

IN SEARCH OF THE ELUSIVE:
TRADITIONAL NATIVE PRESCRIBED BURNING
IN THE NORTHEASTERN WOOD BUFFALO NATIONAL PARK AREA¹

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This project was designed to explore the traditional use of a prescribed burning technique by native people in the Ft. Smith - Ft. Fitzgerald area. Previous research in northwestern Alberta had demonstrated that resident Beaver, Slave and Cree peoples had used prescribed burning in the early part of the 1900's to enhance the productivity and predictability of yield of many of their resources, both plant and animal (Ferguson 1979; Lewis 1977; 1982a). Similar results from the Wood Buffalo National Park area were expected to contribute to the University of New Brunswick Fire Science Center's fire management project through the documentation of one important anthropogenic factor in the fire and vegetation history of the area.

Interestingly enough, the results of this research are not as anticipated. The application of the prescribed burning technique in the northeastern Wood Buffalo National Park area was apparently much more restricted than that defined for northwestern Alberta in the same time period. The following discussion will, first, outline briefly the findings from NW Alberta which constituted the expected findings for this project; second, describe the methods used and the results of this research in NE Alberta; and third, discuss some of the factors which may account for the differences in the ethnographic data from these two areas of northern Alberta.

Background: The Northwestern Alberta Research

This brief discussion is drawn from the following sources to which readers in search of an expanded explication should refer (Ferguson 1979; Lewis 1977; 1982a; 1982b; Lewis and Ferguson 1988). Native prescribed burning in northwestern Alberta in the early 1900's as documented through informant recall, conformed to a 'yard and

corridor' pattern. Yards, such as hay meadows and forest openings; and corridors such as trails, traplines, stream and lake edges were maintained in an open, early successional stage by the use of fire. The resulting young growth of grasses and vegetative suckers in these areas attracted herbivores, both the larger game such as moose and the smaller herbivores such as hare and mice. These smaller herbivores in turn attracted fur-bearers such as lynx, fox and wolf. Native informants commented on the good physical condition of animals harvested in these areas and on their own increased certainty of taking game if they hunted or trapped in these areas.

Settlement areas, also a focus of prescribed burning, were a special kind of yard. In this context the use of fire was directed at reducing summer fire hazard and insect populations; at providing firewood, berrying areas and a pleasing, grassy ambiance; and as a first step in establishing vegetable gardens. In addition, fresh forage for the community's horses was provided by prescribed burning both within the community and in the hay meadows surrounding the community.

The seasonality of burning was the crucial control exercised over fire behaviour. Burning in the spring or in the fall ensured a light intensity fire and took advantage of a situation where wet fuels in the bush (due to persisting snow) would act as a fire-break for the fire on the drier fuels of the open area. On any particular day, the decision to burn would be influenced by an evaluation of wind speeds and direction, humidity and fuel conditions.

The size and kind of area to be burned would determine whether the firing would be accomplished in several stages or not. On large hay meadows, for instance, a partial burn one day would serve as a fuel-break for a fire set several days later. A deadfall area in the bush might be burned out over several years.

