical equipment. Along the highway they are now completely motorized and some of them are able to operate bulldozers and other complicated machines. They are adept at repairs.

Settlements on the Lewes River from Whitehorse to Carmacks are likewise mixed Tlingit. The small group at Tagish is said locally to be still different but the nature and extent of their variance is not known to me.

At one time the mixed Indians served as intermediaries in trade between the Athapaskan tribes and the Chilkats. To the latter they were subservient for the most part, but there are accounts of lively encounters in the period of white exploration. The Stick Indians once found a cow moose and calf on an island in Dezadeash Lake. The animals were left as a living food reserve to be slaughtered when needed, but some visiting Chilkat traders heard of them and killed them, precipitating a fatal encounter.



Of the Athapaskan group the "Copper" Indians of White River are the most interesting. They ranged the White River and the Kluane River to their sources, down the White to its mouth and up the Lewes to Carmacks. They were, and are, a meat-eating group, with all the true mountaineer's disdain for fish. They had fences and snares for moose, quite elaborate moose drives, and they were skilled at cornering mountain sheep in coulees and on cut-banks. In 1898 (Jarvis 1899) they were still using bows and copper-tipped arrows and in 1891 (Hayes 1892) some had never seen a white man. The native copper of the White River was widely used. Their bearing excited the admiration of those who first met them (Jarvis 1899). Parts at least of their hunting technique were used by the Stick Indians (Auer 1917, "caribou" (moose) fences at Marshall Creek). One of the White River group, Jimmy Joe of Kluane Lake, was the party's guide to the upper Donjek and White River area. His father, Copper Joe, who died in 1943, was a grown man when the change from bows to guns was completed, and before his death he often made copper knives for the tourist trade. Jimmy learned English and has demonstrated his ability to use mechanical equipment and get along in a progressive environment.

Species of Mammals and Birds Observed.

The list following comprises actual observations made during the field reconnaissance, and additional information gathered in the field. There are several excellent north-western faunal studies already available. These are the reports of Rand (1944) on the southern portion of the Alaska Military Highway, Cowan (1939) on the Peace River Block, Swarth (1926, 1936) on the Atlin area, Sheldon (1932) on the Mammals of the Northern Rockies and for the Yukon we have Osgood's two reports (Osgood 1909 and Osgood and Bishop 1900). For comparison we also have excellent reports for regions adjoining the Canadian North Pacific area, for the west side of the St. Elias Range (Laing, Taverner, and Anderson, 1927), Mount McKinley National Park (Dixon 1938), the Athabaska-Mackenzie area (Preble 1908) and the Stikine River area (Swarth 1922). A great many formal notes are found in literature consulted in preparing this report, and titles containing useful reference are listed later. The information from these is not included in this list. The nomenclature here used is binomial; collections were limited and have still to be examined. It seemed that time was best spent in the field finding what was present and results were mostly notes. Field information on certain mammals is hard to get in summer and original material gathered at this season must consist largely of reports from natives, trappers, prospectors, and others. In 1944 very few observations were made along the Alaska Military Highway in British Columbia.

Birds

COMMON LOON Gavia immer - The common loon was found on all suitable bodies of water throughout the region.

ARCTIC LOON Gavia arctica - Seen at Burwash Landing, Y.T., where there was a pair in a small lake at the foot of the mountains, July 3, 1943, and on the Lewes and Yukon Rivers where it was abundant from Lake Labarge to Dawson, August 26-7, 1943.

RED-THROATED LOON Gavia stellata - Several were seen on the lower Lewes River, August 27, 1943, and August 26, 1944, and two were seen on July 25, 1944, at mile 84 on the Haines Road, B.C., north of Glacier Camp.



HORNED GREBE Colymbus auritus - A pair was seen on a small lake near Burwash Landing, Y.T., July 3, 1943, and T.M. Shortt observed this species on a pond near Dezadeash Lake, Y.T., August 12, 1944.

PIED-BILLED GREBE Podilymbus podiceps - Observed by T.M. Shortt on a pond near Dezadeash Lake, Y.T., August 12, 1944.

SWAN Cygnus sp. - At Burwash Landing the party was informed that swans commonly alight on Kluane Lake in migration. These would probably be whistling swans, Cygnus columbianus. The party was also told that swans are occasionally found in summer on small lakes in southwestern Yukon. Such reports might refer to the trumpeter swan, Cygnus buccinator. One lake on the highway in northern British Columbia, on Swift River, is called Swan Lake. Information on swans, if any, in this area could not be obtained.

CANADA GOOSE Branta canadensis - Canada geese are reported throughout the region but the writer's only observations were on the Lewes, Yukon and White Rivers, August 26-29, 1943, and August 15-27, 1944, where flocks were moving about freely and in some numbers. The call notes of these geese were entirely different from those of any Canada geese observed by the writer in other localities. They sounded more like brant.

MALLARD DUCK Anas platyrhynchos - The mallard was found to be in suitable areas throughout the region, chiefly at lower altitudes. Young were seen at Burwash Landing, Y.T., July 3, 1943.

BALDPATE Mareca americana - Widely distributed throughout; observations being scattered from Dawson, Y.T., to Peace River, B.C.

PINTAIL Dafila acuta - Squanga Lake, Y.T., August 5-7, 1943; Snag, Y.T., August 14-15, 1944, and Lewes River, Y.T., August 26, 1944, probably much more widely distributed than this paucity of records would indicate.

GREEN-WINGED TEAL Nettion carolinense - Found fairly commonly in most areas visited. Broods of young were observed at Teepee Lake, Y.T., July 16, 1943, Koidern Creek, Y.T., July 26, 1944, Dezadeash Lake, Y.T., August 10, 1944, and Mile 84, Haines Road, B.C., July 23, 1944.

GREATER SCAUP DUCK Nyroca marila - A number of scaups were seen during both summers. Specific identification was possible only on a few occasions, Burwash Landing, Y.T., July 3, 1943, Teepee Lake, Y.T., July 9, 1943, and Mile 84 Haines Road, B.C., July 19-20, 1944, the birds being all the present species. At the last-mentioned locality several broods of young were seen.

BARROW'S GOLDEN-EYE Glaucionetta islandica - Golden-eyes were seen at a number of places. Specific identification was made in one case only, a female with a brood of seven young, at Burwash Landing, Y.T., July 3, 1943, when the even-coloured bill of the present species was noted.

BUFFLE HEAD Charitonetta albeola - Burwash Landing, Y.T., July 2, 1943, (female with 7 young) July 3, 1943, (female with 2 young) and July 5, 1944, (2 broods of young); Squanga Lake, Y.T., August 7 (female with 6 young); probably a well distributed breeding species in Yukon Territory.

WHITE-WINGED SCOTER Melanitta deglandi - A flock, presumably including young of the year, was observed at Squanga Lake, Y.T., August 7-10, 1943.

SURF SCOTER Melanitta perspicillata - A flock was seen near Selkirk on August 26, 1944.

COMMON MERGANSER Mergus merganser - A flock including a female and five young was seen on the Rancheria River near the falls, August 19, 1943. Mergansers seen August 25, 1944, on the Lewes River were also identified as the present species.

AMERICAN GOSHAWK Astur atricapillus - One was seen on the highway in the Teslin, Y.T., area September 1, 1943. In 1944 goshawks were common in the Dezadeash Lake, Snag, and Dawson areas of Yukon Territory and were seen also on the Haines Road in British Columbia.

SHARP-SHINNED HAWK Accipiter velox - One seen at Squanga Lake, Y.T., August 5, 1943. In 1944 a number of sharp-shins were observed at Dezadeash Lake, Snag and Hunker, Y.T., and T.M. Shortt saw one at Mile 84, Haines Road, B.C.

RED-TAILED HAWK Buteo borealis - Red-tails are well distributed throughout the region visited. Birds observed in southwestern Yukon included black individuals as well as typical Harlan's hawks. One was seen (Wolverine Creek) being dogged by a sparrow hawk and a short-billed gull.

SWAINSON'S HAWK Buteo swainsoni - One was observed at Muskwa, B.C., September 8, 1943. Records for 1944 include several Swainson's hawks near Whitehorse, Y.T., and one specimen in the Dawson area, September 5.

COMMON ROUGH-LEGGED HAWK Buteo lagopus - Buteos with white tail bands were seen in 1943 at Minaker River, B.C., on June 20, Liard River, B.C., June 23, and upper Liard River, B.C., August 22, but this character also occurs in some plumages of the red-tailed hawk, so that identification remains doubtful. Undoubted rough-legs were seen along the Lewes and Yukon Rivers, August 27-28, 1943; Teslin area, Y.T., September 1, 1943, and Mendenhall Landing, Y.T., July 29, 1944.

GOLDEN EAGLE Aquila chrysaetos - Golden eagles were not encountered by us until we reached regions where ground squirrels were abundant. In all such areas, both in Yukon Territory and on the Haines Road in British Columbia, golden eagles were seen regularly.

BALD EAGLE Haliaeetus leucocephalus - Well distributed in parts of Yukon Territory visited, and common along the Tatshenshini River and its tributaries in the Yukon and British Columbia.

MARSH HAWK Circus hudsonius - Widely distributed in parts of British Columbia and Yukon Territory visited. J. Smart found a nest at Burwash Landing, Y.T., July 2, 1943.

OSPREY Pandion haliaeetus - Seen at a number of places in Yukon Territory in both 1943 and 1944.

PEREGRINE FALCON Falco peregrinus - Seen along the Lewes River, August 26-27, 1943, and at Dawson, September 4, 1944.

PIGEON HAWK Falco columbarius - The pigeon hawk is generally distributed over the area visited.

AMERICAN SPARROW HAWK Falco sparverius - The sparrow hawk is abundant throughout the area visited.

DUSKY GROUSE Dendragapus obscurus - Seen only at Rancheria River, Y.T., August 14, 1943, but reported common in southern Yukon except in the St. Elias Range, where it is lacking. Its range is said to commence easterly with the first lodgepole pine stands, 27 miles west of Whitehorse.

SPRUCE GROUSE Canachites canadensis - Generally distributed and abundant. All grouse fluctuate in numbers from year to year, and this species is no exception, but in 1943-44 the party was able to find some wherever it went.

RUFFED GROUSE Bonasa umbellus - Ruffed grouse were found in British Columbia as far north as Liard River. In southwestern Yukon Territory only one individual was seen, at Dezadeash River, July 24-25, 1943. This bird was very dusky in plumage. Ruffed grouse of grey plumage were observed in the Snag and Dawson City areas in 1944. According to local reports they had been abundant in 1943.

WILLOW PTARMIGAN Lagopus lagopus - The party found this species abundant in the St. Elias Range in Yukon Territory in 1943 and extraordinarily abundant in the alpine area of the Haines Road, British Columbia, in July, 1944.

