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The Traditional Fishery on Deh Cho: An Ethnohistoric and Archaeological Perspective

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ABSTRACT. Dene use of the resources of Deh Cho, the preferred Slavey name for the Mackenzie River, in the late pre-contact and early post-contact periods is not well understood. This paper examines the archaeological record of the Mackenzie Valley in relation to a model of Native use of the river, based upon Alexander Mackenzie's observations on the exploitation of the fishery at the first direct contact between Europeans and the Dene along Deh Cho. Use of archaeological data, ethnographic analogy and later historic sources provokes the conclusion that Dene land and river resource use did not drastically change as a result of European contact and the fur trade.

Key words: Slavey, Dogrib, Hare, Dene, Athapaskan, fish, Mackenzie River, traditional harvesting, ethnoarchaeology, ethnohistory

RÉSUMÉ. On a peu de documentation sur l'utilisation par les Dénés des ressources de Deh Cho — le nom que les Slaveys préfèrent donner au fleuve Mackenzie — durant la période précédant immédiatement le contact avec les Européens et celle lui faisant immédiatement suite. Cet article se penche sur le passé archéologique de la vallée du Mackenzie en rapport avec un modèle de l'utilisation autochtone du fleuve, en s'appuyant sur les observations d'Alexander Mackenzie concernant l'exploitation des pêcheries lors du premier contact direct entre les Européens et les Dénés le long de Deh Cho. L'utilisation de données archéologiques, d'analogie ethnographique et de sources historiques plus tardives permet de conclure que l'utilisation des ressources de la terre et du fleuve par les Dénés n'a pas changé de façon dramatique à la suite du contact avec les Européens et du commerce des fourrures.

Mots clés: Slavey, Dogrib, Hare, Déné, Athapaskan, poisson, fleuve Mackenzie, collecte traditionnelle pour la subsistance, ethnoarchéologie, ethnohistoire

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PROJECT HISTORY

This paper developed out of a re-examination of historic and contemporary camps along Deh Cho (Hanks and Winter, 1983a, 1986a). That study was undertaken because it was foreseen that development, increased tourist activity and natural decay were all contributing to the disintegration of the recent archaeological record (Hanks and Winter, 1983a:1). To interpret 20th-century Dene land use along Deh Cho, it is necessary to understand the evolution of post-contact exploitation of the river. To begin this process, Alexander Mackenzie's observations on Native encounters along Deh Cho during his 1789 trip are being used as a benchmark by which to examine changes in the exploitation of the eddy fishery.

Field surveys were conducted during 1982 and 1983 along Deh Cho in the vicinity of Fort Good Hope and Fort Norman (Hanks, 1983a; Hanks and Winter, 1983a, 1986a). The surveys were based on a sample of sites and locations identified during interviews with Slavey and Hare-Slavey informants and the published and unpublished anthropological and archaeological literature (Bliss, 1939; Cinq-Mars, 1973; Clark, 1975; Cohen, 1962; Fedirchuk, 1982; Gordon and Savage, 1973; Hara, 1980; Hancock, 1974; Hilderman, 1973a,b; Janes, 1975; Janes and Losey, 1974; Losey, 1974; MacNeish, 1953; Millar and Fedirchuk, 1975; Stager, 1962; Usher, 1971). During salvage excavations in 1984 at Fort Alexander, near the confluence of the Deh Cho and Willowlake rivers, a half tepee was excavated (Hanks, 1984). The plan of that dwelling is very similar to shelters described along the foreshore of the river by Alexander Mackenzie (Lamb, 1970; Hanks and Pokotylo, 1989). The patterns of fish camp distribution revealed in these earlier studies led to the resurvey of the cliff tops at the Upper Ramparts near Fort Good Hope, where an extensive pattern of fish camps extending from the pre-contact through the contemporary periods were located (Hanks, 1986).

The 1982 research in the Fort Good Hope area indicated an active connection between the archaeological record of the early 20th century and contemporary modern hunting and fishing camps. The dynamic link between the material remains of the recent past and current subsistence activities was evident in the camps, travel routes and place names of the present generation of Hare-Slavey people (Hanks and Winter, 1983b). Fort Good Hope informants encouraged us to utilize an emic, or Native, perspective so that we would begin to understand how they viewed their use of camps and tenure on the land. The outcome of this collaboration was a model designed to use Slavey toponyms as variables in the development of an archaeological survey strategy (Hanks and Winter, 1986b).

Several unorthodox patterns involving named local groups, the seasonal round, place-naming practice and site distribution were found in the Fort Good Hope area (Fig. 1). A comparative study around Fort Norman was done to determine if generalizations could be made about the Dene settlement system in the Mackenzie Valley on the basis of the Fort Good Hope study.

When the pattern of Native riverine use is considered in conjunction with the annual flood cycle of Deh Cho, a number of natural and cultural factors influencing the survival of archaeological sites are evident. Fish camps in the study area frequently are located along the foreshore in areas where heavy ice scouring occurs during spring breakup. Unfortunately, they are seldom situated where floods leave overbank deposits that would seal and stratify them. Deeply stratified deposits containing scattered archaeological remains along the upper banks at Fort Norman give credence to the suggestion that some ancient fishing sites may be buried along Deh Cho (Clark, 1975:12). Despite this possibility, few occu-

