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THE PRAIRIE: PAST, PRESENT AND FUTURE

PROCEEDINGS OF THE NINTH NORTH AMERICAN PRAIRIE CONFERENCE



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Gary K. Clambey and Richard H. Pemble, Editors


TRI-COLLEGE UNIVERSITY CENTER FOR ENVIRONMENTAL STUDIES
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Shay (1986)

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Held July 29 to August 1, 1984, Moorhead, Minnesota

Edited by

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Part 1. PRE-EUROPEAN PEOPLE ON THE PRAIRIES

PLANTS AND PEOPLE: PAST ETHNOBOTANY OF THE NORTHEASTERN PRAIRIE

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Abstract. Ethnobotany is the study of how humans relate to plants. This paper explores the ethnobotany of native hunters and gatherers, native farmers and 19th century European fur traders in the northeastern prairie. While the region's long winters, low rainfall and limited forests challenge its inhabitants, it is endowed with a variety of resources including more than 300 useful plant species. Botanical remains from prehistoric sites reveal that several types of berries and weed seeds were collected by early hunters. These wild species continued to be used after aboriginal agriculture was introduced 1,000 years ago. Key foods of historic native tribes included *Acer negundo* sap, *Psoralea esculenta* roots and *Prunus virginiana* berries. Agricultural crops included *Zea mays*, *Cucurbita* spp., *Phaseolus vulgaris*, *Helianthus annuus* and *Nicotiana rustica*. Native tribes used local forests for fuel and construction but had relatively little impact on them. But because of their greater demand, fur traders depleted local forests and were obliged to import wood from a distance. Through such depletion, land clearance and the introduction of Old World species, the Europeans had a much greater impact on the landscape than either native hunters and gatherers or native farmers. European exploitative attitudes contrast with the spiritual bonds that tied native people to the land.

INTRODUCTION

The prairie is more than wind-swept soil, beckoning flowers and waving grass. It is a state of mind - shaped by the way people relate to its plants, animals and other resources.

The bond that developed between native people and plants is illustrated in the legend of Wapee (Brown 1970). The legend tells us that, to enter adulthood, Wapee had to spend four days and nights atop a lonely hill until he had a vision. The first night no vision came. The next day the rising sun shone on a beautiful flower and its open petals nodded as if to welcome him. Wapee no longer felt alone. When night returned, he curled his body around the plant to protect it from the icy winds. Three times he did this and three times when the morning star appeared, he was rewarded with visions foretelling great things. When Wapee rose to leave, he said to the plant, "You have counselled me well. What three wishes would you have me ask of the Great Spirit?" The flower replied, "Pray that I may have the purple blue of the distant mountains in my petals, a small golden sun to hold close to my heart and a furry coat to face the cold winds of spring." The Great Spirit was so pleased with Wapee's thoughtfulness that he granted his wishes. To this day, the prairie crocus has purple petals, a yellow center and a velvety hairy coat. This spiritual bond with plants was typical of native North Americans (Hughes 1983).

Ethnobotany focuses upon the way in which human societies relate to plant life. As a hybrid of anthropology and botany (Fig. 1), it embraces both human values and plant biology. Both play a part in how plants are selected and used. Aesthetic preferences and values heavily influence the choice of religious and social symbols such as our Easter lilies and carnation corsages, but abundance and heat yield most often guide the choice of firewood (Ford 1979). Human values and natural properties share about equally in the selection of food (Ford 1979, Kronld and Boxen 1975).

In a broader sense, a society's attitudes toward nature affect its exploitation of the environment. Exploitation in turn alters the society's culture and the environment. For example, the adoption of wild rice gathering among the prehistoric people of the Great Lakes provided a new protein-rich food which allowed more people to be supported. It also influenced technology and the seasonal movements of the people (Rajnovich 1984). Domestication of the world's major food crops over the past 10,000 years has not only transformed the food supply, it has significantly altered human nutrition, population numbers, settlement patterns, social life, religion and values (Harlan 1975). Exploitation may leave deep imprints on the environment. Plant domestication, the spread of exotic species, fire, land clearance and selective harvesting are among the changes that have profoundly altered the face of the earth (Thomas 1956).