ROCK PTARMIGAN Lagopus rupestris - Seen in the St. Elias Range at Teepee Lake, Y.T., July 15, 1943, and near Mile 84, Haines Road, British Columbia, (by T.M. Shortt) on July 12, 1944.

WHITE-TAILED PTARMIGAN Lagopus leucurus - Seen in 1943 at Swift River, Y.T., June 26; Teepee Lake, Y.T., July 15, and in 1944 (by T.M. Shortt) near Mile 84, Haines Road, British Columbia, July 16.

SHARP-TAILED GROUSE Pedioecetes phasianellus - There are records and reports of sharp-tailed grouse throughout southwestern Yukon, but the party saw it only in the Dawson area in 1944. It had been abundant there in 1943, and in the Snag area as well. Curiously enough it is far more common in both these places than in the semi-prairie west of Whitehorse, where no recent records were obtained.

SANDHILL CRANE Grus canadensis - Cranes migrate through Yukon Territory in numbers. The party was fortunate enough to see this migration in the Dawson area, September 2-5, 1944.

SEMIPALMATED PLOVER Charadrius semipalmatus - Observed in 1943 at Burwash Landing, July 2-6, and on the Donjek River flats, July 13 and 18. It probably nests in the Kluane-St. Elias area. In 1944 the party observed a number in the alpine section of the Haines Road, British Columbia, July 15-23, including downy young at the Stonehouse River, July 18.

WILSON'S SNIPE Capella delicata - Recorded during 1943 at Burwash Landing, Y.T., July 2, and Squanga Lake, Y.T., August 7. In 1944 the party saw it again at Burwash Landing (July 5) and it was fairly common in the alpine area of the Haines Road, British Columbia, in July. The party also saw Wilson's Snipe in the Dawson, Y.T., area, August 31-September 7.

UPLAND PLOVER Bartramia longicauda - One of the surprises of the 1943 trip was the discovery of a large and presumably breeding population of this species distributed largely in spruce muskegs near timber-line throughout the St. Elias Range from the Dezadeash Mountains to near the White River. They were observed there from

July 2 to July 27. It is doubtful if this breeding range actually touches the highway, but it can be reached in several places by a comparatively short walk. The writer has seen no population of remotely comparable size in Eastern Canada. The curious thing is that no upland plovers were found in the extensive prairie parklands in the Takhini-Dezadeash Valley; they were in wet, open, spruce muskegs. One breeding ground at Burwash Landing was revisited on July 5, 1944, and the birds found to be more numerous than the year before. A young bird (migrant) was taken at Dezadeash Lake, August 12, 1944.

SPOTTED SANDPIPER Actitis macularia - Observed continually throughout the region visited. A recital of localities would be tedious. At Squanga Lake, Y.T., June 27, 1943, two nests, each containing four eggs, were found, and a nest with four eggs was found at Klukshu, Y.T., on July 8, 1944.

SOLITARY SANDPIPER Tringa solitaria - Widely distributed, found in most places visited in both British Columbia and Yukon Territory. It was, however, absent from the highest parts of the St. Elias Range and Haines Road.

WANDERING TATTLER Heteroscelus incanus - On July 11, 1944, T.M. Shortt discovered a brood of this species with both parents at a tarn near Mile 84, Haines Road, British Columbia. He was able to collect two downy young birds.

LESSER YELLOW LEGS Totanus flavipes - Undoubtedly widely distributed, although the party failed to see it at any of the stops along the Alaska Military Highway in British Columbia. It was abundant on the Haines Road (where young were seen) and in southern Yukon Territory. Downy young were seen on the Rancheria River, Y.T., June 25, 1943.

LEAST SANDPIPER Pisobia minutilla - Seen in 1943 at Burwash Landing, Y.T., July 4; Dezadeash River, Y.T., July 29-30; Squanga Lake, Y.T., August 7-8. In 1944 it was observed on the Haines Road in July, in both British Columbia and Yukon Territory, and its behaviour suggested breeding.

DOWITCHER Limnodromus griseus - Several dowitchers were discovered by T.M. Shortt at Mile 84, Haines Road, British Columbia, July 19, 1944, and some were observed by the writer on the following day.

SEMIPALMATED SANDPIPER Ereunetes pusillus - Burwash Landing, Y.T., July 4, 1943. It is probably a common migrant.

NORTHERN PHALAROPE Lobipes lobatus - In 1943 the party found this species at Squanga Lake, Y.T., June 27, and Burwash Landing, Y.T., July 2, (young). In 1944 it was found breeding in abundance in the alpine area of the Haines Road, British Columbia, (downy young taken by T.M. Shortt), and it was seen again at Burwash Landing, July 5.

HERRING GULL Larus argentatus - Common and well distributed in Yukon Territory and on the Haines Road in British Columbia. At Whitehorse on July 2, 1944, a large gull without any black on its wings was observed but not identified.

SHORT-BILLED GULL Larus canus - Common in Yukon Territory and observed in British Columbia at Muncho Lake and on the Haines Road. Downy young were observed in the latter area, July 19-20, 1944.

BONAPARTE'S GULL Larus philadelphia - Bonaparte's gulls were observed in a number of places along the Alaska Military Highway from Squanga Lake westward, and on the Haines Road south to Glacier Camp, British Columbia. Young were seen at Dezadeash Lake, Y.T., and on the Haines Road in British Columbia.

ARCTIC TERN Sterna paradisaea - Observations of this species were distributed over the same area as observations of Bonaparte's gull, listed above.

GREAT HORNED OWL Bubo virginianus - Great horned owls were recorded throughout the regions visited.

HAWK OWL Surnia ulia - Observed in 1943 at Donjek River, Y.T., July 13 (young); Wolverine Creek, Y.T., July 14. In 1944 a brood was observed by T.M. Shortt at Burwash Landing, July 5, and others were found at Snag, Y.T., August 15-16, and in the Dawson area early in September.

GREAT GRAY OWL Scotiaptex nebulosa - One was collected at Rousseau's Roadhouse, Flat Creek, east of Dawson, Y.T., by T.M. Shortt, on September 2, 1944.

SHORT-EARED OWL Asio flammeus - This species was abundant around Kluane Lake in July, 1943, there being a plague of mice at the time, and it was seen at other places in the southwest corner of Yukon Territory. In 1944 it was observed in the alpine area along the Haines Road in British Columbia.

NIGHTHAWK Chordeiles minor - The party observed this species along the entire length of the highway in June. It was abundant in the Haines Road and St. Elias area in July and at Whitehorse and Squanga Lake in August. After early August it was not noted until August 21, 1943, when a large number were seen at once, migrating, at the upper Liard Crossing, Y.T. Others were seen up to August 27 (Lewes River).

VAUX'S SWIFT Chaetura vauxi - Observed (and collected by T.M. Shortt) near the Alaska boundary on the Haines Road, British Columbia, on July 22, 1944. A number of individuals were flying above the Sitka spruce and western hemlock forest.

RUFOUS HUMMINGBIRD Selasphorus rufus - This species was discovered near Mile 84 on the Haines Road in British Columbia, July 17, 1944, by T.M. Shortt and later (July 20) observed by the writer.

BELTED KINGFISHER Megaceryle alcyon - Generally distributed throughout the regions visited.

YELLOW-SHAFTED FLICKER Colaptes auratus - Seen in all areas visited, and particularly conspicuous in southwestern Yukon in July. After August 1, it was seen much less often.

YELLOW-BELLIED SAPSUCKER Sphyrapicus varius - Observed in 1943 only, at Fort Nelson, B.C., June 20, (nest), and June 21; Liard Hot Springs-Fort Halkett, B.C., June 23-24.

HAIRY WOODPECKER Dryobates villosus - Observed in British Columbia only at Minaker River, June 18-20, 1943, (nest with young 5 feet from ground in balsam poplar; entrance hole 18 inches from that of a mountain bluebird in the same tree). In Yukon Territory the party found it generally distributed, although only locally abundant, as at Snag, August 15-20, 1944.

DOWNY WOODPECKER Dryobates pubescens - A downy woodpecker was seen by T.M. Shortt at Dezadeash Lake on August 6, 1944, and on August 12 one was collected. The species was previously unrecorded in Yukon Territory.

ARCTIC THREE-TOED WOODPECKER Picoides arcticus - Observed only at Burwash Landing, Y.T., July 3, 1943, Dezadeash Lake, Y.T., July 29 - August 13, 1944, (abundant), and Snag, Y.T., August 18-19, 1944.

AMERICAN THREE-TOED WOODPECKER Picoides tridactylus - Well distributed in the entire region visited, except, of course, in untimbered alpine areas. The spruce forest in the Dezadeash Lake area was suffering severely from a bark beetle infestation, so that the majority of the trees were either dead or dying. There this and the preceding species were in great abundance.

EASTERN KINGBIRD Tyrannus tyrannus - This species was not observed north of the Peace River farm belt in 1943, but in 1944 four individuals were seen on June 29 towards Muskwa, B.C., the northernmost being at Mile 222. No more were seen until the party had passed Whitehorse, when, on July 4, an eastern kingbird was clearly seen near Champagne by T.M. Shortt and the writer. It was not collected, but was identified beyond question and is new to the recorded avifauna of Yukon Territory.

EASTERN PHOEBE Sayornis phoebe - Observed at Fort Nelson, B.C., June 21, 1943.

SAY'S PHOEBE Sayornis saya - Observed in 1943 only at Dawson, Y.T., August 28. In 1944 it was observed throughout the Kluane and Haines Road areas in the Yukon and British Columbia from July 4 to August 20.

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TRAILL'S FLYCATCHER Empidonax trailli - Observed in 1943 at Minaker River, B.C., June 19-20, Fort Nelson, B.C., June 20-21, Gardner Creek, B.C., June 22, Burwash Landing, Y.T., July 1-8, Dezadeash River, Y.T., July 23-29. In 1944 it was seen again at Dezadeash River.

LEAST FLYCATCHER Empidonax minimus - Observed in 1943 at Minaker River, B.C., June 19-20, Fort Nelson, B.C., June 20-21, Gardner Creek, B.C., June 22, Muncho Lake, B.C., June 23, Liard River area, B.C., June 23-24, and Watson Lake, Y.T., June 25. These records indicate a southeastern distribution, and that for Watson Lake was new to Yukon Territory (Clarke, in press).

HAMMOND'S FLYCATCHER Empidonax hammondi - On the party's visits of July 15 and July 23, 1944, to the coastal forest section of the Haines Road, British Columbia, near the Alaska boundary, this species was found to be common. Specimens were taken by T.M. Shortt.

WRIGHT'S FLYCATCHER Empidonax wrighti - Observed at Dezadeash Lake, Y.T., where it was taken on July 31, 1944. The species was previously unknown in Yukon Territory.