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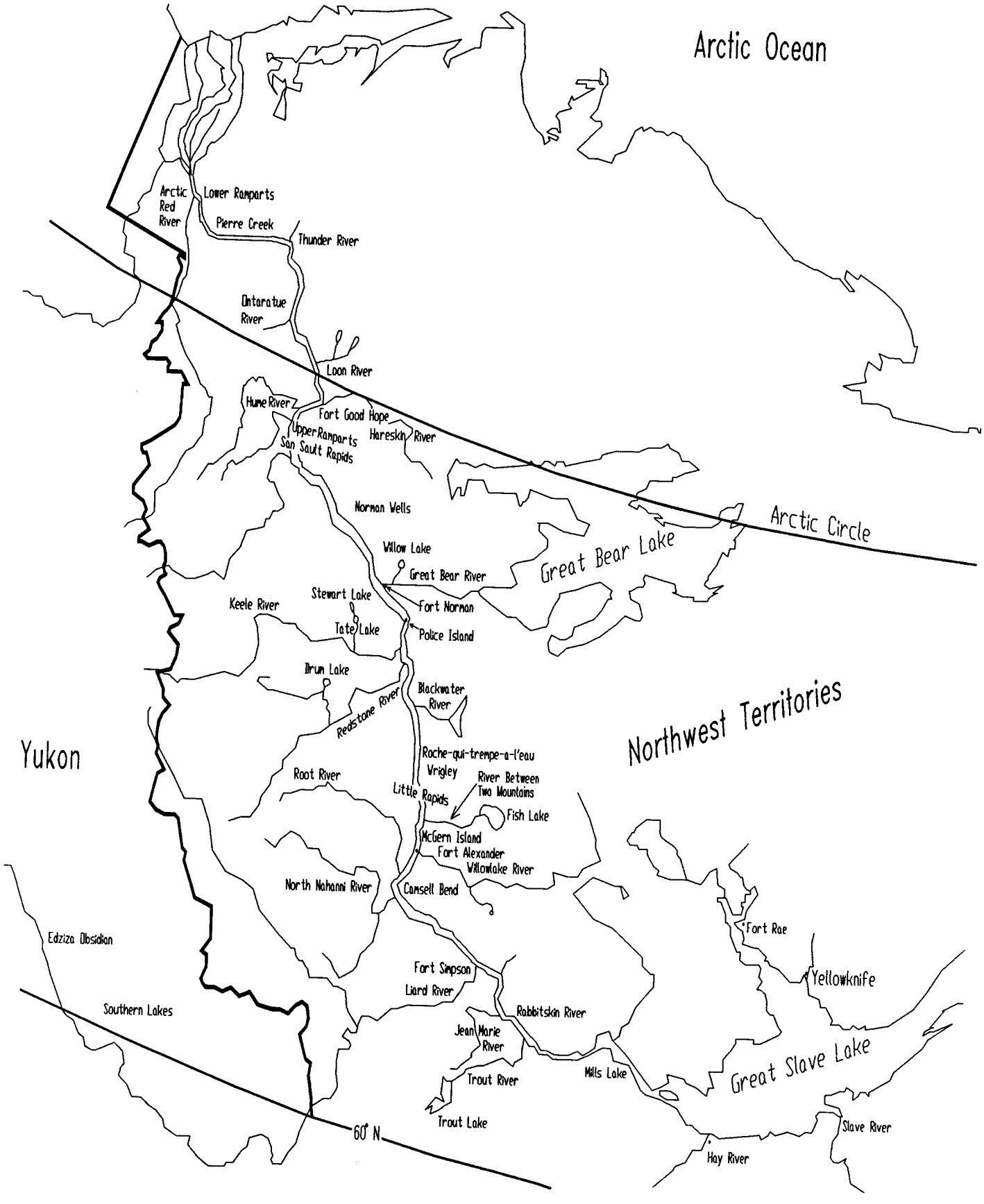

FIG. 1. Map of the Mackenzie River area.

pations associated with known fishery locations have survived to enter the archaeological record.

The assumption that there was infrequent use of Deh Cho by indigenous groups in the early contact period is ques-

tionable (Janes, 1975; Helm and Damas, 1963; Clark, 1975). This supposition is partially based upon the low frequency of lithic sites along the river compared to interior lakes (Janes, 1975) and by a hypothesized settlement shift in the late 19th and early 20th centuries from the inland fish lakes to Deh Cho due to fur trade pressure (Helm and Damas, 1963). The significance of natural processes in which some site locations survive and others do not must be considered. Given what is now known about the river fishery at contact, it is obvious that there was far more use of Deh Cho than is presently evident in the archaeological record.

ALEXANDER MACKENZIE AS AN HISTORIC SOURCE ON ABORIGINAL SUBSISTENCE

When interpreting the observations made by Alexander Mackenzie on his 1789 voyage down Deh Cho, it is necessary to consider the context of the trip and the potential accuracy of his observations. The primary purpose of this voyage of exploration was the search for a route to the western sea, not to compile a detailed account of the Native groups they encountered. However, such knowledge was of interest to traders seeking to increase their trade. Mackenzie selected and recorded observations and events that interested a trader who wished to expand his trade and/or were curiosities to him. Given this perspective, Mackenzie's journal does not contain all the data an anthropologist might wish, but it does provide an invaluable account of the first *direct* contact between the Dene and Europeans on Deh Cho. It is highly probable that some of the Dene (i.e., Dogrib and Slavey) Mackenzie met on the river had previous contact with European traders on Great Slave Lake; a few may also have ventured east along the fur trade routes (Yerbury, 1986:58). Nevertheless Mackenzie is still the first European to observe and record the *in situ* utilization of Deh Cho by indigenous groups. Irregular indirect trade, increased raiding and a few chance encounters with Europeans on Great Slave Lake were unlikely to have caused major alterations of the socio-economic structure among Athapaskans in the middle and lower Mackenzie drainage by 1789 (Yerbury, 1986).