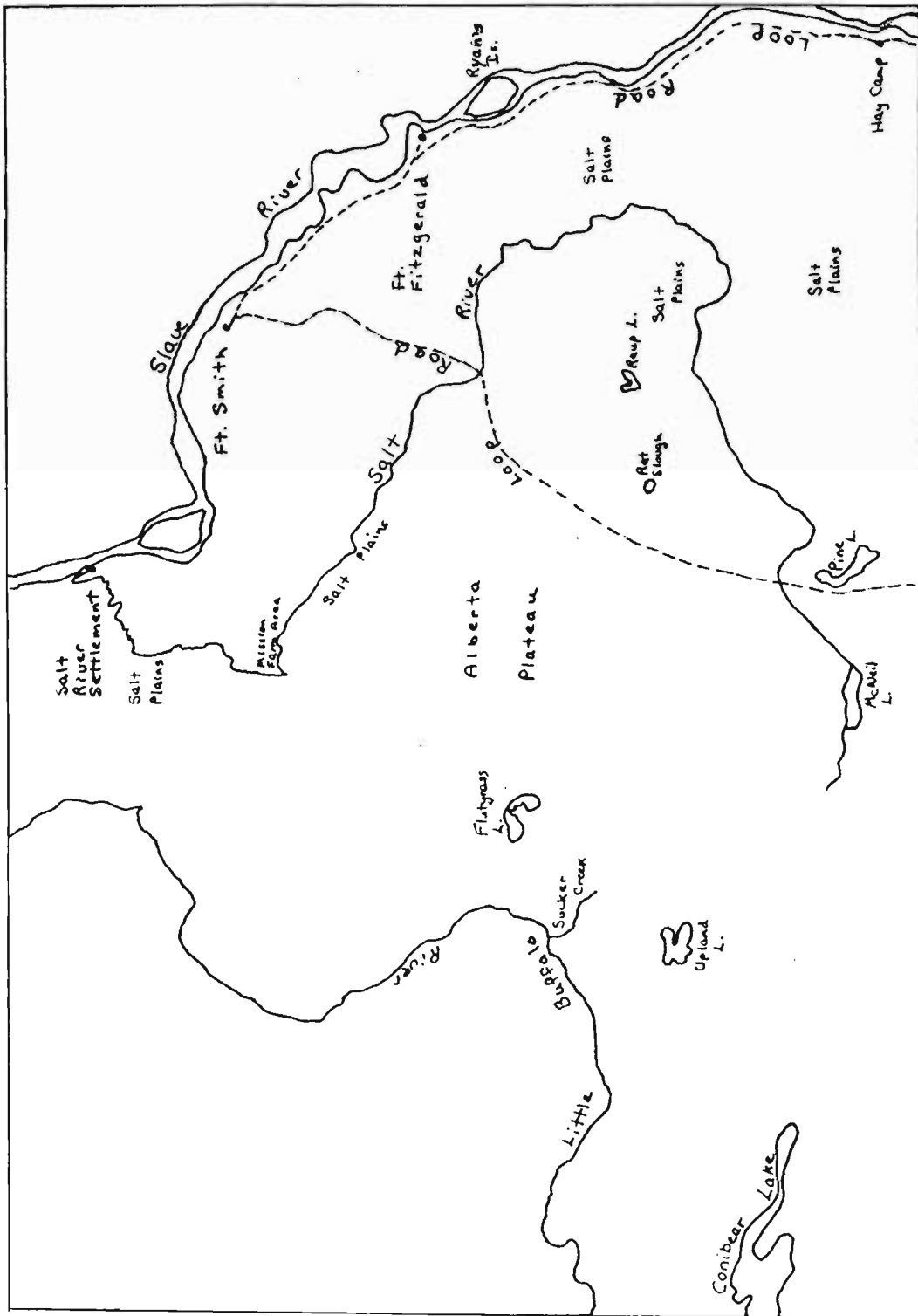
The frequency of application of firing was also perceived as important in achieving certain goals. One light intensity firing would stimulate aspen suckering. Used every few years in any particular spot in the bush this kind of fire created good forage for browsers. However, annual firing would kill off aspen. Annual burning, then, was an important strategy in preventing aspen invasion on hay meadows.

In summary, in order to achieve certain environmental effects, native peoples of northwestern Alberta manipulated the factors of fire location, fire intensity and fire frequency. This technique increased the productivity and predictability of the yield of resources important to their economy.

The Wood Buffalo National Park Research: The Ethnographic Findings

This research was carried out in the summers of 1985 and 1986 in conjunction with other anthropological studies in the Ft. Smith - Ft. Fitzgerald area (see Map 1). A number of Cree-Chipewyan people were interviewed about prescribed burning but ultimately the greatest reliance was placed upon two informants, both of whom were interested in historical questions and were recognized by others in the community as excellent sources of historical information.

These interviews defined a pattern of prescribed burning which was restricted almost exclusively to settlement areas. There were three major settlements in this area in the early part of this century. Salt River Settlement and Fort Fitzgerald were the centers of most of the population. Fort Smith at this time was very small, essentially a depot for the portage around the rapids in the Slave River. The emphasis in informants' statements was on the use of spring burning to clean up these settlements and to provide hay for the horses and cattle. Two interior settlements, Sucker Creek and Conibear Lake, were identified as centers of trapping activity for Ft. Smith and Ft. Fitzgerald people. These interior settlements were occupied only for the winter trapping season. Informants spoke of leaving them for the larger settlements while the snow was still



Map 1: The Northeastern Wood Buffalo National Park Area

on the ground. These interior settlements, then, were not burned.