RICHARDSON'S PEWEE Myiochanes richardsoni - Observed all along the Alaska Military Highway and Haines Road in both British Columbia and the Yukon, except for alpine areas. The party saw none at Snag or Dawson, Y.T.

OLIVE-SIDED FLYCATCHER Nuttallornis mesoleucus - Found along the Alaska Military Highway and Haines Road in Yukon and at Fort Nelson, B.C. It was absent from higher elevations in southern Yukon.

HORNED LARK Otocoris alpestris - Swift River, Y.T., June 26, 1943; Burwash Landing, Y.T., July 3, 1943; Kluane, Y.T., July 8, 1944, and Rainy Hollow, B.C., July 15, 1944, the last two records being by T.M. Shortt. These birds were all above timber-line. Horned lark migrants were common along the highway, September 10-12, 1944.

VIOLET-GREEN SWALLOW Tachycineta thalassima - Observed in 1943 at Whitehorse, Y.T., June 28-30, August 2; Burwash Landing, Y.T., July 4-7, July 18-19, July 26. In addition to repeat observations at these stations, this species was observed in 1944 at Dezadeash Lake, August 1-6.

TREE SWALLOW Iridoprocne bicolor - Observations of tree swallows were made along the entire length of the highway, except for the Rocky Mountain area, where the party failed to note them.

BANK SWALLOW Riparia riparia - Found in suitable places throughout the region visited.

BARN SWALLOW Hirundo erythrogaster - Seen at Teslin, Y.T., June 27, 1943, and at Whitehorse, Y.T., July 28, 1944.

CLIFF SWALLOW Petrochelidon albifrons - Observed commonly in southwestern Yukon, from Dezadeash Lake to Teslin and Carcross.

CANADA JAY Perisoreus canadensis - Abundant and universally distributed in regions visited.

STELLER'S JAY Cyanocitta stelleri - Observed in the Klehini River Valley, British Columbia, July 15, 1944, near the Alaska boundary on the Haines Road.

MAGPIE Pica pica - Magpies are found throughout southwestern Yukon and were often seen in the highway area. At Wade Creek the party saw a pair pursuing a robin fledgling and pecking at its bulging abdomen (July 11, 1943). Jimmy Joe said he had seen this three times before.

RAVEN Corvus corax - Ravens are common throughout the whole region.

AMERICAN CROW Corvus brachyrhynchos - In 1943 the party saw no crows on the highway, but in 1944 they were observed as far north as Minaker River (June 29). On August 4, 1944, at Dezadeash Lake, Y.T., T.M. Shortt collected a specimen of the small fish crow of the Pacific Coast, which may have followed the salmon up to Klukshu and thereby strayed into Yukon Territory, where the species was previously unrecorded.

CLARK'S NUTCRACKER Nucifraga columbiana - One was collected on the Rancheria River, Y.T., August 21, 1943.

BLACK-CAPPED CHICKADEE Penthestes atricapillus - Generally distributed throughout the area visited.

GAMBEL'S CHICKADEE Penthestes gambeli - One was taken at Dezadeash Lake, Y.T., August 2, 1944, by T.M. Shortt. The species was previously unrecorded in Yukon Territory.

BROWN-HEADED CHICKADEE Penthestes hudsonicus - Common in all areas visited.

CHESTNUT-BACKED CHICKADEE Penthestes rufescens - Common in the ten-mile strip of Sitka spruce and western hemlock in the Klehini Valley, B.C., near the Alaska border on the Haines Road.



RED-BREASTED NUTHATCH Sitta canadensis - Seen in 1943 at Minaker River, B.C., June 19, Fort Nelson, B.C., June 21, Squanga Lake, Y.T., August 9, Rancheria River, Y.T., August 13-14 and 18, Summit Lake, B.C., September 4, Muskwa, B.C., September 7-9. The party did not note a single nuthatch in 1944.

BROWN CREEPER Certhia familiaris - Common at Dezadeash Lake, Y.T., July 30 - August 12, 1944, where it was first observed by T.M. Shortt. It was previously unrecorded in Yukon Territory.

AMERICAN DIPPER Cinclus mexicanus - Observed on the Haines Road, B.C., near the Alaska boundary, July 23, 1944.

WINTER WREN Nannus hiemalis - One was observed at Fort Nelson, B.C., June 20-21, 1943. It was found to be common, July 15-23, in the coastal forest near the Alaska boundary, along the British Columbia section of the Haines Road.

AMERICAN ROBIN Turdus migratorius - Abundant in all areas visited.

VARIED THRUSH Ixoreus naevius - Observed in 1943 at Liard River, B.C., (Hot Springs and site of Fort Halkett), June 23-24 (abundant) and Muskwa, B.C., September 9. In 1944 it was found at Minaker River, B.C., June 29, (by T.M. Shortt), and was very common, August 15 - September 3, at Snag, Y.T., and in the Klondike area.

HERMIT THRUSH Hylocichla guttata - Common in all areas visited.

OLIVE-BACKED THRUSH Hylocichla ustulata - Common in all timbered areas visited except at Snag and Dawson, Y.T., where the party failed to observe it.

GREY-CHEEKED THRUSH Hylocichla minima - Found at Squanga Lake, Y.T., June 27, 1943, and along the Haines Road from Klukshu, Y.T., southward to Rainy Hollow, B.C., July 8-25, 1944. It is absent from the St. Elias area.

MOUNTAIN BLUEBIRD Sialia currucoides - Observed in British Columbia at Minaker River, B.C., June 19-20 (nest already mentioned in connection with the hairy woodpecker), and in Yukon Territory generally in both years. No bluebirds were seen on the British Columbia section of the Haines Road.

WHEATEAR Oenanthe oenanthe - Found above timber-line at Teepee Lake, Y.T., July 15, 1943, obviously on nesting grounds (2 pairs).

TOWNSEND'S SOLITAIRE Myadestes townsendi - This species was observed by the party in the Cassiar Mountains and Haines Road sections of British Columbia, and in all parts of Yukon Territory visited.

GOLDEN-CROWNED KINGLET Regulus satrapa - Observed in 1943 at Fort Nelson, B.C., June 21; Summit Lake, B.C., September 5; Muskwa, B.C., September 8-9. In 1944 the party saw it in the Klehini River Valley, B.C., July 22, and at Hunker Summit, Y.T. (T.M. Shortt), August 30, (collected). The last mentioned record was the first for Yukon Territory.

RUBY-CROWNED KINGLET Corthylio calendula - Widely distributed in all parts of Yukon Territory visited. Curiously enough the party observed it in British Columbia only in the Klehini Valley on the Haines Road, but no significance should be attached to this circumstance, as no extended stops were made in British Columbia except on the Haines Road.

AMERICAN PIPIT Anthus spinoletta - Observed in 1943 at Swift River, Y.T., June 26, Burwash Landing, Y.T., July 3; Teepee Lake, Y.T., July 15; Rancheria River, Y.T., August 14; and in 1944 in the alpine area of the Haines Road, British Columbia, July 11-20, and Dezadeash Lake, Y.T., July 31 - August 1. All such observations were made above timber-line. At Dezadeash Lake a storm on August 9 brought them to road level and after August 20 they were in evidence all over the region.

BOHEMIAN WAXWING Bombycilla garrula - At Burwash Landing, Y.T., a nest of 3 eggs July 1, 1943, contained 4 eggs July 4, and 3 young July 20, when another nest with 3 young was found nearby. A nest with 4 eggs was collected by T.M. Shortt on August 2, 1944, at Dezadeash Lake, Y.T. In addition to these breeding records the species was observed in all parts of Yukon Territory visited except the Dawson area, and on the Haines Road in British Columbia, July 15-24, 1944.

NORTHERN SHRIKE Lanius borealis - On July 8-9, 1943, two young were seen on the summit between Duke River and Burwash Creek, Y.T.; when the area was revisited on July 19 an adult was seen. Adults and young were seen in 1944 at Mile 84, Haines Road, British Columbia, July 19-26; at Snag, Y.T., August 15-20; and near Granville, Y.T., September 1.

RED-EYED VIREO Vireo olivacea - Observed in 1943 only, at Minaker River, B.C., June 19-20; Fort Nelson, B.C., June 20-21; Gardner Creek, B.C., June 22; Liard River area (Hot Springs, Fort Halkett), B.C., June 23-24.

WARBLING VIREO Vireo gilvus - Observed in 1943 only, at Minaker River, B.C., June 19-20; Fort Nelson, B.C., June 20-21; Liard River area (Hot Springs, Fort Halkett), B.C., June 23-24.

TENNESSEE WARBLER Vermivora peregrina - Abundant all along the Alaska Military Highway until the Kluane region is reached. There it is absent; it is common along the Haines Road, though not in the alpine area or the coastal forest. It was recorded at Snag by T.M. Shortt but the party was evidently too late for it at Dawson.

ORANGE-CROWNED WARBLER Vermivora celata - Recorded in 1943 at Burwash Landing, Y.T., July 1 and 6, Burwash Creek, Y.T., July 9; Lynx Creek, Y.T., July 17; it may or may not be significant that all the above records are in the St. Elias Range area, since the species seems not to be abundant anywhere. It was observed in 1944, by T.M. Shortt, at Snag, Y.T., (specimen August 16).

YELLOW WARBLER Dendroica aestiva - Observed in areas well distributed along the Alaska Military Highway and Haines Road in both the Yukon and British Columbia. However, the party failed to record it in the Kluane region and at Snag and Dawson. At the last two localities the party may have been too late.

MAGNOLIA WARBLER Dendroica magnolia - Observed at Liard Hot Springs, B.C., June 24, 1943.

MYRTLE WARBLER Dendroica coronata - Common throughout the region visited except in the coastal forest of the Klehini River, where none was seen.

TOWNSEND'S WARBLER Dendroica townsendi - One was observed in alpine firs at Swift River, Y.T., June 26, 1943.

BLACK-POLL WARBLER Dendroica striata - This species was common along the Alaska Military Highway and Haines Road, except for the Fort Nelson lowlands of the former and the coastal forest zone of the latter. It was also absent from the Kluane area and the party did not see it at Dawson and Snag. At these two points the party's visits may have been too late in the season.

OVEN-BIRD Seiurus aurocapillus - Seen in 1943 at Fort Nelson, B.C., June 20, and Liard Hot Springs, B.C., June 23.

NORTHERN WATER-THRUSH Seiurus noveboracensis - In 1943 observed at Fort Nelson, B.C., June 20-21; Watson Lake, Y.T., June 25; Squanga Lake, Y.T., June 27, August 8; Dawson, Y.T., August 29; Muskwa, B.C., September 8. In 1944 it was recorded at Snag, Y.T., August 18-19.