The following pages focus upon the northeastern prairie and how people with several cultural traditions related to its plant life. These relationships are explored for native hunters and gatherers, native farmers and 19th century fur traders. The aims are to: 1) examine the role of plants among these peoples, 2) illustrate their attitudes towards plants and the natural landscape, and 3) note the influence of each lifestyle on prairie vegetation and plant distributions.

THE NORTHEASTERN PRAIRIE ENVIRONMENT

The northeastern prairie (Fig. 2) includes the tall and mixed grasslands that stretch from western Minnesota to western North Dakota and from southern Manitoba and Saskatchewan to South Dakota (Weaver 1954, Weaver and Albertson 1956, Whitman and Wali 1975). Aspen parkland and oak savanna mark the transition from the prairie to the eastern and northern forest (Bird 1961, McAndrews 1966). South and west of this partially wooded fringe, forests are confined to stream valleys, around lakes and on steep escarpments (Küchler 1964, Wells 1970, Burgess et al. 1973, Wali et al. 1980).

With its long cold winters, low rainfall and periodic drought (Borchert 1950), the region challenges its inhabitants. Nevertheless, it contains more than 1,500 flowering plants (estimate based upon

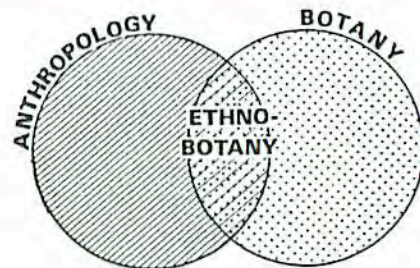


FIG. 1. Ethnobotany, a meeting ground of anthropology and botany.

Rogers 1980b and Barkley 1977). About 300 of them can be eaten; several hundred more can be used for other purposes - as medicines, religious symbols, ornaments, toys, construction materials and fuel.

PREHISTORIC PLANT USES

The uses of certain plants can be traced into prehistory, thanks to the emerging pursuit of paleoethnobotany, the study of ancient plant uses.

Nomadic hunters and gatherers made the northeastern prairie their home for more than 10,000 years (Wedel 1961), although past plant uses are described here for sites spanning only the past 4,000 years. About 1,000 years ago, native farmers settled along the Missouri and other major river valleys (Lehmer 1971).

Insights into the ethnobotany of these prehistoric peoples come from charred seeds and wood charcoal from several excavated sites in the northeastern prairie (Fig. 3). A comparison of plant remains from two hunting and gathering camps with those from three agricultural villages (Table 1) reveals several similarities and differences. The striking similarity is that some of the same berry and weed seeds are found in both types of sites, suggesting that prehistoric villagers did not abandon wild plant collecting when they took up farming. The agricultural villages also contain the remains of the cultivated crops - corn (*Zea mays*), beans (*Phaseolus vulgaris*), squash (*Cucurbita pepo*), sunflower (*Helianthus annuus*), and tobacco (*Nicotiana rustica*).

Wood charcoal from the remains of cooking and heating fires offers further insight into local plant use. Charcoal from three prehistoric hunting and gathering sites in North Dakota and southern Manitoba (Table 2) roughly reflects the present local vegetation around each site. Some species were apparently favored: the charcoal of green ash (*Fraxinus pennsylvanica* var *lanceolata*) predominates at two of the sites. Plant nomenclature for indigenous species follows Stevens (1963) although some Canadian common names from Scoggan (1957) have been added.

Green ash charcoal has also been found at several agricultural villages along the Missouri River near Bismarck, including Shermer (Sperry 1968) and Cross Ranch (Calabrese 1972). Other charred woods from Shermer were oak (*Quercus*), pine (*Pinus*), juniper (*Juniperus*), and cottonwood (*Populus*) and/or willow (*Salix*). House posts at Cross Ranch were made of green ash, cottonwood, juniper, willow, elm (*Ulmus*), wild plum (*Prunus*) and hackberry (*Celtis occidentalis*). The use of such a variety of woods may reflect the villagers' demands for fuel and building materials.