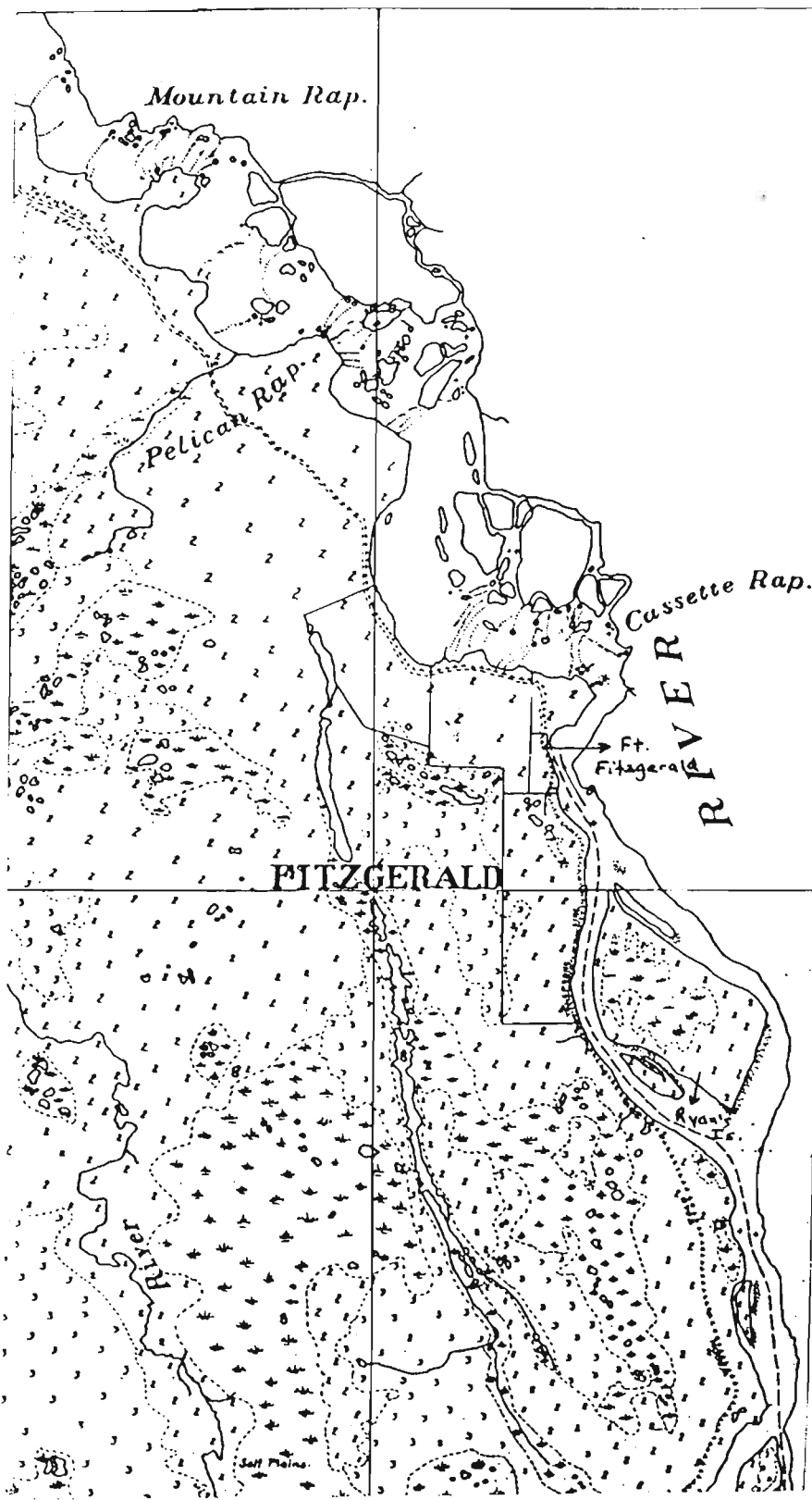
Some variability in the extent of area burned around the settlements did exist. In Ft. Smith and the Salt River Settlement prescribed burning was apparently carried out only in the settlement itself. Informants pointed out that the horses wintered on the Salt Plains and these prairies provided feed without being burned. In contrast, the area around Ft. Fitzgerald wherein small hay meadows were maintained by firing extended to about a three mile radius from the settlement and included Ryan's Island in the Slave River. Ryan's Island (see Map 2) was formerly known as 'Klo' nuay' or 'Hay Island'. Map 2 represents part of a 1927 map of this area which includes some vegetational description. About half of Ryan's Island is described as very lightly or not timbered. The vegetation of the area between Ft. Fitzgerald and the chain of lakes to the west in which scattered hay meadows were maintained by burning is described as ranging from grass/wet meadows to 'partly open' to 'mostly timbered'.