MACGILLIVRAY'S WARBLER Oporornis tolmiei - Observed in the coastal forest area near the Alaska boundary on the Klehini River, B.C., July 15-23, 1944.

MARYLAND YELLOW-THROAT Geothlypis trichas - Recorded in 1943, at Squanga Lake, Y.T., June 27, and August 6-10. In 1944 (July 1-2) it was seen again at Squanga Lake.

BLACK-CAPPED WARBLER Wilsonia pusilla - Observed in 1943 at Minaker River, B.C., June 19, (common) and Dawson, Y.T., August 29. In 1944 it was found to be abundant along the Haines Road in both the Yukon and British Columbia in July. It was certainly absent from the Kluane area in the breeding season. At Snag, Y.T., August 16-19, many were passing through.

AMERICAN REDSTART Setophaga ruticilla - Observed in 1943 at Fort Nelson, B.C., June 20-21; Liard River, B.C., (Hot Springs, Fort Halkett), June 23-24.

HOUSE SPARROW Passer domesticus - A few were seen at Fort Nelson, B.C., June 21, 1943.

RED-WINGED BLACKBIRD Agelaius phoeniceus - Observed at Fort Nelson, B.C., June 21, 1943.

RUSTY BLACKBIRD Euphagus carolinus - Except for the British Columbia section of the Haines Road and the Kluane area the rusty blackbird was found throughout the region visited.

COWBIRD Molothrus ater - Observed at Fort Nelson, B.C., June 21, 1943.

WESTERN Tanager Piranga ludoviciana - Observed in 1943 at Fort Nelson, B.C., June 19-20, and Liard River (Hot Springs and Fort Halkett), B.C., June 23-24. In 1944 the species was recorded in Yukon Territory for the first time, when T.M. Shortt collected a specimen at Kluane, July 6.

ROSE-BREASTED GROSBEAK Hedymeles ludovicianus - Observed at Fort Nelson, B.C., June 21, 1943.

COMMON PURPLE FINCH Carpodacus purpureus - Observed in 1943 at Minaker River, B.C., June 19-20; Fort Nelson, B.C., June 20-21; Gardner Creek, B.C., June 22.

COMMON ROSY FINCH Leucosticte tephrocotis - Found at Teepee Lake, Y.T., July 15, 1943, and at Mile 84, Haines Road, British Columbia, (first observed by T.M. Shortt), July 12-16, 1944.

PINE GROSBEAK Pinicola enucleator - Observed, July 22-23, near the Alaska boundary on the Haines Road, B.C. These were the only pine grosbeaks seen in two seasons.

REDPOLLED LINNET Acanthis linaria - Observed in 1943 at Burwash Landing, Y.T., July 3-8 and 19. In 1944 it was common, July 10-20, at Mile 84 on the Haines Road, B.C., and the party saw a number at Dawson, Y.T., September 5-7.

PINE SISKIN Spinus pinus - Observed in 1943 at Liard River, B.C., (Hot Springs, Fort Halkett); June 23-24 and Muskwa, B.C., September 6-8. In 1944, on June 28 and 29, siskins were well distributed on the British Columbia section of the Alaska Military Highway, and the party also recorded them at Klehini River, B.C., July 15, Squanga Lake, Y.T., July 2, Klukshu, Y.T., July 8, and Dezadeash Lake, Y.T., August 11.

RED CROSSBILL Loxia curvirostra - Crossbills were often seen but seldom identified. Of the two species, the present was the less common. In fact the only one identified was collected by T.M. Shortt, July 8, 1944, at Kluane, Y.T., and was the first one recorded for Yukon Territory.

WHITE-WINGED CROSSBILL Loxia leucoptera - This species was recorded as follows: Fort Nelson, B.C., June 21; Burwash Landing, Y.T., July 3, 6; Burwash Creek, Y.T., July 9; Donjek River, Y.T., July 10-11; Dezadeash River, Y.T., July 22; Muskwa, B.C., September 7-9, all in 1943.

SAVANNAH SPARROW Passerculus sandwichensis - Found in all regions visited. A nest with 3 young was found at Burwash Landing, Y.T., July 2, 1943.

SLATE-COLOURED JUNCO Junco hyemalis - Common in every place visited, and throughout the two seasons of field work.

RED-BACKED JUNCO Junco oreganus - Found July 15-23, 1944, in the Klehini River Valley, British Columbia.

TREE SPARROW Spizella arborea - Except in autumn migration, tree sparrows were not observed along the British Columbia portion of the Alaska Military Highway. They were common in all parts of Yukon Territory visited except for Watson Lake and the Cassiar Range, and were nesting along the Haines Road in British Columbia in July, 1944. T.M. Shortt and the writer each discovered nests with eggs at Mile 84 on July 11.

CHIPPING SPARROW Spizella passerina - Common throughout from Dawson Creek, B.C., to Burwash Landing and Snag, Y.T. It was not present in the alpine portion of the Haines Road but was common at Dezadeash Lake.

CLAY-COLOURED SPARROW Spizella pallida - One was seen at Minaker, B.C., June 19-20, 1943. When this locality was revisited on June 29, 1944, a number of individuals were present.

BREWER'S SPARROW Spizella breweri - The characteristic song of this species was heard above timber-line at Teepee Lake, Y.T., on July 15, 1943. In 1944, T.M. Shortt definitely established their occurrence in Yukon Territory when he found a large colony at Kluane, July 8. In the alpine area along the Haines Road, B.C., Brewer's sparrows were abundant.

WHITE-CROWNED SPARROW Zonotrichia leucophrys - Abundant throughout the entire region except in the Fort Nelson and Liard River lowlands, where it was not seen. A nest with 5 eggs was found at Burwash Landing, July 2.

GOLDEN-CROWNED SPARROW Zonotrichia coronata - In 1943 the first record for the Yukon was established at Swift River, June 26, (at timber-line), where this species was common. In 1944 it was found in extraordinary abundance in the alpine area of the Haines Road, B.C., July 9-26.

WHITE-THROATED SPARROW Zonotrichia albicollis - Found all along the Alaska Military Highway as far as Watson Lake, Y.T. The discovery of its presence there constituted a new record for Yukon Territory.

FOX SPARROW Passerella iliaca - Observed in all regions visited except the higher portion of the Rockies and the Kluane area. Its absence from the latter was confirmed over an extended period of observation.

LINCOLN'S SPARROW Melospiza lincolni - Observations of this species were widely distributed over the regions visited, especially in Yukon Territory where it is common.

SWAMP SPARROW Melospiza georgiana - Observed at Minaker River, B.C., June 19-20, 1943.

SONG SPARROW Melospiza melodia - Observed only at Squanga Lake, Y.T., on June 27 and August 4-9, 1943. When it seemed that the last song sparrow had been left behind in the Peace River District of Alberta, it was surprising to find them breeding in the same swale as tree sparrows and northern phalaropes. An adult was taken, and proved very brown, suggesting that this colony had strayed from the Alaska Panhandle. Young were being fed in August. The species was previously unrecorded in Yukon Territory. There were no song sparrows at this locality in 1944.

LAPLAND LONGSPUR Calcarius lapponicus - Observed only in migration after August 29.

SMITH'S LONGSPUR Calcarius pictus - Near Lake Kelsall, B.C., on the Haines Road, on July 17, 1944, a pair of Smith's longspurs was observed. The female was collected and had a large brood patch, suggesting that it had nested locally.

In this list of birds it is expected that useful distributional material will be found. It certainly contains new information for Yukon Territory. A foundation list of birds of proposed national park areas can also be made.

#### Mammals

CINEREOUS SHREW Sorex cinereus - One was taken at Burwash Landing, Y.T., July 2, 1943, (identified by Dr. R.M. Anderson), and a series of 7 was taken August 5-12, 1944, at Dezadeash Lake, Y.T.

DUSKY SHREW Sorex obscurus - One was taken, Rancheria River, Y.T., August 17, 1943 (identified by Dr. R.M. Anderson), and two more, August 5-12, 1944, at Dezadeash Lake, Y.T. One was also taken, July 11, 1944, on the Haines Road (Mile 84), B.C.

PIGMY SHREW Microsorex hoyi - One was taken, August 5, 1944, at Dezadeash Lake, Y.T. The first record for Yukon Territory was made by Rand (1944) at Irons Creek in 1943.

BATS sp. - Bats were seen at Squanga Lake, Y.T., and Rancheria River, Y.T., in August, 1943, but none was captured for specific identification.

BLACK BEAR Euarctos americanus - Black bears were abundant especially at camp garbage dumps, all along the highway and connecting roads. It is doubtful if any of the occasional bears seen along the road were unconnected with such places, except on the Haines Road where bears are generally abundant, perhaps because of the salmon streams. There were also numerous captives, mostly cubs, in 1943. Brown individuals were reported from Liard River Crossing northwestward. The writer was informed by a native that the latter had seen the skin of a "glacier" bear (described as wolf-coloured) at Klukshu, Y.T.

The abundance of bears, especially in 1943, was not confined to highway areas. They were numerous along the Pelly River and in other places back from the road. Years of unusual bear abundance are well known in Canada. It seems evident that the construction of the Alaska Military Highway coincided with one such period. In 1944 bears were common in the Klondike area.

ALASKA BROWN BEAR Ursus sp. - A great deal of confusion exists regarding the specific identity of large bears. Merriam (1918) has a plethora of species of bears from the Alaska Coast and islands, and no less than six species from Yukon Territory.

In the flesh and in the field it is easy to recognize a grizzly bear or any of the colour phases of a black bear and apply a specific name. In the writer's opinion a barren ground bear can likewise be recognized.

On file in the Bureau of Northwest Territories and Yukon Affairs is a photograph of a 10-foot long, 900-pound bear shot near Bear Creek, in the present Kluane Reserve, Y.T., by a German sportsman, Max Hinsche, on May 23, 1934. The animal was considered by those at the scene to be something different from the familiar grizzly bear. The photograph also looks very different to me. It is a photograph of an animal like the Kodiak bears to be seen in zoological gardens. The writer considers this to be a valid record of an Alaskan brown bear in Yukon Territory. The animal must have wandered up the Alsek River from its normal coastal habitat. Such wanderings have not been recorded before, but they are not necessarily unique. Hootchi Jackson informed me that in his youth he saw a bear "as big as a moose" at Dezadeash Lake, and that he had never seen or heard of such a bear before or since. They certainly cannot be considered normal inhabitants of the Yukon.

