

SPECIAL REPORT ON A RECONNAISSANCE  
OF THE KOBUK-KOYUKUK HEADWATERS WILDERNESS AREA,  
BROOKS RANGE, NORTHERN ALASKA

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Office of Resource Studies  
San Francisco Planning and Service Center

March, 1969

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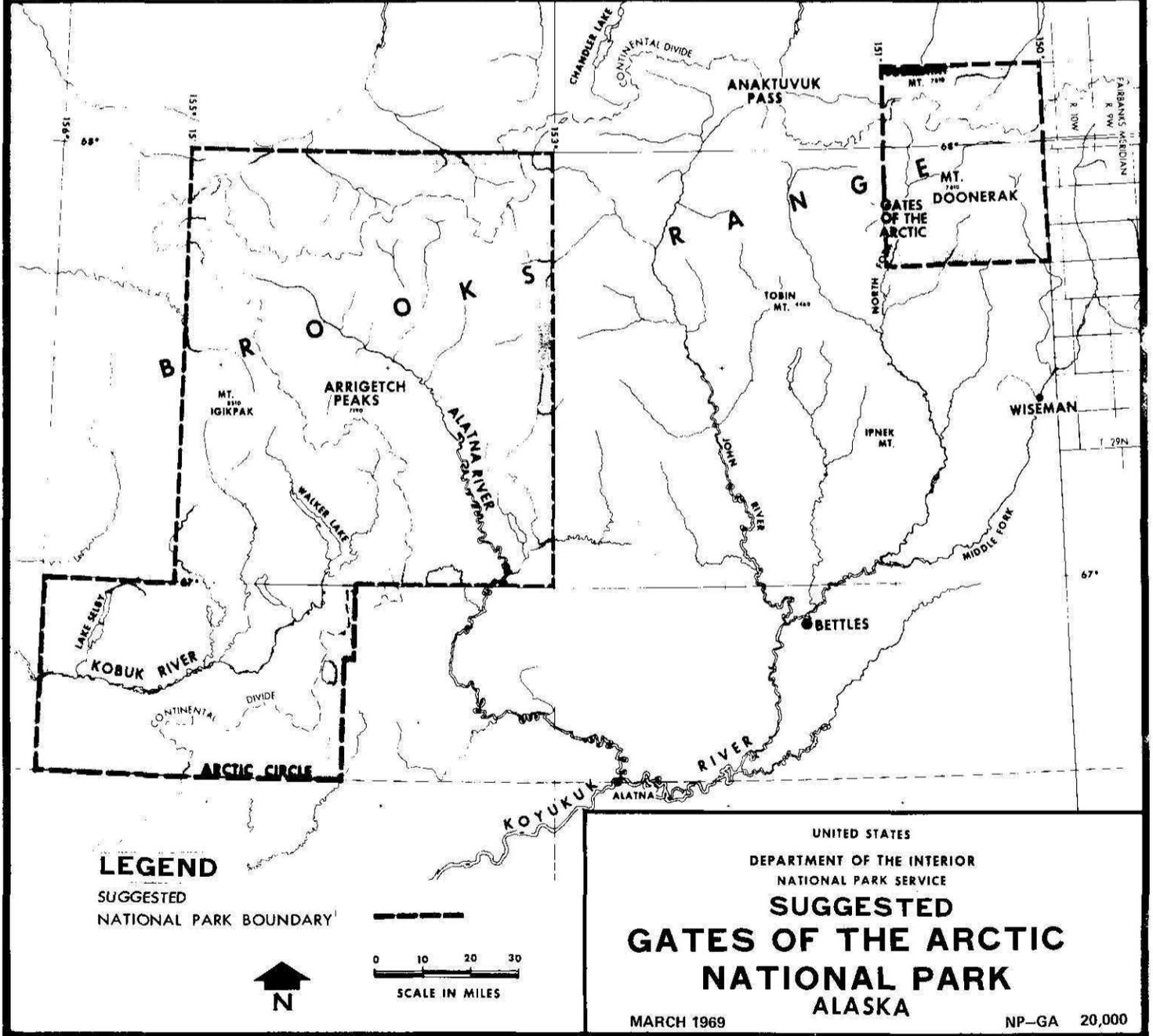
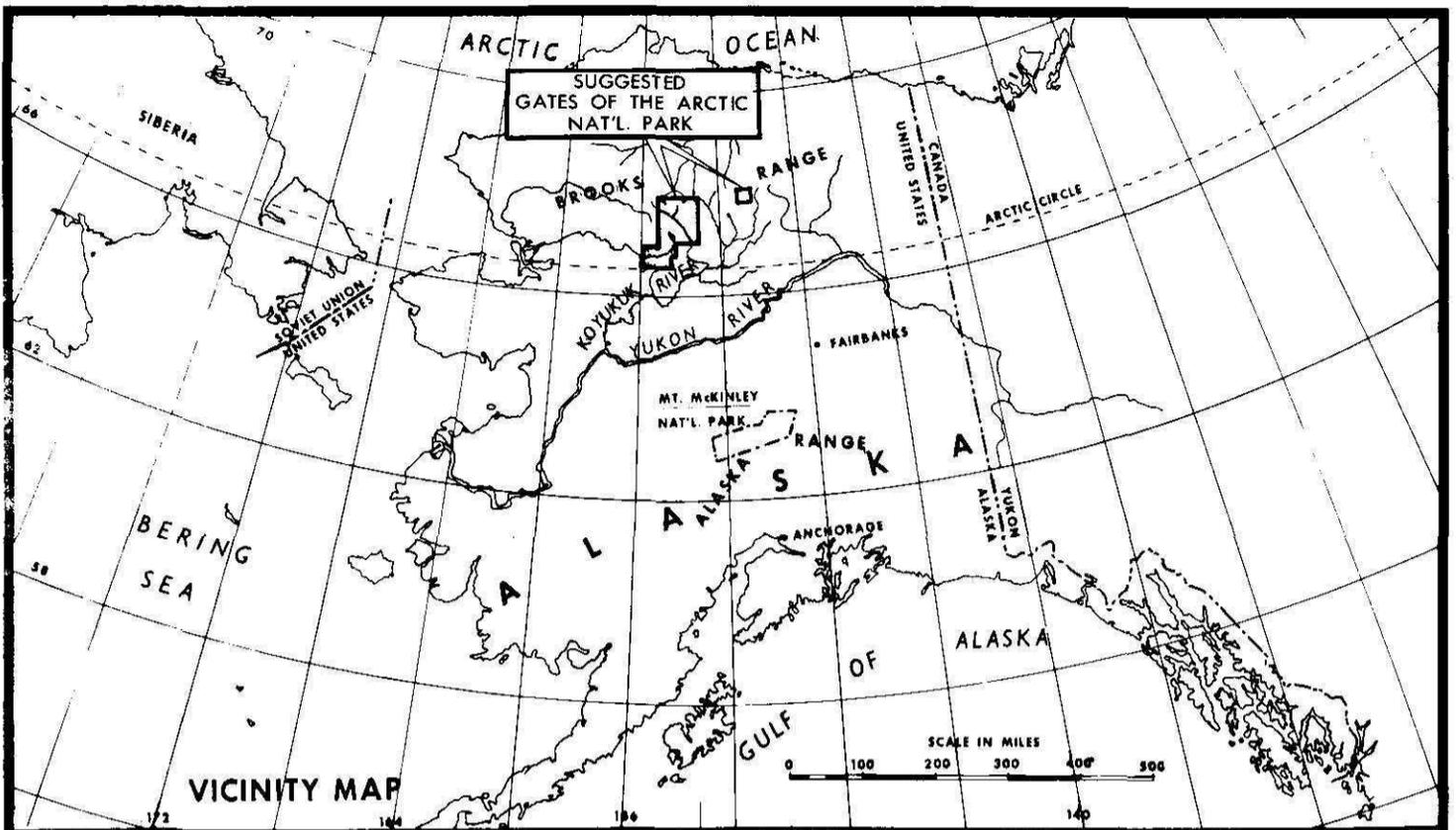
PHOTOGRAPHS

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Suggested NPS Area



U.S. MICROFILM

## 1. INTRODUCTION

Alaska's Arctic region is perhaps the last true wilderness in the United States. That is to say, it is a vast region largely uninhabited and not yet thoroughly explored and surveyed.

The perpetually frozen perimeter of the Arctic Sea is scantily occupied by Eskimos, traders and the U.S. Air Force radar crews; recently, the discovery of extensive oil reserves on the Arctic slope, east of Point Barrow, have resulted in an advance guard of the petroleum industry.

Between the Arctic slope, drained by the Colville River, and the Arctic circle, about 250 miles above Fairbanks, lies the east-west arc of the Brooks Mountain Range, drained by the Kobuk and Moatak Rivers to the west, flowing into Kotzebue Sound, and the Koyukuk, Chandalar and Porcupine Rivers, tributaries of the mighty Yukon, flowing into the Bering Sea. This rugged area is even more sparsely populated than the Arctic slope, with a ratio of about 100 square miles to each single inhabitant!

Among the wildest and least inhabited sections of the Brooks Range are those occupied by the headwaters of the Kobuk (Schwatzka Mountains) and the headwaters of the Koyukuk (the Endicott Mountains, drained by the Alatna, John, Wild, North Fork, Middle Fork and South Fork).

The human emptiness of this region reinforces the popular conception that it is hostile, eternally cold, snowbound, essentially uninhabitable, and therefore unthinkable as material for the National Park System. The question occurs: what tourist in his right mind would endanger himself by a visit there?

In the dead of winter Alaska's Arctic is in perpetual night, bitterly cold and, indeed, hostile. But in the perpetual daylight of late spring and summer it is, in fact, often mild and friendly. It is also a land of awesome dimension and sheer spectacular Alpine beauty, sheltering a unique ecological system, which has simply been waiting, like Cinderella, for something to happen.

The thing that could and should happen is the creation of a national park in this Arctic mountain wilderness. Although it might be some years before the full management, protection and interpretation of such a park could be implemented, and visitors could be accommodated, such a bold visionary step would bring a whole new dimension into the National Park System, and revitalize the tourist picture in Alaska.

## 2. BACKGROUND OF THE STUDY

Since World War II the National Park Service has had several opportunities to reconnoitre Alaska's Arctic. Early in the 1950's a team headed by Biologist Lowell Sumner, collaborating with the Arctic Research Laboratory, the Office of Naval Research and the U.S. Geological Survey, made extensive studies of the northeast corner of Alaska (north slope of the Brooks Range) to determine "the possibilities for interpretation to the public of the natural sciences of the Arctic." This resulted in a report entitled, Preliminary Geographical Survey of the Kongakut-Firth River Area. Alaska-Canada, April, 1954. Among more recent efforts was that of the Alaska Task Force headed by George L. Collins. In its report of January, 1965, it defines a "Brooks Range and Arctic Slope Zone" of about 120,000 square miles in northeast Alaska and northwest Yukon Territory. (Falling within this zone is the Arctic National Wildlife Range of about 9 million acres, established by Secretarial Order in December, 1960, and administered by the U.S. Fish and Wildlife Service.)