The young Mackenzie was not an experienced navigator. In the complex Mackenzie Delta area, the route taken by the expedition is open to a certain amount of question (Lamb, 1970; Bredin, 1962; Mackay, 1963; McDonald, 1966). On Deh Cho proper, however, there is much more agreement over the landmarks that are described and the approximate locations of encounters with Native groups (Lamb, 1970; McDonald, 1966). This is undoubtedly due to the fact that the river provided a linear corridor where confusion and faulty instrument readings are less significant to the interpretation of the journey. Mackenzie's rate of travel down the river was about 70 or 80 miles a day. If this is spread out over a 12-hour day, it averages approximately 6 miles per hour (Mackay, 1963:2). This figure is in line with the rates of travel maintained by other light brigades. Governor George Simpson, for example, attempted to average 100 miles per day.

Mackenzie's Observations

In the course of Mackenzie's round-trip voyage between Mills Lake on the upper Deh Cho and Point Separation at the head of the delta (Table 1), he makes reference to 40 native occupations and alludes to many more (Lamb, 1970:211-219). Of that sample, one represented a Cree camp that appeared to have been abandoned for several years and another a spring hunting camp along the Mackenzie. The majority of the sites appear to have been occupied during the summer of 1789 (Lamb, 1970:175-225). Seventy percent of the camps were being utilized when Mackenzie observed them.

Mackenzie's observations can be broken into two segments — the downstream (1-9 July) and the return (20 July–18 August) trips. This allows for a more precise examination of the timing of river utilization. On the downstream leg of the journey, Mackenzie observed 14 (35%) camps, 9 of which were occupied. Returning upstream, he encountered 26 (65%) camps, 19 of which were occupied (Lamb, 1970). Undoubtedly, word of the party's presence spread after their downstream passage and affected the numbers of groups present on the river during the return trip. There is no means, however, of measuring this variable; we can only acknowledge it as a factor.

Native activity along Deh Cho was characterized by two major themes, subsistence and conflict (Lamb, 1970). They form a tension between use of the river as a fishery and the risk of being caught by a raiding party. Forty percent of the camps observed by the expedition appeared to be in fear of raids. This evidence took the form of verbalized accounts, camp locations on high ground or inland, group size (Richardson, 1852), hiding women and rapid camp abandonment when strangers approached (Lamb, 1970). In contrast, Mackenzie describes only two instances where Cree presence was detected and no sign of Inuit raiding parties on the river.

Although he lacked direct contact with Inuit on the river, he makes two references to locations where Inuit came to obtain lithic raw materials (Lamb, 1970). Despite the threat of raiding, Dene were making active use of the river eddy fisheries along the Mackenzie. Twenty-seven percent of the groups encountered were involved in fishing as a major activity. This contrasts with 31% of the sites where small mammal or ungulate hunting, lithic procurement and/or a diversified strategy that combined hunting and fishing was taking place.

As 42% of the descriptions of sites by Mackenzie contain no information on subsistence, it is evident that his observations are incomplete. This should serve as a caution against uncritical interpretation of Mackenzie's observations. Based upon the study of modern fishing camps along the river, it can be assumed that most groups were involved in a mixed hunting and fishing strategy emphasizing the production of dry fish for fall and winter usage (Smith, 1986:58-61). Storage for later use is evident at the Upper Ramparts, where Mackenzie describes people with dry fish tied up in sheets of birch bark (Lamb, 1970:213).

The integration of this fishery in the total subsistence pattern is described in the comments of a Gwich'in Dene on 23 July, who related that the people had begun to leave the lower Mackenzie to go inland for the caribou hunt. Another group above the Thunder River area indicated that they had left part of their group inland to kill caribou, while a third discussed leaving their young people inland hunting caribou (Lamb, 1970:209-212). Finally, Mackenzie describes one group he met near the Great Bear River who were carrying, in addition to their fishing gear, bows and arrows, light sinew snares, long spears for taking caribou in the water and heavy snare cords of woven green skin. On the basis of this specialized hunting gear, it might be

TABLE 1. Summary of Mackenzie observations, 1 July–18 August 1789[1]