ETHNOBOTANY OF HISTORIC NATIVE TRIBES

Native cultures in the northeastern prairie gradually became transformed under the influence of European contact that began in the 18th century. Until about the middle of the 19th century, the region remained the home of nomadic hunters and gatherers and sedentary agricultural peoples. These included the bison-hunting Assiniboin, Plains Cree, Plains Ojibwa and Western Dakota while along the Missouri River were the farming villages of the Mandan, Hidatsa and Arikara (Lowie 1954, Denig 1961, Howard 1965, Ewers 1968). The Eastern Dakota in southern Minnesota also farmed (Woolworth and Woolworth 1980). Far from being completely sedentary, villagers often ventured onto the prairie to hunt and to gather wild plants.

Although much plant lore has been lost during the centuries of European contact, records of some native plant uses survive in the writings of early observers and ethnobotanists. Edwin Denig (1930), a fur trader on the Upper Missouri (1833-1856), listed 20 plant foods of the Assiniboin; Melvin Gilmore (1919) an early ethnobotanist, named more than 150 useful plant species for the Missouri River tribes. The most complete list, however, was made by Fr. Eugene Buechel in the 1920's. He recorded 200 useful species among the Western Dakota of the Rosebud area in southern South Dakota (Rogers 1980a).

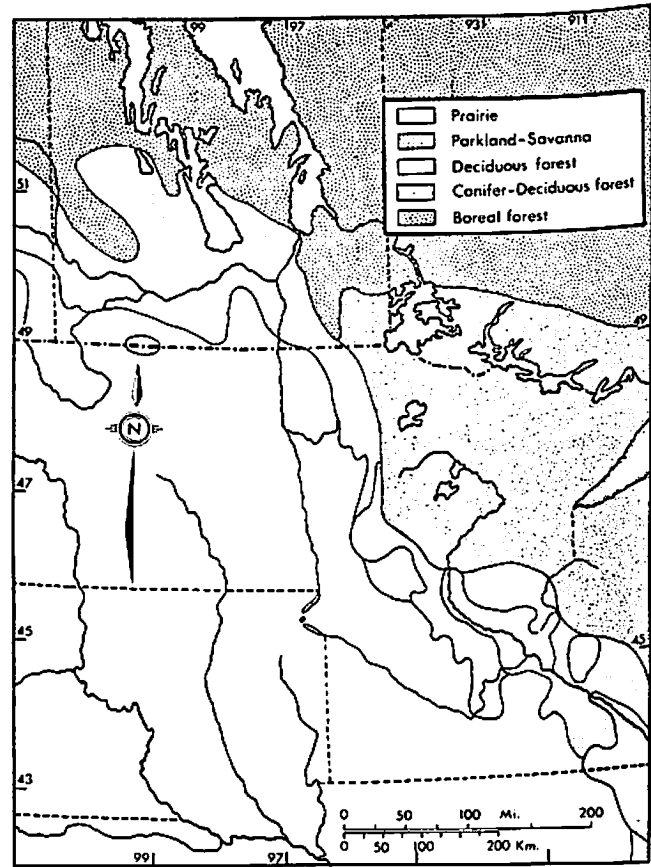


FIG. 2. The northeastern prairie. Vegetation boundaries for the U.S.A. after Küchler (1964) and for Canada, Rowe (1972).