Although the areal extent of burning was restricted, it is important to stress that informants were quite aware of critical aspects of the prescribed burning techniques as used in the maintenance of hay meadows:

We burned the meadows to keep them clear of poplar, every spring while there was still snow in the bush. If you're burning poplar, what you burn one year will dry up and then you burn the next and its all gone. But we had to stop, before I was 20 even. I was out with the men the last time they burned that Ryan's Island.

(Chipewyan male informant, b. 1909)

Even men of the younger generation were aware of the principles behind prescribed burning although not all of their knowledge necessarily derived from traditional knowledge. Some spoke of experiments which they would like to try in certain hay meadow areas. They emphasized the seasonality of the burn as the major control on the fire and they outlined the strategy of proceeding in stages so that earlier burns served as fire-breaks.



REFERENCE

C ... mostly timbered, poor feeding grounds, marked - 2
 ... partly open, considerable swamp, some feed ... - 3
 ... very light or no timber, chiefly swamp.
 ... probably good feeding grounds.
 ... and sandbars as in the month of September 1917
 ... telephone lines shown thus

Map 2. Wood Buffalo Park, 1927: Portion of R/1-18/ Sheet 5. Courtesy of National Map Collection, Public Archives of Canada.

Despite this familiarity with the techniques of prescribed burning, informants were quite adamant that prescribed burning was not used in the bush to create habitat for game animals or fur-bearers nor to maintain trail. There is, nonetheless, one reference to the use of prescribed burning away from the main settlement areas which does not have a parallel in NW Alberta. This involves the burning of grass in spring campsites to discourage snakes.

Garter snakes (Thamnophis sirtalis) are common in the Salt Plains area near the escarpment. The Chipewyans apparently held snakes in disgust and in the past made it a practise to burn off the grass in their spring fishing camp on the Salt River to discourage them:

They used to burn around that fish camp at the bridge because of the snakes. That place is just crawling with snakes so they would burn it off. I guess the snakes don't like to crawl through that stubble. Also, they would put a rope around the tent because those snakes don't like going over rope. I guess its rough, like the stubble. Anyways, they'd burn that place and then set up their tents on the burnt ground.

(Chipewyan male informant, b. 1909)

This informant was speaking specifically of the traditional fishing camp on the Salt River at the northern^{most} crossing of the Loop Road (see Map 1). There is another important spring fishing site on the Salt River in the Mission Farm area where the Salt R. turns north and flows away from the escarpment. Garter snakes were also common there and it would be a logical inference that these campsites were fired as well. In contrast, a small spring fishing site much further up the Salt R. and away from the garter snake area was not burned.

Aside from this instance, the pattern of prescribed burning delineated ethnographically for this area focussed on settlement areas which the people considered their major home base. This conclusion is supported, or at least not refuted, by material from an unpublished study on the use of prescribed burning in the Athabasca Delta - Birch Mountains area to the south (P.A. McCormack, pers. comm ²) Dr McCormack's data on prescribed burning focussed on

'bush settlements' and associated hay meadows. Although the local subsistence-settlement system appears to be somewhat different from that encountered in the Ft. Fitzgerald area, these 'bush settlements' were considered major home bases.