Location	Description of Observation
DOWNSTREAM JOURNEY	
Clark Island	Probably Cree. The structures appeared several years old. Ethnicity based upon the structure type.
Clark Island	Evidence of trees cut by stone axe.
N. Nahanni River	Spring camps 1789 and older.
Roche-qui-trempe-a-l'eau	"English Chief," Mackenzie's guide indicated that people camped on Roche-qui-trempe-a-l'eau to avoid raids.
Police Island	This was the first time Mackenzie encounters natives on Deh Cho. There were members of two tribal groups, Slave and Dogrib. This group had both short eddy and long lake nets made of Willow bark. They also had spears for taking caribou in the water, bow and arrows, war clubs, snares for large and small game, stone axes and bits of trade iron used for small knives. They indicated that Mackenzie had passed many people who lived in the mountains on the east side of the river (McConnell Range).
T'sintu River	Mackenzie recorded four hearths at T'sintu R. The relatives of this group were camped at the Upper Ramparts.
Upper Rampart	Six families were camped at rivulets below the rapids. This may have been Jack Fish Creek (present-day Fort Good Hope). Whitefish, *poisson inconnu* and jack fish were being taken at this camp.
Hareskin River	This group came down from a lake at the head of the Hareskin R., where they snared caribou. They left most of their gear in the interior. Mackenzie encouraged them to go get their goods and to meet with him upon his return. Three families were present.
Loon River	Seven people remained in camp, while the others hid in the bush for fear of Inuit attack. Inuit apparently occasionally travelled as far as the Ramparts for chert. This group was identified for Mackenzie as the Hares.
Arctic Circle+	Several smokes (i.e., fires) were spotted. On seeing Mackenzie approach they headed for the bush. His guides indicated because big game was scarce (i.e., only caribou and beaver) in this region, these people used mostly fish and hare. Mackenzie described these as people as the Hare.
Grand View/ Thunder River	This group had been caribou hunting, but the meat had gone bad. They spoke of a Manitou behind a nearby island. Legends still told at Fort Good Hope place a Manitou on an island 60 km upstream from Thunder River below Grand View.
Thunder River	A Hare guide identified this as a different group than his people. They used an "Eskimo" bow. Some iron was obtained from trade with the Inuit.
Lower Ramparts	Five families Gwichin; some were hiding in the bush.
RETURN TRIP	
Lower Ramparts	Part of Gwichin group met on the 9th. They were camped farther upstream.
Pierre Creek	Group had fish nets set at the mouth of Pierre Creek, but their dwelling was upstream (Deh Cho) and inland. The structure may have been a pit house. Fish were drying both inside and outside the house. They indicated that the rest of their group had gone to the interior caribou hunt. The house was immediately downstream of Travaillant River.
Thunder River	Several abandoned fish camps.
Thunder River+	The creek where the "Indians" and "Eskimo" went for flint. Recent work at the mouth of Thunder River has identified a siliceous argillite source that is quite workable for stone tools (Pilon, pers. comm. 1988).
Ontaratue River+	A new camp established since Mackenzie's last visit. The lodge was not yet finished. They had no fish hanging. The rest of their group was in the interior hunting caribou.
Ontaratue River	Above Ontaratue they passed many encampments that had not been there on the way downstream.
Loon River	Mackenzie met part of this group on the way downstream. There were five or six new men, one of whom was Dogrib. This group was mostly Hare. They told Mackenzie that their young men were hunting caribou near the Eskimo Lakes.
Upper Ramparts	Some of the same families Mackenzie met on the way down. They were wrapping dry fish in birch bark.
Upper Ramparts	This group hunted sheep in the first range of the Mackenzie mountains.
Upper Ramparts	Mackenzie obtained an eddy net from this group.
Hume River	A goose hunting party.
Great Bear River	Just below Bear Rock are a lot of eddy currents. Mackenzie had not seen a group here before.
Great Bear River+	At the coal veins above Ft. Norman he found an abandoned camp. Mackenzie's guide told him that the coal was used as a black dye.
Great Bear River+	They followed a trail inland and found two camps before the trail ended at a lake on which canoes were required. Caribou were coming into the woods on the east side. Mackenzie feared that the Natives would now all be in the mountains setting snares.
Keele River	Mackenzie passed several abandoned camps below the Keele that were not there on his downstream trip.
Little Rapids	The party spotted an abandoned canoe and many camps. Little Rapids later became the first site of Fort Wrigley.
McGern Islands	Mackenzie reported many old camps and trails. This is near Willowlake River, where Fort Alexander was later located.
Camsell Bend	They found a five- or six-day-old camp.
Camsell Bend	Camps hidden in the bush. The guides felt they may have been occupied earlier in the summer.
North Nahanni River	Camps had been quickly abandoned.
Trail River	Natives ran off when they saw Mackenzie.
Trail River	Natives ran off and left all of their gear.
Liard River	Abandoned Native camp along the lower Liard R.
Rabbit Skin River	Many abandoned camps along the base of steep cliffs. No eddies present. Upstream from the Rabbitskin River.
Trout River	Pole frames covered with reeds, which Mackenzie describes as shades.
Mills Lake	Part of a Cree paddle. Mackenzie speculates that this may have been the war party that terrorized the Natives of the upper river.

[1]Based upon Lamb, 1970:175-225, and paraphrased from Hanks and Winter, 1986a.

inferred that this group was preparing to hunt caribou (Lamb, 1970:185).

From this information, it can be concluded that fishing on the river was carried out prior to the move inland for the late-summer caribou hunt. The fishery also provided an alternative activity to the caribou hunt that could be carried out by the older members of a group (Lamb, 1970:211-219). The transition from the fish camps to the caribou hunt in 1789 took place at a time when the fishery began to fall off due to declining water levels and the barren ground herds were reported near the tree line (Lamb, 1970:219-220). Working from the dates of Mackenzie's sightings, the river fishery began in early July, reached a peak toward the middle of the month and drew to a close by the first part of August. The groups then withdrew to the north and east to snare caribou near the Eskimo Lakes and in the Franklin Mountains (Lamb, 1970:212,219).

The juxtaposing of conflict and subsistence provides one way of demonstrating the significance of the Mackenzie fishery within the Dene seasonal round, in that this resource was utilized despite the risk involved. In terms of human movement, the raiding-subsistence dichotomy offers the possibility of an interesting contrast. The fishing or hunting groups encountered by Mackenzie moved down to the river along tributaries and trails from either the edge of the barren grounds to the north and east or from the Mackenzie Mountains to the west. The subsistence pattern represents a lateral seasonal movement back and forth from Deh Cho along a riverine-inland axis (Clark, 1983). By contrast, raiding and trade by outside groups (i.e., Cree and Inuit) represent movement by those parties along Deh Cho from near the mouth and the source.

Though this conflict model is a useful heuristic device for suggesting the importance of the fishery to the Dene, conflict was not restricted to the river alone. Dene groups hunting north into the Eskimo Lakes often confronted Inuit there (Lamb, 1970:210-214). The intensity of the clashes between Dene and Inuit in the Eskimo Lakes, east of Deh Cho's delta, is described in the oral tradition of both groups and is evident in the archaeological record of Saunaktuk (Arnold, pers. comm. 1984). Obviously, conflict was not a sufficient reason to abandon this resource in favour of other options, such as fishing at an inland lake. This suggests that the mid-summer eddy fishery on Deh Cho was well established at contact and was not the result of changes in the settlement and subsistence systems brought about by increased involvement in the European fur trade and subsequent reorientation toward the point of trade (Helm and Damas, 1963:13).