Roger Allin's report of November, 1966 entitled Alaska: A plan for Action, identifies the Alatna-Kobuk headwaters area as among the great climactic but unrecognized scenic wonders: ". . . the most rugged, spectacular and awe-inspiring mountains in all Alaska . . . remote, pristine, undiscovered and unspoiled."

More recently the Bureau of Land Management proposed as "roadless areas" two substantial blocks of land, one comprising the jagged mountain mass at the headwaters of the North Fork of the Koyukuk, the other comprising the beautiful upper Alatna Basin and the chain of lakes at the head of the Kobuk. Currently the Bureau is pursuing wilderness classification studies in these same areas.

Three Alaska developments have helped to focus wide public attention on this, the long-neglected Arctic. First is the State plan for an Arctic Transportation Corridor, some kind of an overland route (probably a winter trail) from Fairbanks to the Arctic slope, probably by way of Bettles, the John River to Anuktuwuk Pass. The second is the very recent discovery of major oil reserves near Prudhoe Bay, which has electrified the State economy. Third is the new tourist invasion of the Arctic, with commercial airlines taking summer tourists to Kotzebue, Point Barrow and Fort Yukon.

Another influencing factor has been the interest of conservationists. In the late 1920's and the 1930's Bob Marshall of the U.S. Forest Service made independent surface explorations of the Koyukuk headwaters, particularly the North Fork, the Middle Fork and the Alatna. His book, Arctic Wilderness, an accurate and enthusiastic guide to these regions, inspired National Park Service planners to examine certain aspects of the scenery in question. The Sierra Club and the Wilderness Society have also expressed concern for the future of the Far North. In 1963 the latter group meeting at Mount McKinley passed the following resolution: "It was the concensus of the Council that the staff explore informally with the Secretary of the Interior a suitable form of wilderness type classification for an appropriate area in the Upper Koyukuk-Endicott Mountains region of the Brooks Range."

In October, 1967 Director Hartzog presented to Governor Hickel an illustrated "deskbook" setting forth "the National Park Service Program in Alaska." This included a brief description of the Alatna-Kobuk Region and the following NPS policy statement:

Because of its remoteness and present inaccessibility, the Alatna-Kobuk region is not well known to the general public. Future development of public access to the area--by air, land and water--would undoubtedly attract many visitors to the scenic wonders of this subarctic wilderness. An indepth study of this area seems warranted from the standpoint of its qualifying as a possible addition to the National Park System.

The Office of Resource Planning, San Francisco Service Center, came up with a plan for a reconnaissance of the Alatna Wilderness in July, 1967 but was frustrated by the Fairbanks flood and heavy rainfall in the Arctic. However, a successful reconnaissance was finally made in June, 1968.

### 3. PURPOSE AND OBJECTIVES OF THE STUDY

The purpose of an "Arctic probe," put in simplest terms, was to reconnoitre that portion of the south slope of the Brooks Range reputed to have the greatest scenic and scientific interest in an effort to determine if there were resource values there which might be considered nationally significant; if so, if it would be both feasible and suitable to consider such resources for inclusion in the National Park System.

With this purpose in mind, the objectives were to spend up to one week in the vicinity, camping at various lakes, and making aerial reconnaissance of features which had been researched or others of interest which might be discovered. A further objective was to prepare a report on this experience and the resultant findings which would either recommend eliminating the Brooks Range from further consideration, or, on the other hand, might form the basis of a judgment by the Director that the area in question had promise and that, therefore, more intensive studies might be warranted.

#### 4. FIELD INVESTIGATION

A decision having been made to undertake the field study in June, 1968, Team Captain Merrill J. Mattes in San Francisco assembled all available maps and data on this remote region. The very limited data consisted primarily of maps and one or two publications by the U.S. Geological Survey, and two pertinent books by Bob Marshall, Arctic Wilderness and Arctic Village, almost the only things in print dealing directly with the area in question. (There is other literature on the Arctic, of course, but it is mainly quite peripheral to the situation on the Upper Koyukuk. The very scarcity of information on this region, indicating the infrequency of visits here by scientific observers, gave this particular project an unusual sense of challenge and excitement.)

Meanwhile, back in Anchorage, the two other members of the team were not idle. Landscape Architect Bailey O. Breedlove took care of the bulk of logistical requirements, including arrangements for supplies, provisions, aerial navigation charts and, most important of all, essential plane transportation by an agreement with Theron Smith, Chief Pilot for the U.S. Fish and Wildlife Service. Biologist Richard Prasil tracked down all data available locally on geology, ecology and other scientific considerations. Of particular value were copies of contract reports on two National Landmarks that fell within the proposed study area: Walker Lake and the Arragetch Peaks.

All team members provided themselves with 35 mm. cameras, and a plentiful supply of color film. It was recognized that a good pictorial record of this little known territory would be of the greatest importance.

The team was not given any specific designated area as the study area, although the Alutna River was generally thought of originally as the focal aspect. Bob Marshall's vivid descriptions of Wiseman and the extraordinary features at the head of the North Fork, suggested their inclusion in the study also while acquaintance with Lois Crisler's book, Arctic Wild and Nicholas Gubser's Munamiut Eskimos indicated that the Arctic Divide and Anaktuvuk Pass would also be of exceptional interest. Another factor governing the limits of the region to be checked out would be the logistical requirements of camping, aircraft landing and refueling, as well as the extensive personal knowledge of the country by the pilot, Theron Smith. As it turned out, the terrain actually covered by the aircraft and thus within sight distance of the team was a rather formidable area roughly 20,000 square miles in extent, bounded by Bettles on the south, Anaktuvuk Pass on the north, the Eskimo village of Kobuk on the west, and Twin Lakes on the east. Thus the general coverage included the Schwatka Mountains at the head of Noatak and Kobuk Rivers, the chain of lakes at the head of Kobuk River, and virtually all of that portion of the Brooks Range identified on some maps as the Endicott Mountains, which constitute the bulk of the Upper Koyukuk drainage basin.

The aircraft used was a twin-engine Grumman amphibian based at Anchorage. Theron Smith, who is generally regarded as one of Alaska's most skillful bush pilots (a fact impressively borne out by our experience) was at the controls. In addition to Mattes, Prasil and Breedlove, the Bureau of Land Management was invited and did send along as an observer, Alden Sievers, Recreation Planner stationed at Fairbanks. The total of four passengers turned out to be ideal, since the added weight of the cargo (supplies and provisions for about one week plus possible emergencies), plus a maximum fuel load, ensured a good lift-off for the Grumman in a tortuous terrain largely devoid of emergency landing facilities where any overload might have unfortunate consequences.

Departure from Anchorage was on the morning of June 16. Pertinent language in Team Captain Mattes's notebook, coupled with the appended map based on aerial navigation charts, will indicate the flight log:

June 16 (Sunday): High overcast permits departure from Anchorage about 11 a.m. Cross the Alaska Range via Rainy Pass. Observe the spectacular Cathedral Spires. Enter Mount McKinley National Park at its northwest corner. Mount McKinley itself is, as usual, invisible, but we get a glimpse of Wonder Lake before proceeding along Toklat River. Observe a light plane crash-landed on a gravel bar within the park, which we report by radio to the Superintendent. Land without further incident at Fairbanks to pick up Alden Sievers.

Proceed northwestward across Yukon River and the Arctic Circle over open tundra to Bettles (population 24, gravel runway) where we refuel and report to FAA station. Being well supplied with woolen jackets and long underwear, I am shocked to find that this Arctic village is enjoying a near-record heat wave, around 90 degrees Fahrenheit. In late afternoon fly northwestward, picking up the Alatna River, just east of Iniakuk Lake and landing at beautiful Lake Takahula where the only sign of civilization is one unoccupied log cabin. We select a gravel bar on the south shore and set up our first camp. The weather is nearly perfect, reminding me of a June day in Nebraska. At this time of year the sun shines all night up here, making sleep difficult.

June 17: The first full day of exploration is brilliant with warm sunshine as we take off with the object of examining the territory to the west. Proceed up the Alatna River to its headwaters, noting tributaries, salient mountain peaks and generally bizarre character of this pure wilderness. At the Arctic Divide, headwaters of the Killik and Niga Rivers flowing into the Colville to the Arctic Sea, we turn south to the headwaters of the Noatak, passing over black, snow-capped mountains so profuse as to resemble ocean waves.

We follow the Noatak valley westward to a point beyond Nakmaktuak Pass, then meander southward over the forbidding Schwatka Mountains, picking up the Kogoluktuk River and Kolliksak Lake. We note a road going northward to Bornite (the Kennicott Mines), the only road of any description in this entire territory. We decide to drop in at Kobuk to be friendly with the natives. Since the runway there is flooded, Theron drops down in a nearby ox-bow lake. The impromptu Eskimo welcoming committee escorts us into the village where we observe their fairly primitive dwellings, food caches, gardens, dogs and riverfront activity. Seems like a quiet peaceful place, far from television and scenes of civic riot and rebellion.

About high noon we take off for Lake Selby-Marvak (twin lakes joined by a narrow passage) where we skim down, have lunch and hike the lake shore, observing the distinctive arctic vegetation, ice still floating in Marvak, and the remains of a tent camp (for fishermen, presumably), once established here by Wien Airlines. Again, the scenery is magnificent and the weather idyllic.

We go several hundred miles out of our way southward to the Athabaskan Indian village of Hughes on the Koyukuk River, in order to refuel. Hughes, with log cabins, the usual caches, small boys, dogs and a native store, is muddily picturesque after a local rain shower.

We fly now directly north to Norutak Lake, thence meander northward to observe Minakosa, Nutuvukti and Walker Lakes, and again northward to circle Mount Igipak, the highest mountain (8510) within our reconnaissance area. From thence we fly eastward to have a close-up view of the crazily designed Arragetech Peaks (to me they resemble the spinal armor plates of a Stegosaurus dinosaur). Lake Takahula is distantly visible from Arragetech, so from this point it is downhill all the way to our camp, which had been happily undisturbed by bears or other marauders.