Hypothesized Influences on the Ethnographic Data:

These ethnographic findings may seem to have diminished the significance of this anthropogenic factor in the fire and vegetation history of the area. Nevertheless, the lack of evidence for extensive prescribed burning in the early twentieth century does not mean that the area was never subject to a more comprehensive pattern of prescribed burning. The deliberate use of fire in a bush context is documented not only in the ethnographic record from NW Alberta but also in more generally phrased ethnohistoric statements on NE Alberta and the Great Slave Lake-South Mackenzie area (eg. Camsell and Malcolm 1919:49; Jarvis 1897:159; Michea 1960:60) and in references throughout the literature on the western boreal forest (eg. Guedon 1974:27; McKennan 1959:49; Petitot 1876:xxv). It seems unlikely then that this area alone was exempt from management by this technique. On the other hand, this situation shows clearly that we cannot make easy assumptions about a uniform application of the prescribed burning technique in all temporal and spatial contexts within the boreal forest. The question remains: why is there so little ethnographic data on the use of fire in bush contexts in this area?

This section of the paper examines a number of factors which may underlie this phenomenon and outlines some directions for future research. Four of these factors can be fairly clearly defined and these are discussed as hypotheses. Other less clearly defined influences are subsequently discussed in a more general way.

Hypothesis A: People are concealing information concerning past prescribed burning activities.

This explanation was offered most frequently by colleagues to

whom I mentioned this lack of data on prescribed burning in a bush context. The deliberate concealment of data by informants is hardly unknown in anthropological research, although perhaps not much discussed in the literature.³

These research findings were supported by non-participating observers in the area as well as by the independent study conducted in the Birch Mountains-Athabasca Delta area. It is quite true that informants who were active trappers were concerned that government institutions would use data about past prescribed burning activities to justify a 'let burn' policy despite the significant differences between the two fire management regimes. These trappers were quite explicit about the reasons behind their reluctance to discuss any of this material. In effect, this concern closed an entire sector of the informant community to me.

The older informants from whom the main data was obtained made no reference to this concern nor to any other. If the legality of the activity was a constraint on providing information, it is unclear why some instances of prescribed burning were denied, while others, equally illegal, were freely specified.

In summary, I do not feel that there is sufficient evidence to support the hypothesis that deliberate concealment is the reason for the limited ethnographic data on prescribed burning in this area in the early 1900's.

Hypothesis B: Soil salinization leading to the creation and maintenance of open prairie areas diminished the need for prescribed burning in bush areas.

This hypothesis is suggested by informant comments on the redundancy of the use of prescribed burning on the Salt Plains. The Salt Plains (see Map 1) are a strip of lowlying land between the western alluvial zone of the Slave R. and the Alberta Plateau. This area

of open vegetation was created and maintained by the flow of saline waters from salt springs which emerge at the base of the escarpment marking the eastern edge of the Alberta Plateau. In the immediate vicinity of the salt springs are salt lakes and salt-adapted vegetation such as the distinctive samphire (Salicornia rubra). Elsewhere in these flats there is marsh and meadow interspersed with forest stands.

Although it is quite possible that the benefits of prescribed burning would not strike a resource-user so forcibly in the Salt Plains, this doesn't explain why the use of prescribed burning is not recorded for other bush areas.

The interaction of prescribed burning and soil salinity as agents in the creation and/or maintenance of prairie areas in northern Alberta is worthy of further comment. The large prairies of the Upper Peace are, for instance, primarily associated with solonchic soils which have a high concentration of exchangeable sodium or magnesium (Reeder and Odynsky 1964; Moss 1952; Wilkinson and Johnson 1983). I have argued elsewhere (Ferguson 1979) that as soil leaching acted over time to decrease salinity and thus to promote forestation in these areas, native burning maintained the prairie vegetation.

Researchers in the Upper Peace (Johnson and Wilkinson 1983:1859) have suggested that the 'dark soils' observed by Raup (1941) to be associated with the subarctic prairies in Wood Buffalo National Park are probably solonchic. One area of mixed prairie-woodland underlain by these 'dark soils' that particularly interested Raup lay between Flatgrass Lake and Grassy Lake⁴ on the Alberta Plateau (see Map 1). Raup (1935:25) estimated this upland "semi-open prairie country" covered about two thirds of this entire area. This area is now completely forested so it can be assumed that whatever process was acting to maintain this prairie-woodland has been interrupted.

Informants have commented that both the Salt Plains and the Alberta

Plateau area have become more forested over the past 60 years. This observation mirrors one made about this same area by Joseph (Susie) Beaulieu in 1907 as reported in Seton (1943:44). Thus, this trend in forestation seems to have begun in the last century and the rate of forestation is faster on the Plateau than on the Salt Plains. This latter inference is reasonable in view of the ongoing salinization of the water and soil in the Salt Plains area. The causes of this forestation are unknown. Possible influences include a cessation of prescribed burning in the 1800's, the effects of leaching on solonchic soils, an increase in climatic moisture etc. Undoubtedly in the past few decades fire suppression programs have affected this rate of forestation.