Inferences about the pre-contact significance of the Deh Cho fishery are further strengthened by Mackenzie's observations on the difference between the Dene's willow bark lake and eddy nets (Lamb, 1970:185, 216). The necessity of this specialization of net technology is attested to by Mackenzie, who traded a steel knife for an eddy net because his longer lake nets were not suited to fishing in the river (Lamb, 1970:216).

Archaeological Implications

From Mackenzie's descriptions, 62% of the groups that he encountered were camped on the foreshore of the river, while 28% were either on the high ground along Deh Cho or a short distance inland along interior lakes. It is impossible to tell where the remaining 10% were located. Mackenzie only discusses on-site structural features (dwellings or hearths) for 33% of the sites. Of this sample, 39 features were mentioned (including hearths, tepees, drying racks and pit houses) that would leave archaeological remains. The description of a possible pit house on the lower river was the only permanent structure that might have undergone reuse over time. This dwelling was located back away from the river (Lamb, 1970).

Seventy-nine percent of the structures he describes were located in camps along the foreshore. The foreshore fish camps are yearly destroyed by ice scouring. Additionally, camps located close to the edge of the high banks will have eroded unless they were protected by bed rock outcrops or along wider sections of the river, where less ice jamming occurs (Hanks and Winter, 1986a; Greer, 1983; Hanks, 1981). As a consequence of site location and natural factors along the river, it is highly probable that a very small percentage of the occupations observed by Mackenzie survived to enter the archaeological record. Despite this, Mackenzie identified some very important trends that have significant implications for the interpretation of the archaeology of the Mackenzie Valley.

Because of the open fear of conflict on the part of Native groups encountered by Mackenzie along the river, his guides indicated he only saw a small percentage of groups near the river, as their camps were hidden inland (Lamb, 1970; Richardson, 1852). This bodes well for the discovery of sites back away from the actively eroding river banks (Hanks and Winter, 1983a; Hanks, 1984, 1986).

Mackenzie's reports of an active contact period fishery along Deh Cho challenges the suggestion that intensive use of the river is a post-contact phenomenon (Helm and Damas, 1963). His observations on Native contacts along Deh Cho during the summer of 1789 provide a useful baseline from which to consider diachronic change between the pre-contact and contact periods.

The Mackenzie Model and Pre-Contact

A model based upon Mackenzie's observations provides a synchronic view of the mid- to late-summer use of Deh Cho. An examination of the fishery on the river as described by Mackenzie places Dene groups *in situ* at contact, utilizing eddies with a specialized net technology. This combined with evidence from the Peace River (Stevenson, 1986), the lower Hay River (Hanks and Irving, 1987) and the mouth of the Arctic Red River (Pilon, 1987a,b,c) argues strongly for the role of the large rivers as important spring-summer fisheries during the pre-contact period.

When the timing of the move from the river fishery to the late-summer caribou hunt in the taiga northeast of the Mackenzie Valley or in the Mackenzie Mountains to the west is compared to post-contact references and the modern seasonal round, it provides a basis for considering changes in the seasonal round over time. The eddy fishery is a pivotal activity for the construction of behavioural analogies about Dene utilization of the Mackenzie drainage because the fishery under normal conditions provided a low-risk–high-return source of food that could be cached and stored for winter. John Thomson, in the 1800 post journal for Rocky Mountain Fort at the mouth of the North Nahanni River, discusses at length the importance of cached food for the

Indians in the upper Mackenzie Valley during the coldest months of winter. According to Thomson (1800) the Natives moved from cache to cache when hunting became difficult. The continued importance of cached food in the Dene subsistence economy throughout the post-contact period is confirmed in the modern oral tradition (Smith, 1986). The fishery has continued to provide a major source of food for caching.

To test the inferences drawn from Mackenzie's journal and archaeological evidence from the peripheries of the study area, it was necessary to demonstrate the presence of a series of fish camps related to the eddy fishery spanning pre-contact to contemporary times along Deh Cho. Unlike many of the river eddy locations, the limestone cliffs at the Ramparts have protected sites from erosion. Though under normal circumstances fishing parties would have stayed on the foreshore, Richardson indicates that because of the danger of raiding, camps were often placed on top of the cliffs at the Ramparts (1852). The Upper Ramparts are still the home of one of the most active Dene fisheries on Deh Cho and offer the possibility of *in situ* comparison between modern and past behaviour.

Mackenzie's references to human movement from the Deh Cho fishery to the interior caribou hunt support an hypothesis advanced by Clark (1983:8), who suggests that the movement back and forth from the Mackenzie Mountains and/or the edge of the barren grounds to Deh Cho would serve to increase the diversity of local environments exploited by human populations throughout the year. Within this movement, the Deh Cho fishery is, despite occasional failures, a relatively low-risk, high-return subsistence activity if it is tapped at the correct time of year (Yerbury, 1986; Binford, 1980:10; Jochim, 1976:16; Hara, 1980:237). Among the Slavey, who were largely cold-climate foragers, the problem of overwintering was solved by exploiting species such as moose, caribou, hare, ptarmigan and fish that are active and available at that time of year (Binford, 1980:15). Fish, moose and caribou taken in late summer and fall and cached were the only stored foods (Binford, 1980:15-16) and were critical to winter survival (Krech, 1984:104). Mackenzie's references to both Mountain and Lowland Dene groups utilizing the river fishery to prepare dry fish substantiate this assumption (Lamb, 1970).