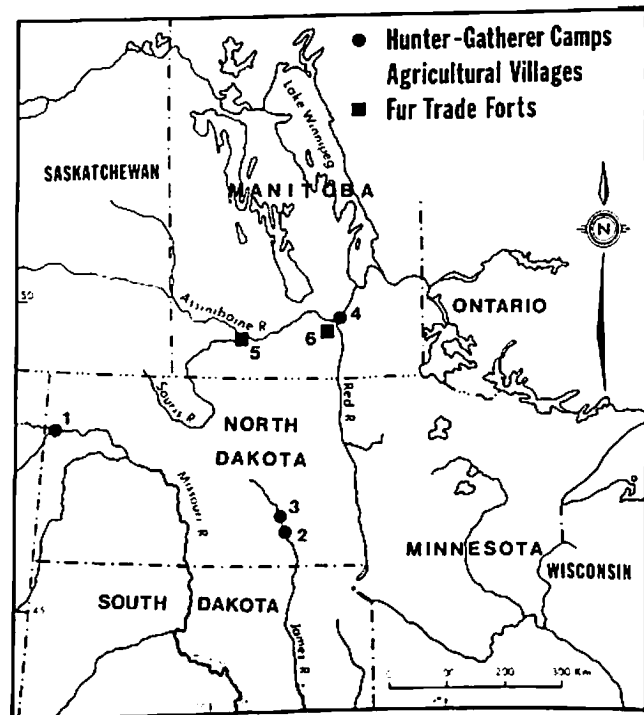


FIG. 3. Selected archaeological sites in the northeastern prairie where plant remains have been analyzed. 1 - Mondrian Tree, 2 - Naze, 3 - Jamestown, 4 - McAuley, 5 - Souris Mouth post, 6 - Upper Fort Garry. Prehistoric and historic agricultural villages were located in the shaded portions of the Missouri and James river valleys as well as in southern Minnesota. See Tables 1-3 and text for the locations of the sites not shown.

TABLE 1. Presence (x) of selected seed types from archaeological sites in the northeastern prairie.

	Hunting & Gathering Camps		Farming Villages		
	Mondrian ¹ Tree	Naze ²	White Buffalo Robe ³	Mitchell ⁴	Chan-ya-Na ⁵
CULTIGENS					
Maize (<i>Zea mays</i>)			x	x	x
Beans (<i>Phaseolus vulgaris</i>)			x	x	x
Squash (<i>Cucurbita pepo</i>)			x	x	x
Sunflower (<i>Helianthus annuus</i>)			x	x	x
Tobacco (<i>Nicotiana rustica</i>)			x	x	x
BERRIES & FLESHY FRUITS					
Wild plum/cherry (<i>Prunus</i>)	x	x	x	x	x
Wild rose (<i>Rosa</i>)	x	x	x	x	
Buffalo berry (<i>Shepherdia argentea</i>)			x		
Wolfberry (<i>Symphoricarpos</i>)	x	x			
Wild grape (<i>Vitis</i>)	x		x		x
Sumac (<i>Rhus</i>)	x			x	x
WEED SEEDS					
Goosefoot (<i>Chenopodium</i>)	x		x	x	x
Pigweed (<i>Amaranthus</i>)				x	x
Knotweed (<i>Polygonum</i>)	x			x	x
Dock (<i>Rumex</i>)			x	x	
Marsh elder (<i>Iva</i>)	x			x	

¹ On terrace of Missouri River, western North Dakota, cultural zones 4-6, ca. 880-2180 B.C.; 31 waterscreen and flotation samples with about 300 seeds (Shay, Hansen and Gennett 1983).

² On terrace of James River, southeastern North Dakota, south of Jamestown, ca. 0 A.D. to historic; three waterscreen samples totalling 27 seeds (Good et al. 1977).

³ On upland adjacent to Missouri River, central North Dakota, ca. A.D. 1300-1845; 288 waterscreen samples with several thousand seeds (Nickell and Jones 1980).

⁴ On upland above Firesteel Creek near Mitchell in southeastern South Dakota, ca. A.D. 985-1125; 77 flotation samples with about 1500 seeds (Benn 1974).

⁵ On upland flanked by steep ravines, Buena Vista County, northwestern Iowa, ca. A.D. 995-1215; flotation samples totalling about 3500 seeds (Wegner 1979).

TABLE 2. Charcoal found at prehistoric hunting and gathering sites in the northeastern prairie.

Tree type	Western North Dakota Mondrian ¹		Eastern North Dakota Jamestown ²		Southern Manitoba McAuley ³	
	Local vegetation	Charcoal	Local vegetation	Charcoal	Local vegetation	Charcoal
Elm (<i>Ulmus</i>)	x	x	x	x	x	x
Ash (<i>Fraxinus</i>)	x	x	x	x	x	x
Box-elder/Maple (<i>Acer</i>)	x	x	x	x	x	x
Poplar-Cottonwood (<i>Populus</i>)	x				x	
Willow (<i>Salix</i>)	x	x ⁴			x	
Basswood (<i>Tilia</i>)			x			
Oak (<i>Quercus</i>)			x	x		

¹ On terrace of Missouri River, cultural zones 4-6, ca. 880-2180 B.C., n = 36 charcoal pieces (Shay, Hansen and Gensett 1983).