June 18: Weather not quite so balmy. Some cloud formations but not enough to impair visibility. Since we were too late last evening to get good pictures of the Arragetech, we return there for another closer look at this fantastic formation. Thence to Bettles to refuel and try to fix, without success, the plane radio, without which if we go down in flames nobody will know where. But that's how it is. We fly up Wild River to the lake of the same name, circle around, splash down at the north end of the lake, decide its no good for camping purposes, so taxi down-lake looking for a suitable spot. By this time it is raining and, to make matters worse, a hippie-type individual with beard is pursuing us in a rowboat. He catches up with us when we get stuck in shore mud. As it turns out he is not violent but he does make it clear that airplanes are not welcome in this paradise. (However else would one get there?) Ignoring him and the tiny colony of self-imposed exiles who live at the south end of Wild Lake, we finally find a camp which affords little shelter, but ample wood, and bed down for the night. The arrangement is the usual one. I share quarters with Theron in the plane while the others, set up in tents, are exposed to grizzly bears and other hazards. (No grizzlies appeared, but Prasil claims to have seen their spoor.)

June 19: This was another very big eventful and memorable day, which was divided into two parts. First from Wild Lake we head more or less due north via the headwaters of John River to Anaktuvuk Pass. Ragged cloud formations make an eerie spectacle of sharp mountain peaks sawed off like a series of shark's teeth. Anaktuvuk Pass is clouded over also, but miraculously the clouds part as Theron threads his way into the pass and drops down on the gravel runway.

The Eskimo village of Anaktuvuk is not exactly Shangri-la but it is one of the most isolated and picturesque spots in North America. Right smack on the Arctic Divide at an elevation of around 2,100 feet, on a cloudy windy day it proves to be the chilliest spot yet visited. However, the Eskimos here couldn't be more friendly, and we thoroughly enjoy talking with them, photographing the dwellings of sod, log and canvas, the drying racks laden with caribou meat and hides, and some of the more colorful individuals, including old Elijah the patriarch, his granddaughters and Simon Paneak, the village chief. These people live by hunting caribou which obligingly migrate semi-annually right past their little village (population less than 100). We each buy a pair of the caribou-hide face masks for which Anaktuvuk craftsmen are famous.

From Anaktuvuk we fly due west to frozen Chandler Lake, just beyond the Divide, (not to be confused with Chandalar Lake at the head of Chandalar River), then pick up Hunt Fork of John River, observing bands of mountain sheep and one or two isolated cabins. Then we dropped south down the John past Sillyasheen and Gunsight Mountains, and a small mining camp at the mouth of Allen River, to Bettles for more gas. From Bettles we head northeastward up the Middle Fork of the Koyukuk, destination Wiseman, the "arctic village" which is the subject of Bob Marshall's book. When he was there in the 1930's it was still a fairly populous village (around 100) as villages go in this part of the world, but we found it to be just one cut above a ghost town. Surrounded by high mountains it sits on the delta formed by the junction of Wiseman Creek and the Middle Fork. Its seldom used airstrip is overgrown with grass and the place looks deserted, but when we land two inhabitants approach. Sourdoughs in their sixties, they inform us that the present village population is 10, and that the other 8 citizens, all male, are working in the mine at nearby Nolan. We are conducted on a tour of Wiseman, observing the neat homes and arctic gardens of these rugged bachelors, as well as the deserted buildings--the locked store, with some goods still on shelves, the Arctic Brotherhood lodge building or community hall, also still furnished with library, victrola, etc., the schoolhouse, the old roadhouse, and numerous empty boarded up dwellings. This looks like a clever setting for a Hollywood western, only it is in the Arctic and it is real.

From Bettles we fly westward, circling the little mine at Nolan, crossing Delay Pass, and observing several bands of mountain sheep before dropping down once more into Wild Lake.

June 20: Another day flying over an immense and hauntingly beautiful land, the pure wilderness of the Upper North Fork, (between Anaktuvuk Pass and Wiseman) dominated by Mount Doonerak, which so captivated Bob Marshall. We decamp at Wild Lake, circle over some moose ponds, and go due north up the Tinayguk, a tributary of the North Fork, to its beginnings at Gray Mountain. From here we go eastward to North Fork at its junction with Ernie Creek, just above the Gates of the Mountains (the sheer valley formed by Mt. Boreal and Frigid Crags), then drop down to Redstar Mountain.

For over an hour we circle around absorbing the magnificent scenery and taking photographs of the great constellation of sharply defined peaks at the head of North Fork--the Precipices, Hanging Glacier, Doonerak, Wien, Anawk, Apoon, etc. The brooding loneliness of these mountains under a leaden gray cloud cover is overpowering. To the north beyond the Arctic Divide we can see Cocked Hat, Marshmallow and other equally stark peaks. We drop down Glacier River, tributary of the North Fork, then ascend Hammond River and return for the last time to Bettles via Diettrich River and the Middle Fork.

From Bettles we follow the South Fork to Big Lake, splash down at Twin Lakes to fish for grayling, then via Chandalar Lake, Chandalar River and the Indian village of Venetic make the long flight to Fort Yukon, where we spend the night.

June 21: Fort Yukon is outside the province of our Brooks Range study (and, in fact, is reported on separately in the RPSSC report on Alaska Native Cultural Studies), but since we are grounded by foul weather we tour this sizeable Indian village out of sheer curiosity, noting the Indian dwellings, boats, manners and customs, the Northern Mercantile store, the tug boat with barges unloading at the dock (it makes three annual visits here), the old hotel or roadhouse, and the restoration of the old Hudson's Bay Company Fort Yukon (built with Alaska Centennial funds in 1967) that goes back to 1848.

The rain continues, but the ceiling lifts sufficiently to give Theron Smith enough courage to try flying to Fairbanks. Because of the low ceiling, however, we do not make a beeline for it, but carefully follow the meanders of the Yukon Basin and see the site of the proposed Rampart Dam which, if built, would flood this entire section of Alaska. In the evening, at Fairbanks, we patriotically visit the Centennial Fairgrounds where certain exhibits and entertainments of the frontier era are featured.

June 22: Breedlove and Prasil go on to Anchorage with the pilot, but I drop off at Mount McKinley National Park to check in with Superintendent George Hall and initiate field studies for the new Mount McKinley National Park master plan.

The entire flight distance: Anchorage to the Arctic and return, was 3,250 miles, while the distance travelled within the Brooks Range study area, from first departure at Bettles to landing at Twin Lakes, was 1800 miles. Total flight time was 26 hours.

It should be noted that later in the season, Bailey Breedlove made a vitally important follow-up trip to Fairbanks where he researched records at the University of Alaska, the District Office, Bureau of Land Management and elsewhere to obtain mining, land ownership, planning and various economic data required for a complete report.

To assist further in the preparation of this report, Bailey Breedlove also provided aerial navigation, flight pattern and meteorological data, while Dick Prasil supplied information relating to natural history, ethnology and other scientific aspects of the study.

## 5A. RESOURCE DESCRIPTION - ARCHEOLOGY AND ETHNOLOGY

Anaktuvuk Pass is the only location within the study area (bounded by Kobuk-Ankatuvuk Pass-Twin Lakes-Bettles) which has received attention from archeologists. The following statement relating to this Pass appears in a report by the National Survey of Historic Sites and Buildings on Alaska archeology:

Several sites of caribou-hunting people, including Kayuk and Imaigenik, have been located at various points within this two-mile wide and twelve-mile long important pass. The entire pass may be regarded as an archeological site of note. The significance lies in the definition of flint forms associated with caribou hunting and the promise of stability in those forms that will make possible a far-reaching typology. Among the sites are those containing Denbigh-like flints, others in which notched points predominate, and still others in which are found points like those of the Great Plains. The precise chronology is not yet worked out, but indications are that the earliest flints were deposited shortly after Wisconsin glaciation ended and that other sites formed a more or less continuous series to the present day.

Since caribou migrate through the Kobuk-Koyukuk study area, and there is a relative abundance there also of moose, bear, sheep and other game animals as well as fish in the streams, it is only reasonable to suppose that the region has been visited for untold centuries by both Athabascan Indians to the south and east, and by Eskimos from the north and west. However, except for Anaktuvuk Pass, no evidence is known of any native occupation sites in recorded times other than summer camps. Because of the very sparseness of native population even today on the periphery of the Kobuk-Koyukuk, it may be concluded that hunting and fishing use of the area has been slight, in quantitative terms. Conversation with Eskimos at Anaktuvuk and Indians at Hughes indicated that most of their hunting and fishing was done within a fifty miles radius of these two villages; in other words, the abundance of game and fish made long forays away from home unnecessary. (Most of the hunting of sheep and bear that occurs today seems to be the sport of non-natives who fly in from Lower Alaska.)

In his personal exploration of the Alatna River and tributaries in 1931, Bob Marshall found "many old stumps of trees which Eskimos had chopped by stone ax." However, in discussing various place names of Eskimo origin which were translated for him by Eskimo acquaintances, Marshall theorizes that "these names were indicative of the fact that this whole country was a no-man's land until quite recently, because even the Eskimos had no names for its features before the life times of the fathers and sisters of the present generation."

The Koyukon Indians living south and east of the Brooks Range (as at Hughes and Venetie) are of Athabascan stock. Their orientation seems to have been southward, to the land between the Koyukuk and the Yukon, so that their impact upon the immediate study area would have been negligible.

The only populations that might be considered actually native to the Kobuk-Koyukuk study area are Inland Eskimos, that is, the Kobuks at Nunamiut Eskimos at Anaktuvuk Pass. There is no record of the Kobuks ever having a village further east than the present one. Within this century some families of the Nunamiut group have also lived temporarily at Bettles and Wiseman but historically, for the most part, their principal habitat was the north slope of the Brooks Range, that is, the Arctic slope along Colville River, and the Arctic Coast.

The earlier migrations of the Nunamiut seem to relate variously to fluctuations in the size of the caribou herds, and opportunities for fur trading and employment at Point Barrow and other posts along the Arctic Sea. Early in the twentieth century the Nunamiut migrated to the coast as the result of the decimation of caribou herds, living at Point Barrow and other stations on the Arctic where they became involved in whaling, the fur trade and occasional employment by American and British traders, government agents and scientists. Old Elijah Kakinya and Jessie Ahgook now resident at Anaktuvuk worked for Vilhjalmur Stefansson and other Arctic explorers.

Although Anaktuvuk Pass itself has been the scene of caribou hunting and intermittent village occupation for many centuries, the present Eskimo settlement at Anaktuvuk is of quite recent origin. In the late 1930's business along the Arctic coast was so poor that the Nunamiut began to drift back to their home country in the Brooks Range. At first they settled in Killik Valley and the Chandler Lake area, but by 1951 most families had settled at Anaktuvuk Pass. That same year a school was established, a church was organized, and mail service was established on a monthly basis. Sig Wien was the first bush pilot to contact the band; he or one of his employees therefore made annual visits to trade supplies for wolf hides and furs. In 1960 Wien Airlines drove a caterpillar tractor from Umiat on the coast to the pass to rough out a landing strip. Since World War II the village has been visited by a variety of scientists, government agents, oil field crews and even some far-out tourists. However, the National Park Service team found in 1968 that an arriving plane is still a sufficient occasion for a turnout of the entire village; they also found one enterprising Eskimo (old Elijah Kakinya) who had a tent cafe set up to sell coffee and doughnuts to any chance arrivals.