On the basis of Mackenzie's data, however, Clark's hypothesis should be expanded to account for raiding and trade along the river in relation to the seasonal movement to the river from near the barrens or the mountains. This distinction is still evident among some Slavey groups who use the term Deh Cho when discussing travel to and from the river and Mackenzie River when describing travel along it (George Boots, pers. comm. 1986).

If the along-river pattern existed in pre-contact times, it may be one of the mechanisms that contributed to the movement of preferred lithic types (e.g., welded tuff) within the drainage (Cinq-Mars, 1973:E22-E24). The known movement of welded tuff from the quarries near Stewart and Tate lakes on the west side of the central Mackenzie Valley along the Mackenzie River into the extremities of the drainage and beyond (e.g., Old Crow Flats and the Southern Lakes in the Yukon; Colville Lake, Great Bear Lake, Fisherman Lake and the lower Hay River in the Northwest Territories; and the Peace-Athabaska region of northeastern Alberta) may be partially explained by this model of movement (Cinq-Mars, 1973:E26; Donahue, 1976:132; Hanks and Irving, 1987).

Similarly, a flake of obsidian found in a *ca.* 1800-year-old level of the Desnoyer site along the Hay River, south of Great Slave Lake, demonstrates the movement of other exotic lithic raw materials into the area from a great distance to the west (Hanks and Irving, 1987). The nearest sources of obsidian are in the St. Elias Range, of which Mount Edziza, in the southwest Yukon, is the best known (Harris, 1987:Plate 14). Though the model is very tentative, the tracing of the distributions of exotic raw materials, such as welded tuff and obsidian, is a promising means of postulating pre-contact mobility within the normal functioning of the subsistence strategy by indirect trade along the Mackenzie drainage (Binford, 1979:260).

A test of the concept of lithics as an indicator of mobility would be to examine the distribution of welded tuff against other locally available raw materials from the central Mackenzie Valley. Several local cherts, for instance, have relatively restricted local distributions (Cinq-Mars, pers. comm. 1984). It may be possible to compare the distribution of tuff as an exotic trade item with locally utilized cherts and sedimentary rocks that are restricted to a few drainages near their source.

Using observations made at contact about subsistence and mobility, two lines of investigation are possible. The first is the further exploration of the early historic seasonal round, based upon ethnographic sources and analogies generated from contemporary behaviour. Using Janes's (1975) assumption that there is considerable overlap between the late pre-contact and early contact periods, it should be possible to extrapolate from this research to pre-contact times. The second step involves using the distribution of local and exotic lithic material in the pre-contact period to examine the nature of mobility where more direct information is lacking. The assumption is that lithics move over long distances as a result of inter-group contacts within normal subsistence strategies. This is based upon analogies from the movement of lithic and trade goods during the historic period. Examples of this movement are found in the testimony of one of Mackenzie's Dene contacts who indicated that Inuit obtained flint from the lower Deh Cho at Thunder River (Lamb, 1970:208; Pilon, 1990:258) and "Russian-type" glass beads found at Fort Franklin on Great Bear Lake (Hanks and Hammond, 1989). The distances involved in the two examples are quite different. The inland lakes where Inuit hunted caribou and fished are not very far from the sources of chert on the lower Mackenzie (Lamb, 1970:209). The nearest Russian trading post to Great Bear Lake in the 1820s, when Fort Franklin was occupied, however, was across the Mackenzie Mountains on the Pacific coast (Masson, 1960:145; Yerbury, 1981). It is interesting to note that welded tuff has been found near the Southern Lakes (Greer, 1983). These areas of the southern Yukon are along a possible trans-mountain route from the Mackenzie drainage to the coast. Trans-mountain exchange is referred to by Wentzel (1821) when he says:

> We have heard that beyond the Rocky Mountains a very large river flows to the westward and discharges itself into the sea. . . . That ships come yearly up the river to a certain distance and trade with the Natives, who get a sort of large dag[g]ers or lances made of a kind of soft white iron. . . .

A longer route by way of the Yukon, Porcupine, Old Crow and Rat river drainages is also likely (Krech, 1987). This is

suggested by the presence of Gwich'in with beads of probable Russian origin along the north shore of Great Bear Lake in the early 19th century (Mckenzie, 1805). References to travel for lithic material and long-distance trade for European goods, coupled with information on the movement of various groups to and from subsistence resources, provides an adequate base from which to begin considering similarities between the early pre-European and post-European periods.

THE CRITICAL LINK — DENE CULTURAL DYNAMICS IN THE 19TH AND 20TH CENTURIES

Because of the accelerating impact of the fur trade in the 20th century, it has been hypothesized by those favouring a theory of *in situ* Dene cultural evolution in the Deh Cho drainage that there is a larger gap between the Dene of the 19th and 20th than between the 18th and 19th centuries (Janes, 1975). Conversely, others maintain that the very presence of the Dene in the valley is largely a phenomenon of the proto-contact period (Yerbury, 1986). Hence, when constructing the analogies proposed in the previous section, change brought about by the intensification of the fur trade must be considered in terms of its impact upon the geographic distribution of the Dene.