² On terrace of James River in Jamestown. Two mounds (32SN22), components I-IV, ca. A.D. 200-1700; (Shay and Zwiazek nd., Shortland-Coles nd.) n = 46 charcoal pieces.

³ On terrace of Red River, East Kildonan in Winnipeg ca. A.D. 1000, n = 24 charcoal pieces (Shay, unpublished).

⁴ Poplar and/or willow.

Not all species were equally important. A few were staples, others were needed only for certain ceremonies or unusual ailments and some were too rare to be anything but occasional treats. Whatever its use, a plant was always gathered with care to ensure its continued supply (Hughes 1983). When and how much to collect was based upon familiarity with plant life cycles and reproductive requirements.

People also learned from plants. Walking Buffalo, a member of the Stoney (Assiniboin) tribe said:

Did you know that trees talk? Well they do. They talk to each other and they'll talk to you if you listen... I have learned a lot from trees: sometimes about the weather, sometimes about animals, sometimes about the Great Spirit. (In Hughes 1983:49).

Plants pervaded all aspects of native life and served native needs throughout the year. A prairie year is marked by sharp contrasts from one season to another, each with its typical subsistence pursuits. These pursuits, largely geared to hunting or agriculture, had an annual rhythm in which plant-gathering played a role. In late winter, nomadic hunting groups could be found in sheltered woodlands. The reason was simple: when game was scarce and provisions low, the inner bark of cottonwood (*Populus deltoides*) could ward off famine. In groves of box-elder/Manitoba maple (*Acer negundo*) sap was tapped and boiled down to maple sugar (MacLeod 1955). As sap dripped into birch bark pails, children scurried to find enough wood for the boiling cauldrons to prepare their sugary treat.

With spring came young shoots and leaves of such species as goosefoot (*Chenopodium* spp.) and dock (*Rumex* spp.) which were eaten raw or cooked. As ducks and geese returned, prairie marshes and potholes attracted nomads for plant gathering as well as hunting. Succulent shoots of bulrush (*Scirpus validus*) and cat-tail (*Typha latifolia*) could be harvested in quantity. Like many other species, cat-tails served many purposes. The starchy roots and rhizomes dug in the fall or early spring were dried and pounded into meal, young flower spikes were boiled and eaten, and the pollen from mature spikes was used for flour. Cat-tail leaves were woven into mats and baskets, and the fluffy down of the ripe seed heads was used for dressing wounds and padding diapers (Gilmore 1919, Rogers 1980b).

As the nomads journeyed across the prairies throughout the spring and summer, useful plants were always at hand. One important food was the prairie turnip (*Psoralea esculenta*) (Reid 1977, Kaye and Moodie 1978, Wedel 1978). Imagine small children combing through the grass until they discovered the turnip's silvery leaves. Hearing their children's joyful squeals, mothers would arrive with their digging sticks, and soon, plump tap roots would go into their baskets. The fibrous pea-flavored roots are as nutritious as domesticated potatoes and will keep for months either dried whole or pounded into flour.

Although strawberries (*Fragaria* spp.) were a tasty treat in early summer, it was not until July and August that wild fruits could be gathered in quantity (Gilmore 1919, Rogers 1980a, 1980b). Woodland margins and thickets became hives of activity as women and children harvested the ripe fruit. An animal hide would be spread on the ground and the berry bushes beaten until the fruit dislodged. Juneberry/Saskatoon (*Amelanchier* spp.), raspberry (*Rubus* spp.) and sometimes the common but bland wolfberry (*Symphoricarpos occidentalis*) were sought. The fruits of rose (*Rosa* spp.) and hawthorn (*Crataegus* spp.) were also gathered but the premier fruit was chokecherry (*Prunus virginiana*). The Western Dakota named the month of July after the chokecherry which ripened at that time. After sun drying, the berries were pounded and mixed with buffalo meat and fat to make pemmican - a staple food for natives and European traders.