None of the former typical dwellings, the caribou hide covered "itchelik," was observed at Anaktuvuk. Their summer dwelling is now a canvas tent or wood cabin. The "itchelik" formerly used was occupied the entire year regardless of weather. Another house in areas of more "permanent" stay was the "ivrulik," made of sod placed over a wooden frame. Several were seen at Anaktuvuk. Although sled dogs are still abundant in the village, over-the-snow vehicles are slowly replacing the older form of transport. Summer clothing is of white man's manufacture, but winter garments are, in part, probably still of Nunamiut construction.

The closer one approaches Anaktuvuk, the more evident it becomes that the people are still dependent to a large degree on caribou. Caribou skeletal remains dot the tundra in increasing number. At Anaktuvuk caribou hides and drying meat can be seen beside most dwelling places. Sled dogs are still observed, but their shelters largely appear to be an open-end 55 gallon gasoline drum - an ubiquitous feature of every village with an airstrip.

The principal informants contacted by the team, besides Kakinya, were John Hugo, Robert Paneak and Simon Paneak. The last individual is understood to be the village leader. A thoroughly informative book, The Nunamiat Eskimos: Hunters of Caribou, has been written by Nicholas J. Gubser of Yale University, whose study was conducted in 1960. The native population at Anaktuvuk seems to be composed of less than twenty households, with a population stabilized around 100. The integrity of the native culture has been remarkably well preserved to date, with pernicious influences such as alcohol almost nil. This is threatened, however, by prospects for an Arctic Corridor from Fairbanks to the coast; if as seems likely this will go through Anaktuvuk Pass, this village may lose its distinctive character by falling into the pattern of racially mixed, mechanized and "Americanized" towns already familiar on the coast, as at Kotzebue and Point Barrow. The Alaska Sportsman for May, 1968 reports also that, "lately there has been some talk of moving the village because it is running out of firewood within a day's dog team trip radius."

## 5B. RESOURCE DESCRIPTION - HISTORY

The non-native human history of the Kobuk-Koyukuk region is, of course, quite meager but nevertheless of considerable interest as evidence of the very slight extent to which European-American civilization has touched this strange land.

Exploration of the Brooks Range was retarded by several factors: Remoteness, climatic severity, lack of or inaccessibility of any known economic values, the acute difficulties of traversing the tundra approaches as well as the jagged mountain terrain itself, and not least of all, the psychological barrier imposed by the mere idea of a mountain range above the Arctic Circle.

Russian penetration of the Arctic was minimal. Kotzebue Sound was named in 1815 for a German officer in the service of the Russian Navy. In 1842 Lieutenant Zagoskian of the Russian Navy travelled 56 miles up the Koyukuk River, beyond its confluence with the Yukon. By 1837 the British-Canadians had explored the Arctic coast to Point Barrow, and in 1847 they established Fort Yukon among the Kuchin Indians, at the junction of the Yukon and the Porcupine.

In 1865 the Western Union Telegraph sponsored a scientific expedition led by paleontologist William H. Dall, who ascended the Yukon to the Hudson's Bay post, thus becoming the first American of record to make an East-West crossing of Alaska's interior. After the Seward Purchase in 1867 the job of exploring fell to the armed services of the United States. Although championed by General Nelson A. Miles, official exploring efforts over the next decade were poorly supported by Congress, where a feeling persisted that the new territory, particularly the northern half of it, was essentially worthless. Lieutenant Frederic Schwatka, in 1883, was the first U.S. Government explorer to reach the Yukon overland, going via the Lynn Canal and Chilkoot Pass. However, the first American to penetrate the region of the upper Kobuk-Koyukuk was Lieutenant Henry T. Allen. In 1885, in the face of reported hostility of the natives of the Copper, Tanana and Koyukuk Rivers, Allen managed the amazing feat of traveling 2200 miles by foot and boat, accompanied only by two soldiers and two volunteer prospectors. From Valdez he followed the Copper to its headwaters, then crossed over to the Tanana and descended to the Yukon. He crossed that river, then advanced northward via the Kanuti River which enters the Koyukuk just below the Arctic Circle. From here Allen (with only one man named Fickett) turned up the Koyukuk, almost certainly the first non-native to see this part of the world. Passing what is now called the Alatna River he named this "Allenkakat" after himself, a name surviving in the form of an Indian village now at the mouth called Allakaket. His name for John River - "Fickett" - did not survive either. After ascending the John a few miles he turned around, descending the Koyukuk and the Yukon, portaging the Unalakleet River to St. Michael on Norton Sound, where he shipped to the United States.

Allen's summer journey resulted in the first known penetration of the upper Koyukuk, and the first accurate charting of three major Alaska river systems. Sherwood considers this "an incredible achievement that deserves to be ranked with the great explorations of North America", an opinion shared at the time by General Miles and the scientists Dall and Mendenhall. Sherwood considers Allen's achievement far more significant than Schwatka's, but somehow Schwatka has emerged with fame while Allen's feat has been ignored.

While Allen was sailing home, the U.S. Navy and the U.S. Revenue Marine (precursor of the Coast Guard) initiated an investigation of the Kobuk and Noatak drainages. In 1885 Lieutenant John L. Cantwell reached Walker Lake (the Eskimo's "Big Fish Lake") at the head of the Kobuk; a year later Lieutenant S. B. McLenegan reached the head of the Noatak. Both found tiny Eskimo villages on the lower portions of these rivers, but were told that no Eskimos lived beyond there. In 1886 Lieutenant George M. Stoney traveled from the head of Kobuk River via the Alatna River to the Arctic Divide and Chandler Lake, thus being the first, probably, to ascend the upper Alatna. Ensign Howard, under Stoney's command, later made the first record crossing of the Brooks Range to Point Barrow, via the pass named for him at the head of the Noatak.

Studies by the U.S. Geological Survey in Alaska began in 1895 after Congress became receptive to the idea that Alaska, after all, might not be worthless, might even have mineral resources. An investigation of the Far North was initiated when Alfred H. Brooks, for whom the Brooks Range was named, entered the Yukon Basin. From the Yukon trader McQuesten, Brooks learned of prospecting activity in the Koyukuk region. In 1899 Frank C. Schrader conducted a reconnaissance of the central Brooks Range. From Fort Yukon he ascended the Chandalar River some 200 miles before crossing over to the South Fork of the Koyukuk, thence descended 700 miles to Eulato., thus completing the mapping of the main stream. In 1901 Schrader and Peters reached Point Barrow, apparently via John River, and Anaktuvuk Pass, at that time making the first instrument survey and the first geological cross-section of the Brooks Range. That same year the geologist Mendenhall left Fort Yukon, ascended the Dall River (tributary of the Yukon) and crossed over to map the Kobuk River headwaters. Thus by 1901 the gross geographical problems of Central Alaska, relating to the main network of rivers and mountains, had been resolved, although the Geological Survey and others, of course, continue to research geographical problems of the Arctic to this day.

In 1911 Philip Smith of the USGS mapped the main course of the Alatna River and discovered the Arragetech Peaks. He was impressed not only with their weird appearance but also with two unusual scientific aspects--the rare example of granite outcropping in the Brooks Range, and the incidence here of one of its few bona fide glaciers. (He was told that the "Arragetech" was the Eskimo word for "fingers extended.")

Because of the later NPS associations of the Murie brothers, Olaus and Adolph, it is of interest to note their activities in the Koyukuk while representing the U.S. Biological Survey. In her book, Two in the Far North, Margaret Murie tells of her 1921 journey with Olaus by boat up the barely navigable river, and the collection of caribou specimens on the Middle Fork. In the winter of 1923 the Murie brothers, collecting mountain sheep specimens, followed the Alatna and a tributary, the Kutuk, to the Arctic Divide. This is mentioned in Adolph's book, A Naturalist in Alaska.

Actual non-native settlement of the Koyukuk, if it can be dignified by that term, resulted from the perennial search for gold in Alaska. Prospectors named Bremmer and Johnson are reputed to have entered the region in 1887, the former having a fatal misunderstanding with Indians. (According to Alaska Place Names, the John River was named in memory of this slain John Bremmer.) In 1893 Johnnie Folger found gold in paying quantities at Tramway Bar on the Middle Fork; however, there was no sizeable influx of prospectors and miners until the occasion of the Klondike stampede of 1898. That same year about 1,000 men, disillusioned by the Klondike, boated hopefully from Dawson to the Koyukuk. Perhaps 200 went north of the Arctic Circle and staked out claims on the South Fork, Middle Fork and Alatna, most of them spending a horrible winter in crude log shacks, the ruins of which can still be found. Utterly discouraged by the shortage of warmth, food and gold, they pulled stakes in the spring of 1899 and retreated down the Yukon, leaving their imprint by naming various creeks after wives and sweethearts (Rosie, Myrtle, Minnie, Clara, etc.). Hard on the heels of this first wave came a few others who found enough gold and tranquillity to convert them into permanent settlers. That same year a store was opened at the mouth of John River by Gordon Bettles, and the tiny settlement which grew up here retained his name.

From information derived from old-timers, coupled with Government records at Fairbanks, Bob Marshall identifies three mining booms (or rather, boomlets) in the upper Koyukuk. The first occurred from 1900 to 1903 when there were successive stampedes at Gold Bench on the South Fork and at Myrtle, Emma and Slate Creeks on the Middle Fork. During this period gold production totalled \$800,000 and the white population peaked at 350. This gave rise to the village of Coldfoot at the mouth of Slate Creek, with a prosperity index of two stores, seven saloons and ten prostitutes. (There were never any churches of record in the Koyukuk region north of the Episcopal Mission at Allakaket on the Arctic Circle.)

In 1905 a spurious bonanza on the John River brought in some 400 transients, but a strike on Chandalar River in 1906 nearly emptied the Koyukuk of population. The third and biggest "gold Rush" here was during the period 1908-1914, when genuine strikes were made in bedrock on Nolan Creek and Hammond River, tributaries of Middle Fork. Gold production exceeded \$2,500,000. Food, clothing, machinery and whiskey were unloaded for both of these diggings at Wright's roadhouse at the mouth of Wiseman Creek. In 1911 the town of Wrights later called Wiseman, sprang up at this point. At the climax of its prosperity, in 1915, it achieved a record population of 300 whites and 75 natives, whose mode of life can best be imagined from two vital statistics for that year--60 tons of whiskey and 14 fulltime prostitutes.