In examining changes in the Dene land use system, the crucial questions generally concern what major shifts in range utilization took place and how these shifts affected the use of key resources and places. The most drastic geographic shift cited by the *in situ* school adherents is the movement toward a greater dependence upon navigable water systems, which increased ease of access to points of trade (Helm and Damas, 1963:13; Cinq-Mars, 1973:30-31, 1974:23; Millar and Fedirchuk, 1975:33; Janes, 1975:7-11). Prior to World War II the acculturation pressure in the Mackenzie Valley was relatively gentle (Janes, 1975:5-7). Oil development during the war and increased interest in the North after it rapidly accelerated the process of change for the Dene. In terms of this study, however, the critical question is: did that shift represent such a dramatic change that it altered our ability to infer the locations of early contact and pre-contact sites from more contemporary ones in the Mackenzie Valley? Yerbury (1986) maintains that indirect contact and the middleman system forced the Slavey farther north in the proto-contact period. If this is so, there should be very little evidence of Native occupation in the late pre-contact period. Helm and Damas (1963:13) suggest a less dramatic shift from inland lakes to Deh Cho in the late contact period. They state that this was a movement from areas rich in fish, flesh and furs to the river, which is, by implication, more convenient to the traders, but not as good a subsistence base.

The low frequency of early contact and late pre-contact occupations along Deh Cho is at least partially based upon the low number of occupations with lithic assemblages found along the river compared to small inland lakes and Great Bear Lake. Earlier surveys along the river have indicated that the Mackenzie River was not intensively utilized until the late post-contact and contemporary times (Janes, 1975:162-163; Millar and Fedirchuk, 1975:1; Morrison, 1984:195; Clark, 1975:161; Hanks and Pokotylo, unpubl. data; Pilon, 1987a,b,c). If these surveys accurately reflect the potential distribution of sites along the river, the explanatory power of analogies about early post-contact use based upon modern examples may be questionable. The distribution of sites, however, is representative only of the surviving archaeological record rather than an accurate reflection of the aboriginal occupation of the Mackenzie Valley. The archaeological record preserved along the Mackenzie is a result of natural (erosion, forest fires and frost) and cultural factors (site formation and abandonment) (Ascher, 1968:47).

Mackenzie recorded an active summer fishery with associated camps along both the foreshore and on top of the river banks. From observations on the erosional regime of Deh Cho it is obvious that many sites that were located near the river bank have been lost (Hanks and Winter, 1983a). The problem of erosional destruction of archaeological sites is evident in Millar and Fedirchuk's (1975:175) search for the location of Fort Norman I (1804) across from the mouth of the Redstone River. Hanks measured the rate of bank slump in this area between March and late August 1984. During that time the bank retreated 3 m, with the result that the cabin that was being used as a datum fell into the river. The test site was located in the immediate vicinity of the location given for Fort Norman I on Wentzel's 1821 map (Millar and Fedirchuk, 1975:175).

Spring flooding of early historic fur trade establishments is documented for both Fort Norman II and Fort Good Hope III in the 1820s and 1830s (Janes and Losey, 1974:109-110). This inundation led to the relocation of both establishments (Janes and Losey, 1974:109-110). "Millers' cabin" below Fort Good Hope is the home of a former Euro-Canadian "depression"-period trapper and is a current Dene spring camp. This site (83-31) is located approximately 8 m above the summer water level (Hanks and Winter, 1983a). According to informants from Fort Good Hope, Millers' has been flooded out several times in the last 20 years (Hanks and Winter, 1983a:104). Conversely, other late spring camps near Fort Good Hope are located on the high banks of the Mackenzie, 18-20 m above the summer water level, to avoid the danger of destruction through ice scouring during breakup (Hanks and Winter, 1983a:107-109).

Given the destruction of many sites due to natural factors such as erosion and silting, it is possible that the change between the 17th- and 18th- (Yerbury, 1986) and the 19th- and mid-20th-century pattern of regional land use may not be as great previously suggested (Millar and Fedirchuk, 1975:32-33). On the basis of Mackenzie's observations along the central and lower river, it is known that there was a substantial summer fishery operating at contact. Despite the dangers of raiding, a large number of camps were located along the summer shoreline. The summer water level may be as much as 5-8 m below the normal high-water line. Conversely, as an apparent direct consequence of the fear of raiding, many camps were located back from the river on tributary streams and on trail systems leading inland. At least three locations — a tepee 30 km below Fort Good Hope (Hanks and Winter, 1983a), the Upper Ramparts sequence (Hanks, 1986) and the Northwest Company, Fort Alexander on Willow Lake River (KeRj-2) — have the remains of pre-contact and/or early contact camps that may have been placed back from the Mackenzie River as protection from raids. Working from historical reconstructions of Mackenzie's progress along the river (Lamb, 1970; McDonald, 1966), the major fisheries being exploited in 1789 were located from the Keele River to Bear Rock below Fort Norman and from the Upper Ramparts at Fort Good Hope to the mouth of the Arctic Red River. Given the seasonal timing of Mac-

kenzie's visit, according to modern Dene informants, this is a logical distribution of sites as the fish run would not yet have reached the upper river. The major fishery in the upper Mackenzie begins late in the summer.

Although today the utilization of the river eddy fisheries near Fort Norman is not as frequent as at Fort Good Hope, the locations are still well known (Cohen, 1962; Hara, 1980; Smith, 1986). Both Fort Norman and Fort Good Hope informants have indicated a number of eddies formed by bedrock outcrops and bends in the river that are used as summer fisheries. Many of these eddies are near locations that were used in the late 19th and early 20th centuries as extended family base camps (Bompas, 1888). These camps were staging areas in the late contact period for collecting activities that would either take groups into the interior or along Deh Cho to the point of trade. Thus, the log cabin all-Native community that became common in the early 20th century should not be viewed so much as permanent residences but as a base of operation from which other activities occurred (Eder, 1984:847; Helm and Damas, 1963).