In its 1944 investigation of the Haines Road the party was able to get much-needed information as to the status of big brown bears in the northwestern corner of British Columbia. The first information was obtained on July 15, when the party made its way to the Alaska boundary on the Haines Road. Below Rainy Hollow, in the shoulder of the road, was an enormous bear track, made during the spring. There were more of them, spread over the whole coast forest zone of the road, representing more than one individual. The following measurements were obtained at one place:

Hind foot - Total length -  $12\frac{1}{2}$  inches  
Claw -  $1\frac{1}{2}$  inches  
Toe (without  
claw) - 2 inches  
Front foot - Width -  $8\frac{1}{2}$  inches

The short claw on such a large foot showed that it was not a grizzly bear. The claw print showed the claw to be hooked. The track was seen by Warden Alex Nelles of Jasper Park and Jack Brewster of Jasper, both of whom are familiar with black and grizzly bears, and they pronounced it unique in their experience. From Dave Hume of Dalton Post, who is familiar with the Tatshenshini River, the party learned that he had seen the big brown bears as far up as the King Salmon River, a tributary some distance below Dalton Post, and on the lower reaches of the river they were probably of regular occurrence. There is no real "coastal forest" at the mouth of the river, because of the steep mountains and glaciers, but the clumps of trees near its mouth are probably Sitka spruce. Here, then, on the Klehini and Tatshenshini Rivers, a small number of Alaska brown bears are at home on Canadian soil.

GRIZZLY BEAR *Ursus horribilis* - In 1943 the party saw one grizzly only; this was at the head of Burwash Creek, Y.T., July 9. However, the party saw evidence that it is well distributed in the northern portion of the proposed park. Tracks were seen, indicative of something well short of abundance, in the Cassiar Mountains at Swift River and Rancheria River, Y.T. From accounts in literature, observations and reports obtained during the summer it is evident that grizzlies are, or have been, found along every portion of the Alaska Military Highway except the Fort Nelson lowland. Grizzlies were often reported at camp garbage holes - accounts which the party could not verify, and finds hard to believe. One such report, for the Gustafson camp on the Rancheria River, Y.T., the party had at first hand and it seemed authentic enough.

On the Haines Road in 1944 grizzlies were in good numbers, especially in the British Columbia section. The writer can state decidedly that he has never seen finer coloured or larger bears. Individuals seen were of a golden hue, with dark faces and legs. Similarly coloured large bears are found in the Kluane area. There are also large dark individuals at the same season. Concerning the local opinion that there are two "kinds", the light-coloured one being found above timber, the writer has no comment to offer. During the salmon run grizzlies are abundant on the Tatshenshini River below Dalton Post, as many as six at once being reported on a gravel bar.

MARTEN *Martes americana* - The party obtained no direct evidence on the status of marten, but reports indicated a fair crop in British Columbia and a shortage in the Yukon. It was once found throughout the area. Marten in southern Yukon are reported on the Alaska boundary and in the Nisutlin district. On the Haines Road they were killed out years ago but there are still some down the Tatshenshini River.

FISHER *Martes pennanti* - Trappers in northern British Columbia reported the regular occurrence of fisher on their lines.

WEASEL *Mustela cicognani* - Reported occasionally along the road and well known to trappers. The party's only direct record was a specimen taken at Kluane, July, 1944, by T.M. Shortt.



MINK Mustela vison - Signs of feeding, suspected to be by mink, were often seen and at Muskwa, B.C., September 6-9, 1943, there were fresh tracks. At Squanga Lake, Y.T., on August 9, 1943, a small fish got into a mouse trap under conditions which necessitate the agency of a mink to explain its presence. Apparently a mink with the fish in its mouth smelled the bait and thrust his nose over the trap so that the fish was snapped out of his mouth. Mink are familiar to trappers in the whole region.

WOLVERINE Gule luscus - The party received first hand reports of wolverine from the St. Elias and Cassiar areas. A track was seen at the Rancheria River, August 14, 1943, and on July 23, 1944, a wolverine was seen near Mile 82 on the Haines Road, B.C. Tracks were also seen on Stonehouse River.

OTTER Lutra canadensis - No first hand reports were obtained.

SKUNK Mephitis mephitis - A track was seen at Muskwa, September 7, 1943.

RED FOX Vulpes fulva - Foxes were seen in 1943, at Duke River, Y.T., August 18, Dezadeash River, Y.T., July 30, and Summit Lake, B.C., September 6. Tracks were seen in the St. Elias area, at the Rancheria River, Y.T., and at Muskwa, B.C. From trappers' reports it was evident that foxes are important fur bearers throughout, especially in Yukon Territory. In 1944 foxes were seen on several occasions on the Haines Road, none of them being normal red individuals. Others were seen near Irons Creek, Y.T., and at Muskwa, B.C.

COYOTE Canis latrans - Coyote tracks were occasionally seen in southwestern Yukon and the writer collected an old skull at Teepee Lake. Coyotes are reported to have died out in 1941, and abundance altered to scarcity. Jimmy Joe, of Kluane Lake, told the writer that he knew of sick specimens found recently. So far as can be judged the coyote is an ancient inhabitant of the parkland of southwestern Yukon, (cf. Armstrong 1937, Cairnes 1909, Seton 1925). Signs of coyotes were seen in 1944 in the Klondike region.

WOLF Canis lupus - On June 18, 1943, the party was shown a large wolf skin, taken at Buckingham River, B.C. On June 26 tracks were seen at Swift River, Y.T. On June 30, a splendid specimen was seen hunting mice in a meadow at Bear Creek, Y.T. Tracks were seen in July throughout the northern portion of the Kluane Lake reserve. In mid-August, on the Rancheria River, Y.T., tracks were seen, wolves were heard, and on August 17 two adults and a young specimen prowled the camp. Wolves had previously visited Dr. C.S. Lord's camp in the area and dug up garbage, and one was reported run over on the road. Along the road wolves were an indicator of game country. In the winter of 1942-43, two were run down on Kluane Lake by dump trucks and killed with a shotgun by Jimmy Joe.

In 1944 the party saw a few signs of wolves on the Haines Road and one individual was seen by T.M. Shortt, on August 8, at Dezadeash Lake. On August 28-29 one was seen and others heard near Wounded Moose lick in the Klondike area, and very fresh signs of at least three were seen on September 2 near Flat Creek. Comparatively fresh tracks were seen in several places.

COUGAR Felis concolor - During the summer of 1943 the writer heard reliable reports of the occurrence of cougars in recent years in the foothills north of Fort St. John, near Liard River Crossing, and at the Lower Post, all in British Columbia. Mule deer had previously spread into these areas; before the deer arrived cougars were unknown.

CANADA LYNX Lynx canadensis - Known to trappers throughout. The lynx fluctuates in numbers so much that reports of abundance or scarcity are hard to evaluate.

WOODCHUCK Marmota monax - This species was seen by the party only at Fort Nelson, B.C., June 21, 1943.

HOARY MARMOT Marmota caligata - Reported by trappers in all the mountain areas traversed. Marmots were observed in 1943 only in the Cassiar Range. In the St. Elias Range the party saw none in the north portion and was told that they are more common to the southward. There, on the British Columbia section of the Haines Road, near Mile 84, the party observed a colony, July 16-20, 1944.

BENNETT GROUND SQUIRREL Citellus blesius - First encountered on the Swift and Rancheria Rivers, Y.T., where it was found above timber-line. On August 21, 1943, one was seen at Road level on the Rancheria, but they certainly do not dwell there ordinarily. They are first encountered at road level west of Teslin near Squanga Lake and are abundant at road level as far as Rainy Hollow on the Haines Road and as far as Donjek River on the Alaska Military Highway. They were also observed at river level down the Lewes to Selkirk. In regions where they are found at road level they are distributed at all altitudes to the snow-line, wherever there is an opening. In accordance with their observed behaviour on the Rancheria they are reported to have a distribution above timber-line much more extensive than at valley level. At Snag and Dawson they are found occasionally. In the parkland of southwestern Yukon ground squirrels are enormously abundant.

A feature of this species is the occurrence of melanism; the individuals concerned are not dull black, like melanistic specimens of Citellus franklini, but brilliant black, a characteristic reported by Osgood (q.v.) for the larger Citellus osgoodi. Melanism seems most frequent in the vicinity of the junction of highway branches leading west from Whitehorse and Carcross, and near Selkirk. Normal individuals predominate, however, even in these areas. The shining pelts of these animals suggest a possible line of investigation for the fur trade.

LITTLE CHIPMUNK Eutamias minimus - Noted everywhere except in the higher area of the St. Elias region, and the southern portion of the Haines Road.

RED SQUIRREL Tamiasciurus hudsonicus - Abundant everywhere where there were trees.

NORTHERN FLYING SQUIRREL Glaucomys sabrinus - Reported by trappers, but said to be very local in distribution.

BEAVER Castor canadensis - Signs observed in northern British Columbia (where trappers report them locally abundant) and in the Rancheria-Swift River area of the Yukon. Beavers are increasing in the Yukon, according to reports. In the southwestern area, including the Kluane reserve, they are rare or absent, but they are, or were recently, common towards Scotty Creek on the boundary. On the Haines Road old signs were seen, but beaver are now extinct there.

DEER MOUSE Peromyscus maniculatus - Abundant at Gardner Creek, B.C., in 1943, and Kluane Lake and Dezadeash Lake, Y.T., in 1944.

PACK RAT Neotoma cinerea - Reported by trappers as abundant in the Rocky Mountain and Liard areas of British Columbia.

NORTHERN SYNAPTOMYS Synaptomys borealis - Two were collected, one at Burwash Landing, Y.T., July 2, and the other at Squanga Lake, Y.T., August 8, 1943.

LEMMING Lemmus helvolus - Prospectors with experience in the barren lands reported lemmings in the Cassiar Range. The writer saw recently used runways, possibly lemmings, at Swift River, Y.T., in 1943.

DAWSON'S RED-BACKED MOUSE Clethrionomys dawsoni - Taken in 1943 at Burwash Landing, Y.T., Teepee Lake, Y.T., Squanga Lake, Y.T., (often seen running around in daylight) and Rancheria River, Y.T., and in 1944 at Kluane and Dezadeash Lake, Y.T., and at Mile 84 on the Haines Road, B.C.

MEADOW MOUSE Microtus pennsylvanicus - Taken in 1943 at Gardner Creek, B.C., Burwash Landing, Y.T., Dezadeash River, Y.T., Squanga Lake, Y.T., Rancheria River, Y.T., and in 1944 at Dezadeash Lake and Snag, Y.T. In southwestern Yukon, especially the Kluane area, these mice were present in enormous numbers early in July, 1943. Before the end of the month their numbers seemed to have decreased considerably. The species is found everywhere.

LONG-TAILED MEADOW MOUSE Microtus longicaudus - None of these mice was taken in 1943 but on August 1, 1944, three were taken high up on a mountain at Dezadeash Lake, Y.T.