After 1916 things went progressively downhill. The mines faltered, high wages generated by World War I attracted the miners to more civilized parts (called "the Outside") and, worst of all, Prohibition went into effect.

There was one last historic phase in the Koyukuk, that is, before the conservation and economic developments of the present. Between 1929 and 1939 the noted outdoorsman and conservationist Bob Marshall, on his own initiative, visited the Upper Koyukuk intermittently and in two books revealed to the world two of its long-hidden yet fascinating aspects. One of these was the village of Wiseman itself (Arctic Village) which then still had a mixed population of about 100 whites and Eskimos. This in-depth sociological study of an isolated village in a supposedly uninhabitable part of the world was a Literary Guild selection in 1933, and is a classic heart-warming study of human behavior in a hostile environment. It is rendered poignant by the fact that in 1968 the NPS team found that Wiseman was a semi-ghost town, with a total population of ten old sourdoughs. (The post office here was discontinued in 1956.)

Marshall's second book, Arctic Wilderness, is the story of his adventures in the realm of geographical discovery. Marshall claims, and there seems little reason to doubt, that the headwaters of the North Fork and Middle Fork had been seldom visited by white men, that in fact he was the first to actually set foot on much of that terrain which is dominated by an assemblage of spectacular mountain peaks. This seems borne out by the fact that most of this country was new to Marshall's companion, Ernie Johnson, long-time resident of Wiseman who had a reputation as the most experienced frontiersman in the Koyukuk. On several expeditions, at different seasons, by sled, boat and on foot, Marshall explored and mapped the country straddling the Arctic Divide and dominated by Mount Doonerak. He likewise ascended the Alatna to its headwaters, a region roughly equivalent in size to the State of Connecticut which in 1931, Marshall asserts, was "almost as unknown as the geography of the moon." His glowing descriptions of this ruggedly beautiful mountain wilderness, and the exhilaration with which he made his discoveries, and an intriguing chapter to the literature of exploration. It derives importance also from the consideration that this may well have been the last sizeable corner of the North American continent to be so explored and mapped.

## 5C. RESOURCE DESCRIPTION - NATURAL HISTORY

### Climate

The National Park Service team got a direct impression of late spring and summer weather from being "rained out" in 1967 but finding warm temperatures and sunny skies, as well as some cloudiness, wind and rain in 1968. It was 90 above, one day in Bettles, while some winter travelers have spoken of 70 degrees below zero; however, this does not represent the entire temperature spread, for the station at Allakaket, right on the Arctic Circle, reports a range of 168 degrees between extremes.

Scientific data, available through Bill Searby, Regional Climatologist for Alaska, is based on data obtained from six weather stations: Anaktuvuk, Wiseman, Bettles, Allakaket, Hughes and Shungnak, all below 1000-foot elevation. (Searby suggests that while wind velocities and snowfall are doubtless higher at mountain-top levels, say from 4,000 to 8,000 feet, the extremes of cold and heat will be found at the lower levels because of "radiational" factors.)

Since Bettles is roughly central to the region in question, it is selected as a sample. Precipitation there normally ranges from 10 to 17 inches, with mean annual of 14.18, including mean snowfall of 59.8. Maximum cloudiness and precipitation occurs in the summer time. Prevailing winds, with an annual average of 6 mph and a maximum of 50 mph, are characteristically dry downslope winds from the north.

On the temperature front, figures for record high and low are not available, but we find that for December, which seems to be the coldest month on the average, there is a mean maximum of -5, a mean minimum of -21, and a mean of -13. In July there is a mean maximum of 68, mean minimum 47 and mean of 57.

A prime factor governing temperature, of course, is the Arctic condition of solar zenith and nadir. On June 21 the sun shines for 24 hours a day, even though dipping toward the horizon at midnight. On December 21 the country is in perpetual darkness. For practical purposes much of the late autumn and winter is in shadow, so to speak, while spring and summer enjoy maximum illumination. The snow and ice which are universal in the cold, dark months disappear altogether in the summer.

## Geography and Geology

A glance at the map of Alaska will show that its relatively flat interior, drained by the great Yukon River, is flanked north and south by high mountains which guard it like the great concentric walls of a medieval fort. The succession of southern ranges, particularly the upper most Alaska Range, forms a great arc with dominant Mount McKinley near that portion of the arc closest to the Arctic Circle. To the north the Brooks Range sweeps across the State into Canada, in the shape of a scimitar or reverse arc paralleling the curvature of the Arctic Circle.

That portion of the Brooks Range which concerns us is contained within the following conjoined 1:250,000 topographic maps of the U.S.G.S: Philip Smith, Chandler Lake, Killik River, Wiseman, Survey Pass, and Chandalar. Here the south slope is drained primarily by the Koyukuk River, a tributary of the Yukon, but including also the headwaters of the Kobuk and the Noatak, flowing independently into Kotzebue Sound. The mountains drained by the first-named river are noted on some maps as the Endicotts, while the explorer Schwatka's name has been given to the mountains further east. These names do not seem to have local currency, however.

Principal tributaries of the Koyukuk which flow from the north are, from east to west, the Alatna, John, Wild, North Fork, Middle Fork (including Hammond and Dietrich Rivers) and South Fork. With the exception of the relatively short Wild River, these streams are all of roughly equivalent length, something over 100 miles. The total length of the independent Kobuk and Noatak Rivers is much longer but it is only the ultimate headwaters of these streams which concern us. Any of these rivers followed to their source will lead to the Arctic Divide and headwaters of the Colville River on the north slope, but the terrain is so tortuous that feasible passes are a rarity. Howard Pass at the head of the Noatak and Survey and Kutuk Passes at the head of the Alatna are negotiable on foot, but Anaktuvuk Pass at the head of John River (reachable also from the head of North Fork) is the only pass worthy of the name. A corridor fifteen miles long and about two miles wide, with an elevation of only 2,000 feet, Anaktuvuk has long been a significant migration route for mammals, birds and Eskimos; inevitably it would be the key to any future mechanized route through the Brooks Range.

The general characteristics of this area are set forth in somewhat technical language in the U.S.G.S. publication, Physiographic Divisions of Alaska:

ROCKY MOUNTAIN SYSTEM

ARCTIC MOUNTAINS PROVINCE

CENTRAL AND EASTERN BROOKS RANGE

General Topography--The central and eastern Brooks Range is a wilderness of rugged glaciated east-trending ridges that rise to generally accordant summits 7,000-8,000 feet in altitude in the northern part and 4,000-6,000 feet in altitude in the southern part. The easterly grain of the topography is due to belts of hard and soft sedimentary and volcanic rocks. The mountains have cliff-and-bench slopes characteristic of glacially eroded bedded rocks.

Drainage--The drainage divide between the Bering Sea and Arctic Ocean drainages is near the north edge of the range west of long. 149° W. and in the center of the range east of long. 149° W. The major rivers flow north to the Arctic Ocean and south to the Yukon, Koyukuk, and Kobuk Rivers in flat-floored glaciated valleys ½-2 miles wide; they have a broad dendritic pattern. Minor tributaries flow east and west parallel to the structure, superposing a trellised pattern on the dendritic pattern of the major drainage.

Lakes--Large rock-basin lakes lie at the mouths of several large glaciated valleys on the north and south sides of the range. The Brooks Range in general is characterized by a paucity of lakes for a glaciated area.

Glaciers--Small cirque glaciers are common in the higher parts of the range, in the Schwatka Mountains and in mountains around Mount Doonerak. The firn line is at an altitude of about 6,000 feet in north-facing cirques and about 8,000 feet in south-facing cirques.

Geology--The central and eastern Brooks Range is composed chiefly of Paleozoic limestone, shale, quartzite, slate, and schist. Northeast of the Sagavanirktok River the Paleozoic rocks are in faulted folds overturned to the north. Elsewhere, they are in giant plates or nappes thrust to the north. The deformation is of Laramide age. The north front of the range is made of light-colored cliff-forming Mississippian limestone. Rocks south of lat. 68° N. are metamorphosed and generally equivalent in age to those farther north. Granitic intrusions underlie the higher parts of the Schwatka Mountains and Romanzof Mountains, both of which rise to 8,500-9,000 feet in altitude.

In less technical terms, major rock formations of the Brooks Range are composed of limestone, quartzite, and metamorphic rocks dating back about 360 million years. South of the crest, on the John River, the oldest rocks are visible. Flanking the range are sediments, conglomerates, shales, and limestones dating from 70 to 210 million years ago. Early rocks show that the region was once occupied by a vast seaway in which sediments were deposited from the north and west. An early climax of uplifting occurred after the last of these deposits were placed, about 130 million years ago. These mountain-building movements of the ancestral range were at first gentle but, during mid-Cretaceous time, increasingly stronger folding and faulting occurred. The sediments were then metamorphosed and intruded by molten material.

Disturbances and erosion continued, and sediments were transported northward. Periodic uplifting persisted during the Cretaceous. About 60 million years ago, Tertiary Period, the range was again subjected to deformation and elevation, only to be further eroded to an area of low relief. Its present high mountainous form was the result of uplifting 10 to 20 million years ago. Following this, renewed uplifting, erosion, and glaciation have accounted for the rugged mountain profiles seen today.

During the Pleistocene, vast icefields covered most of the area. A frost climate prevailed, characterized by glacier and permafrost formation, profoundly affecting the weathering and erosion of rocks. On many gently sloping surfaces, frost action has produced characteristic geometric sorting patterns in the rocky material.

Valleys in the upper reaches are severely incised, with frequent cascades and waterfalls, but the main valleys have the classic glaciated U-shape, with low gradients, resulting in accentuated stream meandering, oxbow lakes, and myriad ponds.

Mountains of the Endicott and Schwatka groups are generally serrated or saw-toothed, with blackish soil tones contrasting with the late spring snow mantle, resulting in a strange zebra-hide pattern. From the air these mountains present a fairly monotonous ocean-wave effect, but this is broken sharply by prominent topographic features within the study area, described below.

The highest peak observed was Mount Igikpak in the Schwatkas, with an indicated elevation of 8510 feet. Its sharp triangular spire stands like a shark's fin above surrounding mountains. The Eskimo name refers to the two rock columns that form the pinnacle of this spire. (Pending more intensive surveys, all elevations may be considered tentative; the highest peak in the Brooks Range is reputed to be Mount Michelson, 9239 feet, in the Romanzof Mountains in northeastern Alaska.