LOCAL KNOWLEDGE, SITE LOCATION AND RESOURCE AVAILABILITY

The land immediately along the Mackenzie River is part of a larger generalized ungulate hunting area, intermixed with more specifically defined fishing, trapping and gathering areas. When the along-river/across-river model is applied, it is possible to infer certain trends about sites and potential sites along the Mackenzie River. Bishop Bompas (1888:42), for instance, names numerous Dene groups that frequently utilized the Mackenzie Valley in the late 19th century (e.g., Big River Indians, Slave and Hare) and other adjoining bands who may have made less frequent visits (e.g., Dog Rib, Nahanny and Mountain) to the areas immediately adjoining Deh Cho.

According to Bompas (1888:5,41), netting fish and snaring rabbits (arctic hare) were extremely important activities along Deh Cho, particularly when large game was scarce. Bompas's observation is in keeping with those of Alexander Mackenzie at the time of contact (Lamb, 1970), William Wentzel in the period *ca.* 1807-23 (Krech, 1984:103-104), and Dr. John Richardson (1852) in the 1840s. It is evident from these sources that Native fishing on the Mackenzie River was an on-going summer subsistence activity in the late 18th and 19th centuries. It is obvious from the reinterpretation of Mackenzie (Lamb, 1970; MacDonald, 1966), Richardson (1852) and Bompas (1888), that the intensive riverine adaptation of 20th-century Dene is not a fundamental alteration of the patterns that persisted during the 18th and 19th centuries, but rather a continuation of pre-contact/early contact adaptation. Given historical continuity, the distribution of late contact and contemporary sites along Deh Cho has direct analogous relevance to long-term Native land use patterns in the Mackenzie Valley.

The continuity of Dene land use patterns has a biogeographical, as well as a cultural, component. Though this geographical dimension is often taken as a given by archaeologists (Binford, 1982), it is an important criterion in developing site distribution models. The social changes linked to contact with Europeans must be understood within the context of the biotic and physical factors that influence the distribution and abundance of species within the Dene's range (Cox *et al.*, 1976:30). Changes in human subsistence and settlement have occurred over time due to both social and biogeographical factors.

Within the context of this generality, there are certain fixed geologic features that have created resource concentrations or "islands" in comparison to adjacent areas that may have similar but more dispersed resources. These loci may be river eddies formed by bedrock (e.g., the Upper and Lower Ramparts, Twelve Mile Point, near Fort Norman, and Little Rapids, the site of Fort Wrigley I). Mackenzie observed people fishing in close proximity to the areas where bedrock outcrops have formed eddies and at creek mouths. These locations are still in use today. Eddies, like salt licks on the Saline Creek, Great Bear River and Willowlake River, or shallow lakes on the Mackenzie migratory bird flyway (e.g., Brackett or Willow Lake) form foci in the Dene subsistence system. Early 19th-century references in the Hudson's Bay Company journals from Fort Norman to the Great Bear River salt lick and spring hunting at Willow (Brackett) Lake further demonstrate continuity in the use of these locations (H.B.C., P.A.M. B.152/a/4.27d, B.152/a/12.9). Consideration of these features and others, such as lake narrows and mountain passes, which consistently funnel migrating herds of caribou into drift fences, and winter fish lakes near old burns, which provide both dry sources of firewood and moose browse (Krech, 1984:104), indicates a pattern of high-potential resource "islands" that have been and remain seasonal loci for Dene groups.

Preliminary studies of Dene seasonal round and concepts of geographic recognition indicate that knowledge of these resource loci are maintained through stories of travel and place naming (Hanks and Winter, 1983a,b, 1986b; Andrews and Hanks, 1987). There is a balance within the seasonal round between the point-to-point logistics utilized to exploit these "resource islands" and the areas travelled through between these points, where resources are dispersed and must be encountered through a more random foraging strategy.

CONCLUSION

The overlap of early contact, late contact and contemporary fisheries at permanent eddies in conjunction with the existence of a well-developed aboriginal net technology at contact (Lamb, 1970; Morrison, 1984:196, 1987:61; Krech, 1984:103) provides a significant argument for the antiquity of the summer fishery on Deh Cho.

An increased awareness of the scale of erosion along the river and the impact of raiding during the contact period are important factors in explaining the lack of obvious early contact and pre-contact sites along Deh Cho. Although there was an increase in the length of time groups spent near the big river as a result of fur trade intensification, it is certainly not a new adaptation. Recent archaeological discoveries at Bird Rock downstream from Fort Good Hope (Hanks and Winter, 1983a), on top of the cliffs at the Upper Ramparts on Deh Cho (Hanks, 1986) and at Fort Alexander next to the Willowlake River (Hanks, 1984) illustrate post-contact Dene structures drawn back from waterways and kept out of sight. These discoveries are consistent with the observations of Mackenzie (Lamb, 1970) and Richardson (1852) and Dene oral tradition on raiding. Intensive survey of Dene trail systems, tributary streams and small lakes near the big river may lead to the discovery of late pre-contact and early contact period sites that relate to the utilization of the Deh Cho fishery.

Ethnoarchaeological research along Deh Cho has provided a context for understanding the eddy fishery that can then be applied to the interpretation of historic accounts and the archaeological record. Timing, exploitation with nets and storage for later use are all areas where fruitful comparisons can be made. There is little doubt that natural eddies upstream from Fort Norman and in the Fort Good Hope area that are known and used today are very close to the locations of ones described by Mackenzie at the time of contact. Further, the ethnoarchaeological techniques for eliciting ethnogeographic data through place-name research has demonstrated to a small degree how knowledge about resources and camps is passed on even when the locations are not currently in use or are seasonally destroyed.

Given the erosional regime of the river and factors of site visibility, the archaeological record known from the late contact period is weighted toward the large base camps, in which cabins were the principal form of shelter. Through the use of ethnographic analogy and historic reconstruction we have, however, been able to make inferences about broader summer use of the river and to reflect on the relationship between that model and the known archaeological record.

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