Common ailments were treated with medicinal plants found in virtually any patch of prairie (Gilmore 1919, Rogers 1980a, 1980b). These included purple cone-flower (*Echinacea angustifolia*),

wild bergamot (*Monarda fistulosa*), prairie clover (*Petalostemum* spp.) and sage (*Artemisia* spp.). Sweet grass (*Hierochloa odorata*) was burned as incense during native ceremonies invoking the spirits of good, and it was also used as a delicate perfume.

Long summer days must have been pure heaven for the small boys of prairie tribes as they busied themselves with manly sports. Big bluestem (*Andropogon gerardi*) made ideal arrowshafts and when tipped with the spines of hawthorn, the arrows became formidable missiles against frogs and other small prey (Gilmore 1919).

As summer turned to autumn, thoughts turned to winter provisions. In addition to roots and berries, protein-rich seeds and nuts were valuable foods. Seeds of weedy annuals such as goosefoot, knotweed (*Polygonum* spp.) and marsh elder (*Iva* spp.) could be harvested from drying mud flats and similar open habitats. The most valued seed crop came from wild rice (*Zizania aquatica*) although it is found only in the eastern half of the region. Hazelnuts (*Corylus* spp.) and acorns (*Quercus* spp.) were also gathered for food although acorns had to be leached of their bitter tannic acid before they could be eaten (Gilmore 1919, Rogers 1980b).

The cottonwood, a tree invested with mystic powers, flourished in virtually every stream valley. Who could fail to be soothed by the soft rustle of its leaves on a calm day? Whatever the reason for its symbolic importance to the prairie tribes, cottonwood served practical needs. Its inner bark offered emergency food, its fuzzy catkins a chewy treat and its leaf buds a yellow dye. Children enjoyed fashioning the large triangular leaves into miniature tipis, moccasins and toy whistles (Gilmore 1919, Rogers 1980b).

Wooded areas were vital to the survival of prairie tribes. This is reflected in the Western Dakota language - it has 17 different terms for woody habitats (Rogers 1980a). In addition to cottonwood, other common trees were green ash, aspen (*Populus tremuloides*), American/white elm (*Ulmus americana*), bur oak (*Quercus macrocarpa*), box-elder/Manitoba maple, and in the western part of the region, Rocky Mountain juniper (*Juniperus scopulorum*) and ponderosa pine (*Pinus ponderosa*) (Barkley 1977, Wali et al. 1980). Of these, ash and elm were favored for building (Gilmore 1919). Many shrubs were used in crafts. Juneberry/Saskatoon and chokecherry made strong arrow shafts, and sandbar willow (*Salix interior*) was sought for baskets (Rogers 1980b). Virtually all woody species were burned as fuel, although elm was preferred (Gilmore 1919). Conifers were avoided for indoor fires because the resin produced sparks and too much smoke (Laubin and Laubin 1957).

Firewood on the prairie was often in short supply. For example, Denig (1961:81) the mid-19th century fur trader, said of the bison-hunting Assiniboin in western North Dakota: "Owing to the absence of wood on this great plain they are obliged to place their camp on or near the Missouri in the Winter Season." Similarly, the French explorer La Vérendrye had commented on the Assiniboin a century earlier: "They even make the dogs carry wood for fires, frequently being obliged to camp in open prairie, where the islands of timber are distant from one another" (Smith 1980:50).

Firewood and building timber were just as important to the farming tribes as to the hunters. When local supplies were depleted, villages were moved, sometimes every six or seven years (Griffin 1977). A typical farming community would be perched on a high terrace overlooking its fields and the river below (Will and Hyde 1917). Behind it was the open prairie. Such a settlement of several hundred people would be surrounded by a wooden palisade. Inside the walls were earth-covered lodges grouped around a central plaza.