Of equal or even greater interest is the group which the Eskimos called Arragetech, about 20 miles east of Mount Igikpak and within the Alatna drainage. These fantastic formations rise 1000 feet or more above, and are in striking contrast to, the surrounding metamorphosed uplands. They are vivid examples of sharply delineated mountains carved from highly resistant granitic intrusions (a rare occurrence in the Brooks Range). They present an ideal locale for the study of Cretaceous rock geology and geomorphology, as well as illustrations of both ancient and existing glacier activity. The incidence of live glaciation is also rare in the Brooks Range. (The Arragetech Peaks have been recognized as a Registered Natural Landmark.)

The third and most extensive alpine phenomenon is the cluster of stark, sharply defined peaks at the head of the North Fork of the Koyukuk and the companion group across the Arctic Divide drained by the Anaktuvuk and Itkillik Rivers. Although hornlike Mount Doonerak at 7610 is the highest mountain in sight, there are dozens of others of spectacular beauty and interest, including Hanging Glacier, Wien, Amawk, Apoon, Falsoola, Alhamblar, Oxadak, Slatepile, Snowheel, Blackface, Cocked Hat, and Marshmallow. These were mostly named by Bob Marshall who first described them, using fanciful or appropriate Eskimo names--Doonerak, for example, is an Eskimo god or spirit. Bob Marshall also, in a moment of real inspiration, gave the name Gates of the Arctic to the valley of the North Fork as it passes between two spectacular peaks--Frigid Crags and Mount Boreal. While such evaluations are purely subjective, of course, it seems that Marshall was not guilty of exaggeration in claiming that this was a region equal to a dozen Yosemite Valleys and an equal number of Matterhorns.

There is a paucity of high-elevation lakes in the Brooks Range, an unusual condition for a heavily glaciated area. Marshall Lake at the side of Doonerak and Loon Lake at the head of Hunt Fork of the John are among these rare occurrences.

Wild Lake near the head of Wild River, and smaller Lakes Tobuk and Takahula, well up the Alatna, about 15 miles east of Arragetich, are isolated instances of sizeable headwater lakes at intermediate elevations. Wild Lake is an enlargement of Wild River itself, walled in by mountains. Takahula is a crystalline lake on a tiny tributary of the Alatna in an open valley with magnificent mountain vistas. Marshall thought it looked like an Adirondack pond, with the densest tree growth he had seen in the Brooks Range.

Of exceptional interest is a series of large rock-basin or moraine-dammed lakes at the mouths of various glaciated valleys--Big Lake at the head of Bettles River and Twin Lakes of Middle Fork; Iniakuk, Norutak, and Helpmejack Lakes off the Lower Alatna; and Selby-Narvak, Minakokosa, Nutuvutki, and Walker Lakes at the head of Kobuk River. All of these lakes have good scenic quality, though Selby-Narvak, Minakokosa, and Walker Lakes might be considered outstanding. The high scientific study value and ecological fragility of this rare concentration of arctic lakes is well recognized in the professional site evaluation report on Walker Lake which has led to its recognition as a Registered Natural Landmark.

## Fauna

The Brooks Range mammalian fauna is limited in variety. Excluding bats and microtines, the list of species totals 33. The most significant of these are discussed briefly.

Caribou: Only a few barren-ground caribou were observed by the team, but migration routes through valleys were clearly abundant, especially along the Upper John, Anaktuvuk Pass, and Chandler Lake area. At Anaktuvuk skeletons, hides, and carcasses were commonplace. The arctic herd, ranging over the western half of the Brooks Range, is estimated to number over 200,000. According to Rausch, the main calving grounds are located along the upper portions of the Colville and Utukuk Rivers; in summer the animals disperse over a wide area extending from Cape Lisborne on the west, and to the Colville and north slope of the Brooks. In winter the animals migrate to the taiga zone below the Brooks Range, including the tundra uplands between the Koyukuk and the Yukon.

Grizzly Bear: No census available, but believed to be reasonably abundant in the Brooks Range. Several are killed by inland Eskimos each year; the skin of one grizzly was seen drying at Anaktuvuk. None were seen by the team, but tracks and claw marks were observed at Takahula, Wild, Selby, and Twin Lakes.

Black Bear: Reported as relatively common in the timbered areas on the south front of the range, but the team saw tracks only in the vicinity of the Takahula and Wild Lake camps.

Moose: The region is not densely populated with moose but they are reported on the increase in the Kobuk-Koyukuk region, and their range is believed to extend along the lower valleys and into the higher mountain ridges. Apparently they have been seen on the north slope of the Brooks Range, as well. The team saw a few moose or evidence of moose activity (browsed willows, droppings, and tracks) at all lakes visited. Moose hides were seen at Kobuk but not at Anaktuvuk.

Dall Sheep: Brooks Range has a healthy sheep population. A State aerial survey of the Koyukuk in 1962 resulted in a census of 1,000 animals, but estimates for the south slope range up to 5,000. The team observed sheep along Wild, Hunt, and Hammond Rivers, while sheep trails were abundant in the Gray Mountains, Middle Fork, and Upper Alatna. The largest flock seen numbered 22.

Wolves: Once in respectable numbers, wolves are dwindling because of hunting overkill. Although the team saw or heard none, tracks and other signs were noted at Twin Lakes and Selby Lake. While some wolves may associate with moose here, most follow the migrating caribou.

Other: Evidence of beaver activity is common at lower elevations and suitable habitats show evidence of a normal complement of rodents, including hoary marmots, ground squirrels, porcupine, red squirrels, lemmings, and voles. The weasel family is represented by wolverine, otter, marten, mink, ermine, and least weasel, while the Canada lynx occurs in forested areas. The red fox is the most common member of the dog family.

Birds: About 150 species of birds have been reported in the region. Obviously, "treeline" limits the number and abundance of taiga-inhabiting species, and both birds and mammals of such habitat predeliction are found in significantly decreasing numbers in comparison with their populations in portions of the taiga more distant from its northern margin. Although there are barriers of a physiographic and topographic nature, the north-south passes of relatively low elevation and grade provide easy avenues of travel for birds and mammals not closely tied to the "little stick" taiga habitat. Additionally, some north-south passes are low enough and broad enough to have accumulated a soil bed on which threads of willows and other low herbaceous plants afford refuge and travel routes for "normally tied" forest species.

The lowlands, the broad flat marshes of the Kobuk, Koyukuk, and Yukon Rivers, and their many thaw lakes, ponds, and oxbows are the nesting grounds for a multitude of waterfowl, while the uplands provide suitable habitat for other migratory species, including the wheatear, an Asian migrant which was one of the most common birds observed above brushline in the summer of 1968, and an occasional surf bird. Resident species include the gray jay, magpie, chickadee, horned owl, myrtle warbler, varied thrush, arctic 3-toed woodpecker, semipalmated plover, and other mountain-and interior-dwelling forms. Except for the lower, marshy waterfowl-breeding areas, there are no notably large bird populations.

Fish: The larger lakes of the area have populations of lake trout, arctic grayling, northern pike, and whitefish. Grayling are present in most streams, while salmon, primarily chum, and sheefish run the Kobuk and Noatak Rivers. A BIM survey reports specimens of northern pike up to 38.5 inches, and grayling up to 16 inches in length.

Vegetation: Ecologically the study area is an extremely interesting region, and on the southern slopes of the west Brooks Range it forms the boundary between arctic forest and northern tundra. Treeline is digitated on these slopes. Biological information on this area is relatively sparse.

The area has an altitude range from near sea level to 8510 feet. With increasing altitude, the boreal forest (primarily white and black spruces) gives way to alpine tundra and to rock areas in which lichens become the dominant life forms. Such transitions can take place over distances of miles or within a few hundred feet in extremely precipitous areas. Treeline, although irregular, varies from 2500 to 3000 feet. Some of the spruce found in this area are among the oldest present in north Alaska and have great value in studies of long-term growth rate and climatic controls relative to the position of forest margin.

On the lower slopes, tussock-heath tundra is typical. Miles of this type of wet area are found. Sedge-grass marshes are also common in the lowlands, and along the broad valley meanders of the Koyukuk, John, Alatna, and Noatak Rivers. Willow and alder shrubs border streams or are found in understory of the forest canopy. On mountain slopes, forest types are spruce or a mixture of spruce and birch, with an admixture of aspen and balsam poplar along certain of the lower elevation streams. Higher mountain slopes are characterized by dry tundra and plants only a few inches high. Above this there are many extensive stands of grasses and sedges, as well as large areas of mature lichen growth. Upward, bare rock, perennial snow patches, and glaciers are in evidence. The area contains a wide variety of habitats, and the thinness of margin between habitable and uninhabitable environments is easily observable. The diversity and severity of habitat type emphasize the relationship of plants and animals within the narrow restrictive habitats.

In the upper reaches, the rock desert exhibits very scanty vegetation or none at all. Vegetation that does exist consists largely of crevice species, the most common probably being Saxifragas and a few grasses. A sprinkling of ericaeous plants also occurs. Below this zone, or intermixed in its dry meadows, Dryas is perhaps the most common plant. Relatively tall grasses are also present and intermixed with them are the usual crowberry, dwarf willow, and Loiseleuria. At high elevations, vascular plants are entirely lacking, although certain lichens may grow. Obviously, populations vary considerably in composition and density, depending on direction of exposure. Warm, dry, south-facing slopes have a greater population of forb species with showy flowers. Cooler, moist, north-facing slopes are essentially covered with low shrubs. The alpine tundra is perhaps best characterized by the presence of bearberry, mountain heather, and blueberries.

On low, somewhat wet slopes and flats of glacial moraines and alluvial fans are the more typical tussock areas, in which characteristic hummocks of Eriophorum are perhaps dominant, but associated with them are the usual sedges, small willows, and again the ubiquitous Dryas. The terrain of the lowlands adjacent to streams and lakes contains wet, boggy meadows of sedges, Juncus, Eriophorum, and willow.

The report recommending Walker Lake as a Natural Landmark provides further insight on the unique quality of arctic flora in the area:

The plant assemblages around Walker Lake illustrate a wide range of environmental controls that emphasize the harshness of the subarctic climate. Walker Lake is a northern outpost of the interior spruce forest. Treeline stands at an average altitude of 2,000 feet east and west of the lake with striking examples of the detrimental effects of wind and beneficial influence of snow cover occurring at many readily accessible sites along the forest margin. Pronounced contrasts in soils and plant cover related to differences in topography, internal drainage, and composition of the bedrock and sediments are illustrated. Walker Lake provides a definitive view of these ecological variables and their relationships at the edge of the boreal forest margin under subarctic conditions.