Hypothesis C: The ethnographic record reflects the activities of a recent immigrant population, the Chipewyan, which did not traditionally use the prescribed burning technique.

The contemporary native peoples in the Ft. Smith area are Cree and Chipewyan. It is now well established that the Chipewyan were encouraged by the fur traders to move into and occupy on a year round basis the Slave River-Lake Athabasca-Athabasca River areas. This 'migration' west and south from a traditional tundra-transitional forest home started around 1770 and was not complete before the 1830's (Gillespie 1975). In contrast, the date of arrival of the Cree in the Lake Athabasca-Peace River-Athabasca River area is indeterminate, although certainly it predates that of the Chipewyan (Gillespie 1975; Smith 1987).

The first historical record for a specific ethnic group on the Slave R. dates from 1772 and refers to an 'Athapuscow' or Cree camp on the east side of the rapids (Hearne. 1911:269). The impression left by Hearne is that the Slave R. was not occupied by any one group. Perhaps it acted as a buffer zone between the Cree and the Athabaskan groups to the north. From the earliest of the continuous Lake Athabasca records, i.e. ca. 1800, it does seem clear that the

Slave R. was occupied solely by bands which were considered Chipewyan. Informants have suggested that in the early 1900's, the people of the Slave River communities considered themselves Chipewyan and that the Cree now in these communities are subsequent arrivals.

Although there seems to be little doubt that the Cree practised the prescribed burning technique in their traditional full boreal forest habitat (Lewis 1977), it is unknown whether the Chipewyan did so in the transitional subarctic forest. At first glance, it may seem unlikely that any group with a strong dependence on caribou would use prescribed burning to open up or enhance areas of secondary succession within the forest. The lichens on which caribou feed in the transitional subarctic forest are slow-growing plants, part of the climax forest, unlike the fast-growing, early successional grasses and vegetative sprouts which are favoured by fire. Such an observation does not preclude, of course, the use of prescribed burning in the transitional forest to favour other resources than the caribou.

Documentation on the Chipewyan move to the full boreal forest habitat may provide some ^{more specific} clues. This move does not appear to have been an easy one for the Chipewyan. Records from Forts Chipewyan and Resolution make special mention prior to the 1830's of the poor success the Chipewyan encountered in hunting bison and moose (eg. HBCA. Ft. Resolution Journals, entries of July 17/1820; February 17/1823; PAC. MG 19 C1, Vol. 52:2). A journal entry from Ft. Chipewyan for this same period also notes:

Fires in every direction, these Chipewyans I can't imagine what prepossession has now taken hold of them, blazing the Country in this manner.

(PAA. 74.1. Box 3, Item 115. July 10/1826)

From these statements it could be argued that the Chipewyan, lacking a technique used by many boreal forest residents to increase their hunting success, experienced problems in harvesting the boreal forest large game. Interaction with the local Cree people introduced them to the beneficial uses of fire. An initial period of learning by experimentation resulted in some errors in the use of fire, hence, the example of a "blazing" of the country dangerously late in the season.

There are no references to indicate what happened subsequently. Did the Chipewyan go on to refine their use of the technique? Or did they prefer to rely solely on the European firearms to improve their hunting success?

What is required to pursue this hypothesis is research with Chipewyan peoples using the transitional forest zone. Snowdrift on Great Slave Lake or the northern Saskatchewan communities would be likely areas in which to undertake this work.

Hypothesis D: Ethnographic data on burning in the bush areas is generally unavailable from this area because of the early date of the beginning of fire suppression.

Fire suppression in NE Alberta was initiated with the Royal North West Mounted Police patrols in 1897. Large wildfires had occurred in the North in previous years and caused much concern ^{in government circles} about wastage of timber resources. The primary purpose of these patrols, however, was to enforce the game laws, particularly the law which prohibited bison hunting. The RNWMP established permanent posts at Ft. Smith and Ft. Chipewyan around the turn of the century. These posts provided a degree of supervision of local activities that would not be present in NW Alberta for another 40-45 years.