SINGING MOUSE Microtus sp. - In the alplands of the St. Elias area, and in mossy forests near timber-line, the writer found in 1943 a small mouse which had the peculiar habit of coming frequently to an entrance of its runway system and singing, in a voice similar to that known for shrews and house mice. In the writer's experience shrews sing rarely, and the song heard by the writer from shrews was more sustained than that of the mice in question. Two singing animals, both males, were taken at Teepee Lake, Y.T., August 15, by means of dust shot. These specimens are now under examination at the National Museum of Canada, in which they were deposited. No singing mice were found in 1944 although one good 1943 locality was revisited.

MUSKRAT Ondatra zibethicus - Observed in 1943 at Squanga Lake, Y.T., June 27, (when a large number of carcasses were found) and August 4-11, and at Teepee Lake, Y.T., July 14-16. Reports show it to be well distributed. In 1944 one was seen in a pond at Mile 84, Haines Road, B.C.

JUMPING MOUSE Zapus sp. - Jumping mice were seen in 1939 at Liard Hot Springs, B.C., June 23, and Squanga Lake, Y.T., June 27. In 1944 one was taken at Mile 84, Haines Road, B.C., by T.M. Shortt.

PORCUPINE Erethizon dorsatum - The party saw only one porcupine, at Dezadeash River, Y.T., July 26. Reports indicate a wide distribution but the species is said to be scarce in the Teepee Lake region, Y.T. In 1944 a number of signs and a dead individual were seen at Dezadeash Lake, Y.T., and a small specimen was collected.

COLLARED PIKA Ochotona collaris - Observed (and taken) in 1943 at Teepee Lake, Y.T., July 15, and reported generally distributed in the mountains of southwestern Yukon. In 1944 the party saw none on the Haines Road, but a colony was found near Soldier's Summit, Kluane, Y.T.

SNOWSHOE RABBIT Lepus americanus - The first important observation of the season for this species in 1943 was at Smith, Alberta, June 15, where remains of a number of rabbits were found in the bush. As the species is known to fluctuate, such observations are useful. Around Fort St. John, B.C., on June 17-18, an extraordinary number of rabbits was seen hopping about on the roadside. At the Minaker River, June 18-20, the number of rabbits seen was much smaller, but they still seemed plentiful. A few were found dead in the bush. At the Muskwa River bridge (B.C.), on June 20, there was a swarm of rabbits such as the writer had never seen before. A small patch of bush contained scores. A few miles away, on the road between Muskwa Airport and the Fort Nelson landing a few rabbits only were seen. This was across the Muskwa River. The scene of great abundance at the bridge was revisited in September and not a rabbit or a trace of a rabbit was seen. The actual flat had been flooded in July, but the rabbits could easily have escaped. Along the road as far as Swift River there were patches of rabbit abundance - 95 miles west of Muskwa was the centre of one patch, Mile 320 west of Muskwa of another, Mile 341 west of Muskwa a third, Mile 50 east of Teslin a fourth, etc., (those mentioned being the most noteworthy). The Rancheria River area was noted as a rabbit centre in August; the party had not noticed it particularly in June, but passed through it then in a short time. In general, rabbits were found to be scarcer on the return trip in September. Patches of abundance could be the advance indication of general abundance, the last patches to go in a time of decrease or optimum areas in a time of abundance. In southwestern Yukon rabbits were scarce. Three individuals were seen in a full month in the field. At Burwash Landing the party saw one rabbit, but there were 50 old croties to the square foot on the ground where the tents were pitched.

In 1944 rabbits were much more abundant at Burwash Landing than in 1943 and at Dezadeash Lake they were numerous. At Snag and Dawson, Y.T., they were swarming. A few rabbits were seen on the Alaska Military Highway but the party's pauses were insufficient to gain information on numbers.

WAPITI Cervus canadensis - When it was first discovered, the Peace River country was full of elk and buffalo (Mackenzie 1801, Harmon 1820). Both seemed to have been exterminated during a series of hard winters, (Preble 1908) or at least this explanation was given for the buffalo. That a remnant of bison survived in the north is well known. Not so well known is the fact that a remnant of wapiti also survived in the north. They were discovered in 1931 by K.F. McCusker and he has kept track of them since, and shown them to others (e.g. Henry 1933). Specimens (Snyder, 1936) have been received in Ottawa. Mr. McCusker, whom the party met at Fort St. John, stated that the elk survived on the Prairie River (the first fork of the Muskwa below the Henry or Tuchodi River). Apparently they lived there for years without spreading, but since their discovery they have begun to increase, and have spread south to the fork of the Prophet River above the Minaker and to a pass between the Henry and Racing Rivers. They may be expected to reach the highway before long, in the dry country of the Toad and Racing Rivers where the Sikanni Indians run their horses. Their presence in former times, at least as far north as now, is attested by Richardson (1851).

MULE DEER Odocoileus hemionus - Mule deer were unknown in the Peace River country until well into the period of settlement. They have spread northward until now they are distributed through the Liard River Valley. At Buckinghorse River, B.C., trappers Thomas Foote and Olaf Christiansen reported them common, but only

on open banks. At Blueberry, B.C., on September 12, 1944, four mule deer were seen. Tracks were seen in the highest portion of the Rocky Mountain section of the road. In the Liard River Valley the deer are still in the first stages of occupation. Occurrences are now reported at the Lower Post. No information was obtained as to whether or not mule deer might have reached this section from the southwest, but the writer thinks it likely that they have all come up the Liard.

There have been no reports of mule deer at Watson Lake; the area between there and the Lower Post is much travelled by human residents. There are likewise no records farther east in Yukon Territory. In view of the proximity of the Yukon boundary to the Liard River, and the nature of the country it is considered certain that mule deer have occurred in Yukon Territory, in the Beaver, Smith, and perhaps Coal River Valleys, and that they will continue their present spread and increase.

West of the Liard Valley in Yukon Territory there are definite records of deer which can hardly be anything else than mule deer. Some eight years ago Robert McCleery of Teslin, while making a sled trip up the Nisutlin River, saw a group of deer. Since that time tracks have been observed several times in the Teslin region. First reports identified these animals as coast deer (Odocoileus columbianus), but Mr. McCleery informed the writer that he had merely noted the similarity of the animals to coast deer, with which he was familiar, rather than to moose or caribou.

MOOSE Alces americana - Moose are found throughout the region in varying numbers. The party saw signs everywhere except in the immediate vicinity of Whitehorse and Carcross. The only moose that actually was seen during the summer of 1943 was at Swift River, Y.T., where they were undoubtedly abundant. They were obviously present in some numbers both north and east of Kluane Lake, Y.T., and throughout the fringes of the Rocky Mountains in B.C. Reports of other areas of moose abundance on the Donjek and White Rivers, east of the Lewes River and on the Nisutlin River, were obtained.

In 1944 the party had no opportunity to obtain information on moose along the Alaska Military Highway. On the Haines Road moose are well distributed, though not common, along the northern end of the road, and more common on the upper Tatshenshini River, where they could be observed from the road near clumps of timber across the river. They are reported to be reasonably common down the river and constitute the chief meat resource of Indians at Klukshu and Dalton Post. There are moose scattered all over the alpine area in summer. One came down to the party's caboose at Mile 84 and fresh tracks were regularly seen. Tracks were also seen in the coastal forest zone, and there are some in coastal Alaska. The Indians remarked on the small size of moose in the Tatshenshini region compared with those north of the Alaska Military Highway and this was true of two specimens closely observed by the writer.

At Snag moose were said to be common, and fresh signs observed at a series of licks in the Dawson region showed that all of them had been frequented by numbers of moose during recent weeks.

CARIBOU Rangifer arcticus - Signs of caribou were seen in 1943 on the Sikanni Chief, Minaker, and Buckinghorse Rivers and around the Lower Post in British Columbia, in southern Yukon around

Watson Lake and on the Rancheria and Swift Rivers, and in southwestern Yukon in the portion of the Kluane Reserve lying between the Donjek and White Rivers. These animals were all of the mountain type known as the Osborn Caribou, Rangifer arcticus osborni (including Rangifer mcguirei). They are comparatively sedentary, although their migrations into the lowlands in the vicinity of Watson Lake were until recently quite extensive. They are large, although accounts of 700-pounders are gross exaggerations. They have the build and gait of a barren ground caribou, and the antlers and testes are similar. Last but not least (to the hunter's eye, at any rate) the crotels of the Osborn caribou are like those of the barren ground animal, whereas those of the southern mountain caribou (related to the woodland caribou) are smaller than those of a deer.

There are genuine migratory barren ground caribou (Rangifer arcticus stonei) in western and northern Yukon. Except for the Richardson Mountains herd most of them cross the International Boundary in their wanderings. The most important group winters chiefly in Alaska and migrates in summer into the region southwest of Dawson. Usually, according to Dr. Bostock, they reach the Yukon River near Stewart. Often they are seen near Dawson. At one time they went farther south. In 1936 they reached Kluane Lake, and traces of caribou seen around Burwash Landing must be attributed to that year. Carcross is a contraction of Caribou Crossing and the name is a relic of migrations which ceased even before 1898. In 1944 the party learned that caribou came regularly within 35 miles of Snag, and the Indians there had hides.

The Osborn caribou live outside the range of the barren ground caribou, except for rare overlapping such as may have occurred north of Kluane Lake in 1936. There is no evidence of mixing. This may in part be prevented by a difference of some weeks in the breeding season. The Osborn caribou horns strip in August; whereas those of the barren ground animals strip in September; the rut and the condition of the depouille vary accordingly. The barren ground caribou of the east (Rangifer arcticus arcticus) rut even later than those of Alaska and Yukon, whereas the domestic reindeer (Rangifer tarandus) rut earlier than the Osborn caribou. This gives a possible explanation of the absence of mixing between Osborn and barren ground caribou and suggests that the size and quality of reindeer might be improved by crossbreeding with Osborn caribou, which might prove more compatible than the barren ground caribou previously tried in such experiments.

There was once a herd of Osborn caribou on the Haines Road in British Columbia. They were reported at Glacier Camp in 1898 (Jarvis), but the Indians say that they were always in a precarious position because of deep snow there and they have been extinct for many years.

The migratory barren ground caribou cross the Alaska Military Highway in Alaska. On the Canadian section of the road caribou are most abundant near Swift River and in the Rocky Mountains.

BISON Bison bison - Reference has been made already to the fact that buffalo were once common in the Peace River Block and northward. (Mackenzie 1801, Harmon 1820). These bands extended towards the Liard River (Pike 1892), and also joined up with the herds near the Slave River. Russell (1898) and Stone (1900) both mention an individual (perhaps the same) killed near Fort Liard. Ogilvie (1893) records their presence north of Fort Liard.

In recent years there have been persistent reports of buffalo north of the Liard (one in Snyder 1936) and in view of the increase of the species in Wood Buffalo Park these rumours are quite credible. Most extraordinary of all is the report given me by Rev. Father Beaubier of Selkirk that Indians at the Lower Post had killed a bull about 1939. The Liard is a natural avenue of spread for the increase from Wood Buffalo Park.