The richness of the flora at Walker Lake reflects the great diversity of habitats available in a concentrated area. Relative to other areas of interior Alaska, Walker Lake has a more mesophytic vegetation, which clearly has closer affinities with the Bering Sea and Pacific coastal regions to the west and south than with the interior regions to the east. Large portions of the mountain slopes around Walker Lake are covered with dense alder (*Alnus* sp.) stands reminiscent of mountain slopes along the Alaskan Pacific coast. Walker Lake's relatively diverse fern flora is also atypical for interior Alaska. Floristically, this mesic condition is suggested by the presence of coastal species . . . .

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## 6. PRESENT USES OF THE STUDY AREA

To a large extent this huge wilderness is not used for anything by anybody, in the exploitive sense, and nature goes her own way unmolested. With a resident population of less than 300 in an area of some 20,000 square miles, there is a lot of breathing space for all living creatures, the rivers flow wildly, the lakes are devoid of billboards, bikinis and pleasure domes, and the mountains remain unclimbed.

There is, of course, some hunting and fishing activity, which breaks down into four groups: native subsistence, white prospector or miner subsistence, sportsmen or trophy-hunters from outside, and commercial hide hunters. No statistics are available. Obviously the subsistence hunting has not made too much of a dent in wildlife populations, and the occasional sportsman probably hasn't seriously upset any balances either. There is some indication, from team observations as well as surveys of BIM and the state, that there is decimation of wolves by bounty-hunters.

In the wintertime natives and local whites get around by sled, snowshoe or dog-team, usually following habitual winter trails; the most frequently traveled, of course, are those between Kobuk, Bettles and Wiseman. Planes can land on skis many places in snow-time, of course; after break-up time there are gravel landing strips at the four communities involved here: Bettles, Wiseman, Kobuk and Anaktuvuk. In addition float planes and amphibians can land at any of the lakes indicated in this report. That they do so land is demonstrated by the occasional phenomenon of empty 55-gallon gasoline drums, tin cans, packing boxes and other paraphernalia of civilization found at these lakes; however, the litter so far is really minimal, and as yet no cause for alarm. Since these landing strips and lakes are relatively few in number, and largely concentrated in the southwest corner of the study area, this means that the great interior wilderness mass is disturbed only by planes overhead, or the very infrequent boatman, hiker or snow-shoer.

Outside of the four communities noted, settlement is just above absolute minimum. At Nolan a few miles west of Wiseman there is one active mine; there may be other mines that are operational intermittently within a 50-mile radius of Wiseman but these would not involve more than a handful of people. The team spotted one occupied mine shack on the Upper John, but could not land to say hello because the gouged out strip there was unlandable. There are 3 or 4 homesteaders who have secluded themselves at Wild Lake. There was one homestead cabin at Lake Takahula with no evidence of recent occupancy. We did not see it but there is reported to be one small hunting lodge or something of the sort at Walker Lake. The records show that both of these establishments are owned by a party named Helmerichs. On Lake Selby, near its connection with Marvak Lake, there are the undisturbed remains of a tent camp, evidently a fishing camp, reported to have been an abortive project of Consolidated Air Lines. So to summarize, outside of the four tiny communities of Kobuk, Anaktuvuk, Wiseman and Bettles, all on the edge of the study area, there are a few mines with very light seasonal activity, and a very few occupation sites of other types abandoned or at least infrequently used. Again, since every one of these slight evidences of civilization are on the edges or in the corners of the study area, the deepest penetration being the mining camp on the John and the colony on Wild Lake, it cannot be said that as of June, 1968 the main Arctic wilderness here had been noticeably disturbed.

The only patented lands of record appear to be the two Helmerich properties indicated in the southeast corner, the John River mine, the Wild Lake holdings, sites in the four villages, and mining claims in the general area between Bettles and Wiseman, most all of it on the fringes of the study area. In addition there are a small but not exactly determined number of homesteads, applications, mining claims and oil lease applications on the fringe areas, particularly around Wiseman and Walker Lake. The total patented acreage in the study area would be considerably less than 1/10 of one percent.

Mining records available at the BLM office and the University of Alaska at Fairbanks indicate that there were some old gold mining claims on the Alatna River as well as on the John, the South Fork, the Middle Fork and Hammond River of the Middle Fork which with exceptions noted in the History section, seem to have amounted to very little or nothing. The U.S. Geological Survey has analyzed sections of the Kobuk and Koyukuk for mineral potential but their findings have not stimulated any modern gold rush.

The BLM has issued at least one permit for timber-cutting in the bottoms between Bettles and Wiseman. The natives produce a very limited number of handicraft items for the tourist trade, sold to dealers for retail elsewhere. This, plus the very limited mining and the small amount of business done by the store proprietor at Kobuk and the road-house proprietor at Bettles, is the sum total of commercial output within the study area. The only other human activity is subsistence hunting and fishing, sporting expeditions, and occasional visits to the area by parties of scientists and representatives of various concerned State or Federal Government agencies.

## 7. USES PROPOSED BY OTHERS

1. Arctic Corridor: P.L. 607 authorizes the State to select and develop an Arctic Corridor, that is, an access route, from the general vicinity of Fairbanks to the Arctic Sea. Because of the hostility of the climate, the engineering difficulties of negotiating the tundra, and the immense cost of constructing and maintaining any all-weather road in Arctic terrain for wheeled vehicles, it is generally understood that the "Arctic Corridor" idea is something that will have to be explored. It will be developed initially as a "Winter Trail," for tracked vehicles over the snow. (Such a trail would be impossible in warm months because of soft and boggy tundra.) It is taken to mean also a possible railroad, or a possible pipeline . . . The Alaska Railroad engineers have made limited studies with a view to extending a railroad northward from Fairbanks, but the results of their feasibility or cost studies is not known. Neither have findings of the Alaska State Highway Department been disclosed publicly, though the general route in mind is understood to be via John River.

There is a road presently as far north as Livengood, about 60 miles above Fairbanks. According to the Fairbanks Daily News-Miner for November 20, 1968, a Highway Commissioner is quoted to the effect that a new "winter trail" will go from Livengood to Stevens Village, then on to Dall, Bettles and up the John to Anaktuvuk Pass, then down the Anaktuvuk River to the coast. From Livengood to Sawgon Airport the trail would cover 429 miles. A suggested branch of the Arctic Corridor would go westward from Allakaket to Kobuk, or overland to the head of Kobuk River. It is understood that variations from this general route are also being considered by the railroad, oil and highway interests, but no findings or recommendations have been announced.

2. Oil Exploration and Exploitation: Former Governor Walter Hickel is quoted in the June 10, 1968 issue of U.S. News & World Report as follows: "We are 70 years behind the Russians in opening up Arctica. We intend to telescope time and open our Arctic within the next 10 years."

Most of the motive power for this avowal relates to recent discoveries of huge oil reserves on the Arctic slope, centering around Umiat and Prudhoe Bay, about 360 air miles north of Fairbanks. Various U.S. Oil Companies are, of course, pushing this development for all it is worth. This industry is the main objective of the Arctic Corridor concept, since development is handicapped by reliance only on cargo planes and sea-going ships that can navigate to the Arctic only about two months a year.

There are U.S. Naval Petroleum Reserves on the Arctic slope, to the east of the above mentioned discoveries.

The south slope of the Brooks Range has no oil fields of record, but there has been some mild interest in exploring this region; there are a few oil lease applications in the vicinity of Walker Lake, and some suggestion of oil reserves along the Kobuk, but nothing that is predictable.

### 3. Bureau of Land Management Program:

The BLM is aware of wilderness values as well as economic potentials on the South Slope, and is studying classification of these lands for multiple use management. A Borneite Planning unit west of the study area includes Kobuk, Shugnak, Ambler, Cosmos Hills, Jade Mountain, and the Ruby Creek Division operations of Kennecott Copper Company. Within the study area two roadless areas have been suggested (but not publicly presented to date). The Mount Doonerak roadless area is the rugged topography at the head of the North Fork. The suggested Alatna River-Walker Lake roadless area includes the Alatna Basin, headwaters of the Noatak, Killik and Higu, Mt. Igipak and Walker Lake. In addition BLM is considering the need to zone around other fragile wilderness lakes to preserve natural values, free from settlement, mining or other exploitation.

The future of the South Slope is, to a considerable extent, tied in with the implementation of P.L. 88-607 (September 19, 1964), to authorize and direct that "certain lands exclusively administered by the Secretary of the Interior be classified in order to provide for their disposal or interim management under principles of multiple use and to produce a sustained yield of products and services, and for other purposes." Among alternatives for retention in Federal ownership are outdoor recreation, wilderness preservation and "preservation of public values that would be lost if the land passed from Federal ownership."

### 4. Mineral Deposits and Claims:

See map

5. Native Claims:

Nature and extent of such claims within study area unknown.

6. Proposal by Wilderness Society:

George Marshall (brother of Bob Marshall), of the Wilderness Society, indicates his thinking as follows:

The area which you are studying is larger than that explored and mapped by my brother, Bob Marshall, but that is as it should be. I do not know whether he ever had a definite idea for provisional boundaries for an area to be classified in one way or another for national park or other preservation purposes, but when I have been advocating something of this kind I have had in mind a large area of wilderness, within the context of the basic definition of the Wilderness Act, in what I have called the upper Koyukuk Drainage and the Arctic Divide. In general I had thought of the preservation as wilderness of as much of the area as possible on the Middle Fork of the Koyukuk River, including its two main tributaries, the Hammond and the Dietrich Rivers and their tributaries; the north fork of the Koyukuk and its tributaries; Wild River, John River and tributaries and Alatna River and tributaries. A south line I suppose would come just north of Wiseman with the line going westerly perhaps through Twoday Mountain to be adjusted north or south as seems practical. In addition to the Koyukuk Drainage itself, it seemed to me logical to include the north side of the Brooks Range, or Endicott Range as this portion of the Brooks Range is sometimes called, to make a reasonable wilderness. I do not know how far north of the Divide is practical.

In addition, such areas as there may be permanent settlements such as there were or are at Big Lake, Wild Lake, the mining camps on the lower Hammond River, and the Anaktuvuk Pass settlement would have to be excluded from wilderness classification.

## 8. USE SUGGESTED BY NPS RECONNAISSANCE STUDY TEAM

Within the study area are the raw materials for a unique national park. The team was unanimous in concluding that a cross-section of the Arctic mountain wilderness, in particular a section with certain highly distinctive features, should be within the National Park System. Although many alternative approaches and alternative boundaries can be imagined, it appears that the main point can be made by suggesting, at this time, one specific possibility for such a national park. Requirements of such a park would include the following:

1. Inclusion of a substantial sweep of wilderness from the Arctic Circle to the Arctic Divide and beyond, to encompass topographic and ecologic units.
2. Inclusion of the most climactic mountain mass, plus other highly distinctive features.
3. Exclusion of the Arctic Corridor.
4. Exclusion of communities and any significant number of patents, claims, or other known existing or potential economic uses, where such uses might outweigh national park values as the "highest and best use."
5. Selection of a distinctive and appropriate name.