With the establishment of the Park and the warden system local native activities were subject to additional scrutiny. The early Alberta Forestry Service fire records seem to indicate that the Park provided fire suppression in areas immediately adjacent to the Park boundaries such as Ft. Fitzgerald. Their assumption of this role may account for the cessation of hay meadow burning around Ft. Fitzgerald in the late 1920's as noted previously in a quotation from a local informant.

This chronological difference in the enforcement of fire suppression may be sufficient in itself to account for the lack of ethnographic data on prescribed burning in the bush as compared to NW Alberta. This hypothesis could be further examined through research in early Parks records and early RNWMP/RCMP records on local activities in these communities.

These last two 'social change' hypotheses make reference to relatively clear-cut changes. There are other socioeconomic changes operative throughout this period which are less well defined. The impact of these upon patterns of prescribed burning is more difficult to trace. The NW Alberta data, for instance, seemed to indicate that slower, less well-documented changes in bush burning preceded the marked change of the fire suppression period. The earlier changes involved a reduction in the use of fire in the bush. Influencing factors could have included a shift in trapping technology from snares which can be used in the open to steel traps which must be used under closed forest canopy; an increasing emphasis on marten and lynx, both fur-bearers of the climax forest; or even just the increasing concentration of local populations into settlements. In general, we have only a superficial knowledge of the impact of early historical processes on traditional native society. Many changes may have occurred at a relatively early date in the Slave R. area, simply due to the river's use as a main transportation link.

Summary:

In summary, this research suggests that there is little in the way of an ethnographic database on prescribed burning on a regional scale for the northeastern area of Wood Buffalo National Park. The area involved in settlement and associated hay meadow burning was too limited to be significant in terms of a regional fire and vegetation history.

The four major hypotheses discussed here as to the reason for the limited ethnographic data are not the only ones available; none are mutually exclusive; and all will require more intensive analysis than that attempted here. These results underline the need for expanded comparative work on prescribed burning throughout the boreal forest.

Concerning the broader topic of native land-use, as opposed to specifically fire-use, a potential direction for research in the Wood Buffalo National Park area yet lies in the identification of

major 'yards' and 'corridors' in the bush, that is, areas which were intensively used and exhibited fairly open vegetation. Peace Point and the Mission Farm area appear to be good examples of yards; the eskers running northwest from Lake McNeil to Upland Lake form well-defined corridors. Despite ethnographic ambiguity over how such areas ^{were} maintained, their exploration can contribute much to the understanding of native settlement-subsistence patterns in this area.

Footnotes

1. Financial support for the fieldwork was provided by the Fire Science Center, University of New Brunswick; and the Boreal Institute for Northern Studies, University of Alberta. I would particularly like to acknowledge the facilitative roles played by Dr. Ross Wein and Janice Moore of the Fire Science Center, Anita Moore of the Boreal Institute and Dr. Henry T. Lewis of the Department of Anthropology. The Social Sciences and Humanities Research Council generously supported both fieldwork and archival research.

In addition, I would like to express my gratitude to Parks Canada and to Arctic College of Ft. Smith for logistic support; and to the Hudson's Bay Company Archives, Public Archives of Canada and Steve Simzer of the Alberta Forest Service for access to archival materials.

Above all, I would like to thank the people of the Ft. Smith area for their patience and generosity in sharing their knowledge with me. This paper is dedicated to the memory of the late Jean Bantiste Tourangeau of Ft. Smith.

2. Dr. McCormack is the Curator of Ethnology, the Provincial Museum of Alberta.
3. Only fairly recently have anthropologists cared to discuss situations in which informants have offered misleading data. Doubtlessly, this is because such an occurrence was considered to reflect upon the anthropologist's interpersonal abilities and standing with the informant group. However, contemporary anthropology has become more sensitive to the ethical issues surrounding research with native and other relatively powerless groups. The critical questions has changed from "what strategies do we use to elicit sensitive data from unwilling informants?" to "do we have the moral right to try to elicit data from people who have strong concerns about how that data will be used?"

4. Grassy Slough is a name no longer in use. From its position on Raup's (1935) map, it seems to be near the pond known locally as 'Rat Slough'. Delineating changes in local place names would produce one line of evidence on the shift from mixed woodland to a continuously forested landscape.

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