DALL'S SHEEP Ovis dalli - Under this heading are included the pure white sheep of Alaska and the Yukon, (Ovis dalli dalli), dark Stone's sheep of British Columbia (Ovis dalli stonei) and the intergrades known as Fannin's sheep (Ovis dalli fannini), for they are all one species. There are two genetical strains at either end of the range and an area of overlapping, in the centre of which a great range of coat colour occurs, intensified by the fact that conditions of climate, vegetation and topography in the area of intergradation do not result in a continuous range but, rather, isolate groups one from the other.

Climate is the key to sheep distribution in any country where there are treeless slopes and cliffs; they like dry country. In the south the familiar bighorn sheep (Ovis canadensis) can stand the heat and drought of Death Valley in California but they will not live in the Selkirks. The Dall's sheep of the north will not live on the west side of the coastal mountains. On the eastern side of these same mountains conditions of comparative drought prevail and sheep find good range. The mountains of the interior are not suitable but a scattering of sheep is (or was) found throughout. On the east side of the Rockies and the east and north sides of the Mackenzie Mountains, as well as on the mountains towards the Arctic Coast, large and excellent areas of sheep range are found.

Nowhere do the ranges of the bighorn sheep and Dall's sheep overlap. The range of the latter west of the Rockies is all south of the northernmost railway line. The range of Stone's sheep commences on the headwaters of the Skeena. In the Rockies the bighorn nowhere approaches Peace River; Stone's sheep has been observed watering on the north shore (Raup, 1934) though it never crosses the river. Telegraph Creek is near the centre of the good range on the west side. Northward the now vanished animals at the head of the Lewes River and the sheep of the Wheaton region are intergrades. West of the headwaters of Takhini River the sheep are pure white. There is a small group on the Haines Road and a few are found near Kathleen Lake. There used to be others around Dalton Post but a very little hunting suffices to eliminate all but strays. Northward they get more and more numerous, reaching maximum numbers at the headwaters of White River.

The entire British Columbia population of both Dall's and Fannin's sheep must be contained in the small bands along the Yukon boundary from the Haines Road to Lake Bennett, the sheep at Atlin being identified as Stone's sheep.

On the east, Stone's sheep occupy the Rocky Mountains and have no contact with sheep north of the Liard. The sheep on the north and east slopes of the Mackenzie Mountains and on mountains toward the Arctic, are all white. Dall's sheep come close to the Liard at the Nahanni and Stone's sheep do likewise at the Canyon. According to Keele (1910) and Sheldon (1911), sheep are not found in the Mackenzie Mountains in the barrens just east of the divide. In the interior the Cassiar Range belongs to Stone's sheep, but the populations are rather scattered. It is in



the mountains of the interior of the Yukon (Pelly and associated ranges, west slope of Mackenzie Mountains and Ogilvies) that the two forms mix. Sheldon drew up an elaborate chart of the various degrees of intergradation, but the utility of this is doubtful. Most of the intergrade flocks have sheep approaching both extremes as well as median types. The writer's information is that the sheep may migrate from one range to another in winter over wide valleys, hence the genetical type of sheep on a range may vary. The International Boundary Commission report (1918) indicates intergradation in the scattered herds south of the Yukon and west of the Lewes.

Except around Watson Lake and close to the Liard River there are few places in the Yukon Territory where (in the past, at least) one could be sure that there were no sheep in the vicinity at any given time. However, the party saw no sheep in 1943 except on a packhorse trip into the St. Elias Range. A few were seen by Dr. C.S. Lord, not far from the road in the Rancheria country, but it is evident that they are never abundant there. Towards McDame's Creek and the Turnagain River, the party were told, there were more sheep. There are some reported on the west side of the Rocky Mountain Trench. On the east side of the Rockies the party saw the only Stone's sheep of the summer at Muncho Lake, June 22. In the Toad and Racing River areas there was plenty of evidence that the range was occupied in winter. The "headquarters" of the Stone's sheep is reported to be at the head of the Muskwa, just south of the Tuchodi Lakes.

In 1944 the party saw its only sheep near the Haines Road, and received no information additional to that already given.

MOUNTAIN GOAT Oreamnos americanus - Mountain goats are found in the Coast, the Cassiar, Rocky and Mackenzie Mountains. They are most abundant on the west side of the Coast and St. Elias Ranges and only patches of abundance are found in Canadian territory, such as around the glaciers of the St. Elias Range draining towards the Alsek. One goat only was seen in 1943, on the Dezadeash Mountains, Y.T., July 30. In mountains away from the coast the occurrence of goats is irregular. The Mackenzies and Rockies, with their great peaks and ice-fields, have the most. The party was told by Mr. McCusker and others of a large band on the Sikanni Chief River, a few miles from the road, actually lower down than the nearest band of sheep in the region. The presence of this band had been successfully concealed from construction and army men who could soon have destroyed it. In the Cassiar Mountains, Dr. C.S. Lord saw one solitary goat in the Swift River area, Y.T., within two miles of the road. No other records for that region are known to the writer.

In 1944 the party penetrated into good goat country on the Haines Road in British Columbia, and an excellent lick, much frequented, was located not far from our camp at Mile 84.

As in the case of the bird list, this list contains new distributional records. It is far from complete. A complete mammal list can be compiled only by an intensive collecting campaign, and the status of the various species can not be judged without field experience in winter. Because of the economic importance of various species a great deal of information may be procured at second hand, but such material has always to be used with caution.

CONSERVATION OF WILDLIFE WITH SPECIAL REFERENCE TO YUKON TERRITORY

Many of the birds and mammals listed are abundant, widely distributed and unaffected by such events as the building of an Alaska highway. Some, on the other hand are economically important or in some other way affected or likely to be affected and require special discussion.

BIRDS

The upland game birds do not require special consideration although they are quite important locally. Waterfowl are not as a rule produced in quantity in mountainous regions, but northern British Columbia and the Yukon, because of the fact that small numbers of waterfowl are produced over an immense area, make a substantial contribution to the waterfowl production of North America. The Yukon River and its main tributaries are first class waterfowl breeding grounds. Small lakes and sloughs in southern Yukon frequently swarmed with birds. Mountain lakes, like Kluane are not very suitable for wildfowl but back from the road were many productive tarns. Even in the high alps of the Reserve there were many good sloughs.

There are certain species of birds whose rarity has been the cause of international concern and whose preservation and rehabilitation is a matter of international interest. The party looked and inquired in vain for the whooping crane (Grus americana). Reports of the occurrence of swans in the Yukon should be verified if possible and the species involved be determined. The wintering ground of the remnant of trumpeter swans in Canada is known, but the lack of information on nesting grounds is a handicap in their protection.

The most noteworthy event was the astonishing discovery of a large breeding population of the upland plover in and near the Kluane Reserve. The perilous condition of this species a few years ago was due, as is the case with other birds in the region, entirely to its destruction on wintering grounds many thousands of miles away.

BIG GAME AND FUR - As a generalization it may be said that the whole region was once a fine big game and fur country, supplied with a stock unexcelled on the continent for number and variety. Much of it is still good. The Cassiar country suffered from the gold rush of 70 years ago but has recovered. The Yukon stocks of game suffered depletion from the great expansion of mining in 1886-1900 and the permanent developments that resulted. Depletion had been replaced in some areas by recovery when highway construction brought a renewed rush of population. After discussing with Dr. H.S. Bostock his observations of moose on the Lewes and Yukon steamboat route and checking literature references the writer is sure that there are far more moose along this route now than there were in 1897-98, though there is still plenty of room for increase. In the Rocky Mountains' region of British Columbia game seems always to have been abundant. With respect to fine fur in the Yukon the situation is not so encouraging. In many areas there is a depletion of long standing, but remaining stocks are still well enough distributed to provide the basis for general rehabilitation.

It is interesting to see what pioneers had to say about game and fur in the Yukon. Robert Campbell starved at Dease Lake, and the Liard in early days was a poor river for "country food" (Campbell M.S.S. and 1885). Fort Halkett always had a

small establishment because of the difficulty of provisioning it (Anderson 1857). Not until he got on the Pelly did Campbell find plenty of game. The manner in which the Liard Valley was occupied naturally by moose and became a good game country has been well described by Pike (1896), but remains unexplained. There is still little real knowledge of the factors controlling animal populations. In the southwestern part of the Yukon game was abundant in the White River country when it was discovered (Brooks 1900, Hayes 1892, Cairnes 1915), and has remained so though there has been some local diminution. This information the party also obtained from residents of the Kluane and Snag districts. Accounts of the Dalton Trail region, all the way to the Lewes River, have agreed generally in describing a scarcity of game. There were goats near the coast, and plenty of bears but sheep were scarce; moose were hunted chiefly in the region of Kloo and Pine Lakes. (Glave 1892, Jarvis 1899, Ogilvie 1897, Tyrrell 1901). At Klukshu the party was informed in 1943 by Hootchi Jackson (Indian) that game conditions had not changed much except that caribou had disappeared. However, a complete reconnaissance of the Haines Road in 1944 showed that game was more readily observed from the road than anywhere along the Alaska Military Highway, although not as plentiful as in the "back country" of the Kluane Reserve.

The history of fur animals in these two areas of southern Yukon, including the Kluane Reserve, is not so good. When first discovered there was a good supply of fine fur. Now marten and beaver are very scarce. The party's Indian guide in the Kluane district, Jimmy Joe, had seen only a half dozen beaver in his life and knew of no places where marten could be found. Lynx are more common but still do not contribute nearly as much to the fur crop of the region as some much cheaper species. Foxes, wolves, coyotes, muskrats, and mink, have remained common. Hootchi Jackson was inclined to blame the use of poison for the complete destruction of marten and the decline of lynx. So far as records go fox has always been the leading fur of the region. (McArthur 1898).

The route of travel and settlement from White Pass to Dawson has an interesting game and fur history. When it was first used (Schwatka 1885, 1900 and Sawson 1887) game and fur animals were abundant and the native population was getting its meat supply along the main rivers. A guide to the gold-fields published in 1895 (Wilson 1895) speaks of the abundance of game along the line of travel. By 1895, however, things were changing. Inspector Constantine of the R.N.W.M. Police went into the Yukon in 1894. He reported that game was already becoming scarce along the river system and predicted extermination if the existing rate of destruction were maintained (Constantine 1895). Ogilvie (1897) reporting on the Yukon BEFORE the Klondike rush said the same. According to him "a boom in mining would soon exterminate the game in the district along the river". His prediction was no sooner in print than the boom came. All travellers in the time of the Klondike rush speak of the scarcity of game (Cartwright 1899, Osgood and Bishop 1900, Price 1898, Scarth 1898, Ogilvie 1898, etc.). Wood (1899) stated "There are signs to show that the country was well stocked before travel set in, but the people passing through and the bush fires have driven the game away". There was still game in the back country. Strickland (1899) reported that the Tagish Indians were hunting 20 miles back. The boom population was fed on game meat secured by commercial hunters. Harper (1899) reporting for 1898 says of the Klondike: "The game ordinance was not enforced here last summer. --- if the quantity of moose that was brought in last summer is brought every year,

very few will shortly exist in the country--". Cairnes' reports (1908, 1909, 1910) on the Upper Lewes region give an interesting history. In 1905 game was still plentiful in the back country. Signs of decline were noted later, and the Wheaton River rush pushed the game country well back.