The result of these guidelines is a suggestion for a national park to be composed of two units, unavoidably separated by the Arctic Transportation Corridor via John River and other factors. One large unit would consist primarily of the magnificent Alatna River basin, plus headwaters of circumambient streams. The second and smaller unit would consist of the mountain mass which straddles the Arctic Divide at the heads of North Fork of the Koyukuk and the Anaktuvuk River. Among names considered one has gripped the imagination of all concerned: Gates of the Arctic. This name is derived from a geologic feature at the head of North Fork which was bestowed by Bob Marshall, the prime discoverer and publicist of this remote wilderness area.

The suggested Gates of the Arctic National Park is shown on the appended map. Boundaries have been determined on the basis of encompassing scenic and scientific values. The combined area of 4,119,000 acres, a superlative cross section of the Arctic wilderness, is truly of outstanding scenic and scientific importance. This is uninhabited uncompromised wilderness on a vast scale. In addition to its locale above the Arctic Circle, it includes features to be found nowhere else in the National Park System: Phalanxes of saw-toothed mountains, broad glaciated valleys with serpentine streams, tributaries, chasms, rare Arctic lakes and glaciers, and a wealth of Arctic flora and fauna.

Principal features of the 3,592,000-acre west unit would include Mount Igilpak, the highest peak in the western part of the range, the grotesque, knife-like Arrigetch Peaks, and a series of eight major lakes. Walker Lake is the best known of these. Both the Arrigetch Peaks and Walker Lake areas are eligible for inclusion in the National Registry of Natural Landmarks. During the long warm daylight of the summer months the green mantle of tundra is brightened by a scattering of arctic wildflowers. Small stands of spruce, birch and willow checker the valleys. Caribou, Dall sheep, and grizzly bear abound in the area. The west unit encompasses the headwaters of four major river systems. From it the Alatna River drains to the Koyukuk, the Yukon and the Bering Sea; the Kobuk and Noatak flow to Kotzebue Sound; the Killik to the Colville and the Arctic Sea.

The suggested east unit of 526,000 acres contains the headwaters of the Anaktuvuk River also draining to the Colville River and the Arctic Sea and the North Fork of the Koyukuk River draining to the Yukon River and the Bering Sea. Here the Central Brooks Range has been elevated and sculptured into its most dramatic relief resembling the Swiss Alps. Outstanding attractions of the east unit include its topographic ruggedness, classical sheer-walled glacial troughs and U-shaped canyons, the awesome fissure-like Valley of the Precipices on Ernie Fork, the Yosemite-like valley of upper Clear Creek, Mount Doon-erak, and the Gates of the Arctic. Another distinction of the unit is the exceptional number of prominent horn-like peaks and high crests rising to above 7,000 feet. This remote vastness of the Brooks Range has the historical distinction of being one of the last places to be visited and explored by non-natives and they found that Eskimo knowledge of the area was slight. Its prime explorer was Robert "Bob" Marshall, the famous wilderness conservationist who bestowed virtually all of the nomenclature (including Eskimo names and fanciful names like Gates of the Arctic) during his intermittent explorations of 1929-1939.

Within the suggested area there are no roads and no withdrawals by the military, the Bureau of Reclamation or the Corps of Engineers. No lands have been selected by the State of Alaska. (The extent of native claims, if any, has not been determined.)

Private claims within the area occupy a negligible percentage of the total. Available records show a total of only two homestead patents, six homestead or headquarters applications, and five oil and gas leases. The locale of most activity is Walker Lake; single sites are at Lake Takahula, Iniakuk and Selby-Narvak.

There is no present mining activity within the suggested area and prospects for oil and gas at Walker Lake are, of course, purely speculative. The meager records reveal several mining operations, historically, at points along the Alatna River and tributaries. Gold was the primary objective but yields were unprofitable during the only flurry of activity, 1898-1901. The Cobbs maps on mineral occurrences (USGS) suggest only traces of copper and chromite in the Upper Alatna and Kobuk areas.

The remote and forbidding North Fork area is apparently as seldom visited as any point within the continental United States. It is known that a few hunters and fisherman enter the Alatna region. Natives of Kobuk and Hughes villages visit here occasionally by foot or boat or sled. Hunters from Fairbanks, Anchorage and other settled Alaska communities arrive by float plane.

National Park status should not invalidate subsistence hunting and fishing rights by natives or limited fishing by others. Existing valid claims would not be impaired in any event.

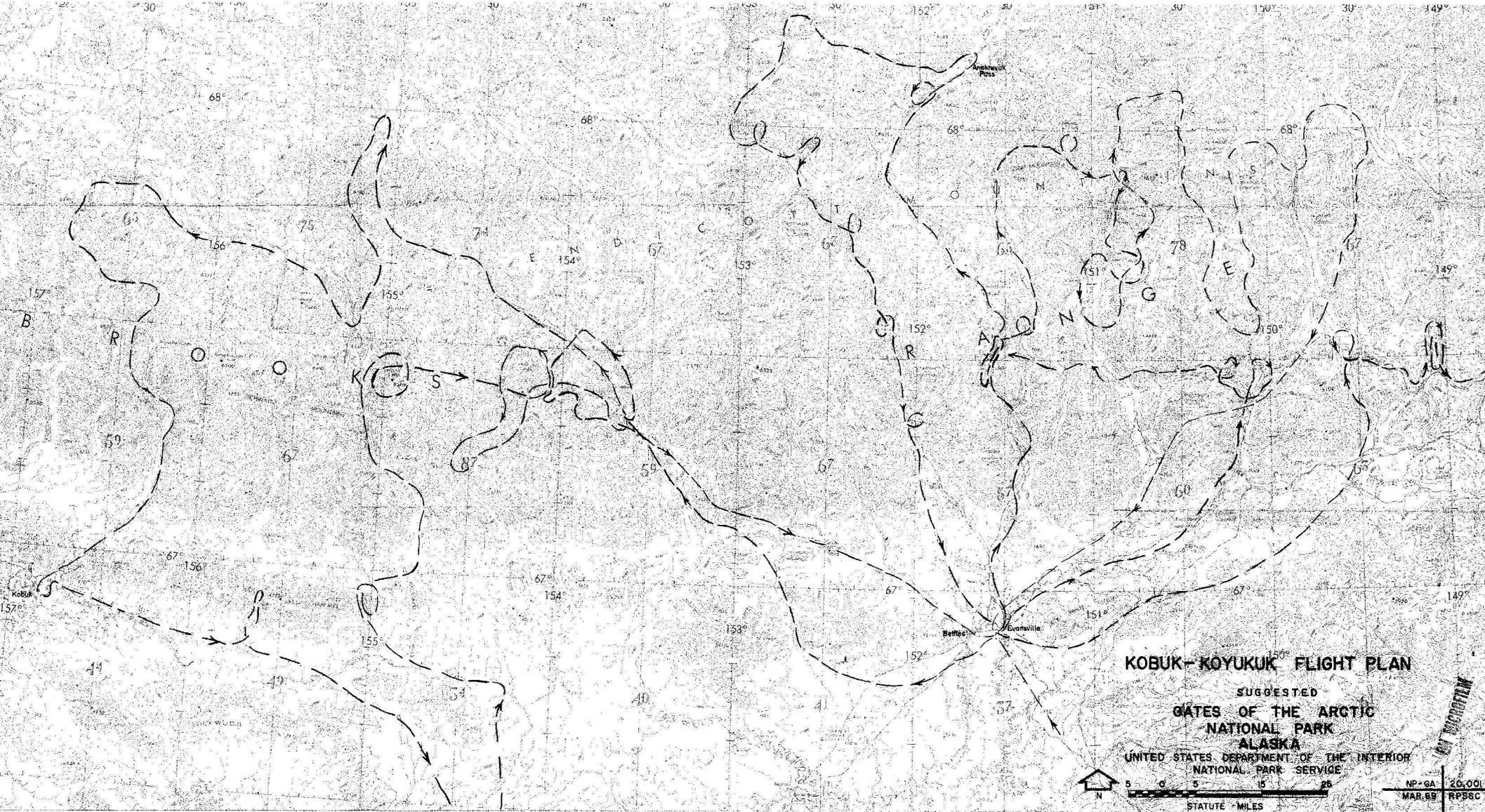
Gates of the Arctic would be preserved primarily as a status quo wilderness area. No management staff would be required initially; that is, until the situation in the Arctic becomes "ripe" for public access and Congress would appropriate needed funds. However, it is not envisioned that this area would be an expensive one, either to acquire or to operate. All but a tiny fraction of the lands are already Federally owned, so acquisition costs would be negligible. In the long term it is probable that there would be a Superintendent and staff with offices in Fairbanks and summer quarters in Bettles, outside the park proper. Development might be limited to a modest facility at Bettles to serve as seasonal headquarters, information office and station for scenic flights over the area. Aircraft would be needed also, of course, for management purposes. There would be no roads constructed within the park, unless the State road from Allakaket to Kobuk materializes. It is not believed that such a road would be fatal to park objectives; rather, it would make the interesting lower Alatna and Kobuk Lake region more accessible.

Although the Arctic Corridor would separate the two units, it is not thought desirable for any side roads to penetrate toward the park, nor do such roads seem feasible from an engineering viewpoint, in any event. Except for the above-mentioned State road, all access would be by aircraft, which could land only on the lakes in the Alatna unit. No lodges or formal campsites within this area are contemplated, but wilderness camping and hiking under permit would be encouraged.

Although Wiseman and Anaktuvuk would be outside the national park, it is probable that park visitors will be interested in visiting these unique communities. The Service could cooperate with any local, State or other Federal agency that was interested in cultivating tourism at these villages.

In conclusion, it is emphasized that this is a reconnaissance report, and the idea of a Gates of the Arctic National Park, splendid as it may seem, is merely a suggestion. If the concept is favorably received at the Director's and Secretary's level, we would be in a position to proceed with Alternative and Master Plan studies.

In informal discussion with the Bureau of Land Management, our impression is that agency is not unfavorable to the concept. No discussion of it has been held with any official representative of the State of Alaska; nor should such discussion be held unless and until the concept is accepted in principle by the Director and Secretary.



**KOBUK-KOYUKUK FLIGHT PLAN**

SUGGESTED  
**GATES OF THE ARCTIC  
 NATIONAL PARK  
 ALASKA**

UNITED STATES DEPARTMENT OF THE INTERIOR  
 NATIONAL PARK SERVICE



NP-GA 20,001  
 MAR 69 RP5EC

GATES OF THE ARCTIC