These reports show that fur was still abundant in 1898, although beaver may have begun to slip. The region was once noted for marten (Dawson 1887). It was the decline of mining that drove men to trapping and the destruction of fur came as an aftermath of the gold rush. The fur-bearers have not recovered from the inroads made, and the productivity of the region is low today.

Although the writer was informed during the summer that game and fur were scarce up the Stewart and Pelly Rivers, on the whole it must be said that eastern Yukon is still a good game country and there are still portions where even the marten is not depleted. After the present road and pipe-line development, isolation will cease to play a part and account must be taken of changed conditions.

Of the various species the following may be said:

BEARS - Black bears are well distributed. Grizzlies have maintained their numbers better than many other game animals and are likewise quite widely distributed. Bears are valuable game animals and a good stock will bring hunters from afar.

GOATS - The coastal ranges are well stocked with goats, but isolated bands in the interior could easily be wiped out. It is important that the location of such bands be discovered so that their proper management may be undertaken.

SHEEP - It would be desirable to direct hunting pressure on sheep, as far as possible, to the largest bands. Before this can be done the largest bands must be known and of course the small bands as well. Undoubtedly the largest single group of sheep reported in Yukon Territory is that near the Alaska boundary in the area of White River. A great many isolated bands of sheep in southern Yukon have been destroyed, but the remaining nuclei are well located for restocking the whole territory.

MOOSE - The moose (with caribou) has borne the brunt of meat hunting in the Yukon. It is still well distributed and holding its own so far as the party could ascertain.

CARIBOU - It is highly desirable to have the Tanana herd of barren ground caribou extend its migrations into the Yukon as far as possible. This probably depends much more on conditions in Alaska than on anything happening in the Yukon. The isolated groups of Osborn caribou need careful watching. A great many of them have been wiped out and others have been depleted. Excellent caribou range in some places (e.g. Squanga Lake) is unoccupied.

ELK - The spread of elk in northern British Columbia has been noted. Attention should be drawn to the fact that the increase of these elk dates from their discovery by Mr. McCusker. During the long years when they were just holding their own they were known to trappers, native and otherwise; when their presence became officially known they were accorded formal protection. It is obvious that almost all of southwestern Yukon is suitable for elk.

DEER - The northward spread of mule deer appears to be a natural post-glacial movement of a species into suitable ranges. The deer are just beginning to reach southern Yukon, where they will find the largest area of suitable range as yet unoccupied. The process will take many years and could well be accelerated. Mule deer have an excellent capacity for living near settlements and would be most desirable in some areas of the Yukon.

BISON - One is tempted to use the reported occurrence of a buffalo at the Lower Post as a basis for predicting that they might in time extend their range to the Yukon by natural avenues. Certainly southern Yukon is very suitable for them. A stronger ground for predicting that they will reach the Yukon is to be found in the presence of a herd on the Tanana flats of Alaska, the result of the release of a small band there by the U.S. Fish and Wildlife Service. This introduction has proved an outstanding success and the animals will, in the course of time, spread into the Yukon.

MARTEN - Along main routes of travel and in the vicinity of settlements marten are scarce or lacking, although very large catches were made in many such places forty or more years ago. In less accessible regions they are still found and in the Mackenzie Mountains and beyond them to the north the stand seems to be undepleted. Along the Alaska boundary good catches are made and here the trap-lines have been in the same hands for years, or passed on as though there were actually some title. Generally speaking, the status of marten may be said to be similar to that in British Columbia at the time trap-line registration was introduced. There the well stocked areas were maintained and failing areas restored.

BEAVER - Beaver are easy to kill off and yet prolific enough to make a quick comeback. This process has gone on in northern Canada many times in many places. There are still no beaver in the greater part of southern Yukon, but it will be easy to restore them.

LYNX - Lynx, while depleted, are still more numerous than other fine furs.

WOLVERINE - This species has vanished from most of its range but still hangs on in the Yukon. The best market for the furs is among Canadian Eskimo, and the wolverine skins used by Mackenzie Eskimo in 1942 were imported. The utility of wolverine fur in arctic clothing makes the preservation of some stock highly desirable.

HOT SPRINGS - The Hot Springs of the Liard River are here suggested to be the single natural formation of national interest immediately on the Alaska road, apart from the Kluane Reserve. The springs are located from 300 to 500 yards north of the highway not far above the lower Liard crossing. The party observed three separate springs. The upper spring farthest from the road sits in a mound of calcareous tufa which has come out of solution from the spring water. It is a round pool about 65 feet across and at least 15 feet deep. It is remarkably free from algae and most pleasantly situated. The maximum temperature taken by Mr. Smart was 102°F. The rim of tufa was quite hard and there was no outlet. Drainage is obviously by seepage through the porous rock (which incidentally preserves perfectly the shapes of leaves and other objects around which it has crystallized). The west side slopes down 100 feet (the thickness of the tufa) to a marshy area, probably fed by hot springs water. The rest of the seepage runs gently down towards the road. About 200 yards nearer the road is the lower spring. It is a single stream at 125°F. bubbling out of the tufa. It mingles immediately with a cold spring coming down a hill to the east and at the point of mingling the U.S. Army had excavated a hole and built a bath-house.

The mingling streams flow into the bath-house through a screen which eliminates algae, and on through a marshy area towards the Liard River. The bath-house was built very close to the site of a cabin which was built years ago by a homesteader named Smith who was afterwards drowned descending the Liard. There were plants of rhubarb and potatoes growing. The warm spring coming down the hill to the east ranks high among interesting natural formations. The tufa has come out of solution in steps along the hillside and each stage holds a pool of clear water. The entire hillside supports a profusion of calcophile plants growing on the ground and in shallow water. The hillside is open and the result is a remarkable natural hanging garden. It should be said that the whole area is rich in flowers and growth is unusual. Between the upper and lower springs is a patch of ostrich ferns of gigantic size. This patch of ferns, with the general luxuriance of growth, has given rise to stories of a tropical valley in the north.

It is very obvious that these springs will attract practically every tourist on the Alaska Military Highway. It is equally obvious that their value as a natural formation could easily be destroyed by improper development. It is suggested that the natural hanging gardens is much more interesting than anything that could be created artificially. Likewise the upper spring is a unique outdoor swimming pool. Tampering with the brittle and porous tufa crust in which it stands might prove disastrous. The lower pool lends itself to the development of a bath-house, which would still have to be built with great care. It would be desirable to have the earth removed in any excavation carefully examined for Indian relics, because the springs must have been used by Indians from earliest times to the present.

The supervision of such a unique natural formation requires competent, responsible authority.

There are other hot springs, which have also been associated with stories of a tropical valley, on the Toad River just above its junction with the Racing River. They are difficult to get at from the road and on getting a good description the party decided it was not worth-while to visit them. The best description was obtained from Mr. McCusker, who showed me a photograph of the largest spring. There are a number of springs of varying temperature. One, just large enough to wash one's hands, is very hot. There is only one pool of swimming pool size, temperature about 90°, in which nine or ten persons can squat at once. There is obviously nothing to compare with the Liard springs. From the situation it is likely that accumulations of tufa are swept away by the Toad River in flood.

#### SPORT FISHING

Mention has been made of the salmon run on the Haines Road. Pacific salmon are not sport fish in the usual sense, nor are the whitefish and similar species of the larger lakes. The writer made no detailed study of fishes, but the immediate economic interest of the sport fishes makes it desirable to record some notes on their occurrence. They are given in order of importance.

GRAYLING (Thymallus signifer) - Found throughout the region, except in the southern portion of the Haines Road area.

LAKE TROUT (Cristivomer namaycush) - Generally distributed in lakes.

DOLLY VARDEN (Salvelinus malma) - Found in Swift and Rancheria Rivers in Yukon Territory and in many streams in northern British Columbia. The party found trout in the headwaters of the Tatshenshini and Kelsall Rivers on the British Columbia section of the Haines Road. When examined they turned out to be Dolly Varden.

RAINBOW TROUT (Salmo gairdneri) - As already mentioned, the sea-run steelhead comes up Tatshenshini River in May. It would seem reasonable to expect ordinary rainbow trout to be present in some of the lakes and streams, but the party obtained no proof of this. There are rainbow trout in the Halfway River in British Columbia.

INCONNU (Stenodus mackenziei) - Uncommon in the upper portion of the Yukon drainage.

ROCKY MOUNTAIN WHITEFISH (Prosopium williamsoni) - One was taken on a fly at the Rancheria Falls, by H.L. Holman, and another was found washed up on the shores of Squanga Lake.

JACKFISH (Esox lucius) - Found in shallow lakes in the Yukon and Liard drainages, and probably generally distributed.

#### BEAVER AND MUSKRAT AREAS

Two areas in Yukon Territory were visited which are of actual or potential value in the raising of beaver and muskrat. In both of them it was found that the beaver was the key species, and that artificial water-level control was inadvisable.

The Scotty Creek trapping area has already been dealt with. It would certainly lend itself to the beaver management practices used by the Indian Affairs Branch in Eastern Canada.

The Flat Creek and Slough Creek areas were the subject of correspondence last year with a gentleman who wished to organize a private wildlife management scheme there. The party was able to cross a portion of this area, to view it from a dome and to pass over it in an aeroplane. It is excellent moose country. The caribou range is seasonal only, and so, in fact, are the visits of the caribou. The success of elk, deer, and buffalo would be doubtful. Certainly the more arid part of the Yukon would be better for the introduction of these species. There is much natural hay, but live-stock would have to be fed for months, and there are parts of the Yukon where this would not be necessary, and which, therefore, would be more desirable for live-stock raising. While the relief is low, the writer is convinced that it would not be economical to flood the whole area for muskrat ranching. It would be much better to have numerous small dams on creeks and pups. Beaver would put these in free of charge. In fact the writer has never seen as fine a stretch of beaver country unoccupied. There were scores of sites for dams in the small belt traversed by him. A few beaver have found their way in, but unless they are protected they will have no chance at all. There are signs of an abundance of beaver about 40 years ago. There are few natives using this area.

The party learned with interest, from a former resident of Old Crow, of the large muskrat harvest on the upper Porcupine, from an extensive flat there.

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