Field crops included squashes and pumpkins (*Cucurbita* spp.), beans (*Phaseolus vulgaris*), sunflowers (*Helianthus annuus*) and tobacco (*Nicotiana rustica*), but corn (*Zea mays*) reigned supreme (Wilson 1917, Will and Hyde 1917). Legend made it clear that in the beginning Mother Corn, assisted by animals, led the people out of the ground. She gave the people four ears of corn, each symbolizing the four sacred colours - red, yellow, blue and black. The bond between Mother Corn and the people was a lasting

one. At planting time, some tribes held a ceremony during which each woman was given a few kernels of sacred corn to mix with her own seed grain (Will and Hyde 1917). All of the tribes held harvest ceremonies that usually lasted for several days. In some villages a sacred ear of corn shared the same altar with a buffalo skull, the symbol of animal sustenance (Will and Hyde 1917).

Strong spiritual bonds united the native people, the plants they used and their environment. Black Elk, a Sioux holy man said:

We are of earth, and belong to You, O Mother Earth from who we received our food, You care for our growth as do our own mothers. Every step that we take upon You should be done in a sacred manner; each step should be a prayer. (In Hughes 1983:20).

19TH CENTURY EUROPEANS

Compared with the slow spread of native agriculture, European practices struck the prairies like a storm. Beginning in the early 1700's and lured by furs, land and adventure, European traders penetrated the northeast via such rivers as the Minnesota, Red, Assiniboine and Missouri. Dozens of fur trading posts sprang up at key points in the communications network amid the fierce competition of the early fur trade (Ray 1974). Later, military forts were built as the pace of colonization quickened and national sovereignty became an issue for both the United States (Robinson 1966, Athearn 1967) and Canada (Morton 1967).

The European immigrants were perhaps as ambivalent towards the prairie as they were toward nature as a whole. In Europe, the 19th century saw an increasing conflict between an exploitative utilitarian view and a growing sympathy for nature (Thomas 1983). While the fur trade was seen by most as merely a livelihood, some objected to it. As early as 1690, the Englishman Thomas Tryon contrasted the native North American's harmonious relation to nature with the negative impact of the European fur traders (Thomas 1983).

To the newcomers, the northeastern prairie posed challenges to overcome although some were impressed by its beauty. In 1690, Henry Kelsey recorded a negative view of the Canadian prairies in doggerel verse:

This plain affords nothing but Beast and grass and over it in three days time we past (In Warkentin 1964:23).

An 1814 account of the same area:

Herds of light-limbed antelopes, and heavy colossal buffalo...all these champaign beauties reflected and doubled as it were, by the waters of the river. (Gabriel Franchere and M. Bibaud in Warkentin 1964:110).

Residents of the early posts and forts consumed local fish, game and garden produce, supplemented by imported foodstuffs. Garden plots contained a mixture of European (wheat, cabbage, peas, turnips) and native (corn, beans, squashes) crops (Leechman 1970). In addition to cereals, vegetables and root crops, the Hudson's Bay Company posts also imported seeds of spices and, later, of ornamentals. A host of unwanted weeds also arrived as contaminants in seed grain and by other means. Landscaping with exotic flowers became common. Settlers apparently sought to bring the Old World to the New by importing exotic European species. A nostalgic Red River settler wrote:

One sadly misses the sweet smelling flowers and glorious roses of Old England, the climbing ivy and many hued creepers, but if the nostrils are not regaled, vision is abundantly favored by the bewildering beauty of the woods and prairie. (Douglas 1959:62).

Europeans adopted some native plant uses, in part because many species were similar to those in the Old World. Fresh greens and fruits supplied a number of nutrients. Nutrients included vitamin

C which was vital in preventing scurvy, the scourge of the traders (Rich 1976, Athearn 1967). One prized food not found in Europe was described in an Irishman's letter home in 1832:

But what flogged all that I had ever seen, was making sugar out of a tree, Mary - not a word of a lie do I tell you;...but where's the use of my telling you anything about it, as you have no sugar trees at home. I remember when you and I thought a shuggar stick, a mighty good sort of thing, never thinking I'd lay my eyes on a shuggar tree. (In MacLeod 1955:11).

Throughout the pioneer period, wood was the basic raw material of everyday living - for fuel, housing, household utensils, farming implements, carts and wagons, furniture and toys. Historical accounts offer insights into the early wood economy but they lack details about species chosen and their relative importance. In such cases, archaeological evidence can fill these gaps. This is illustrated by wood and charcoal from two fur trade posts in southern Manitoba (Fig. 3, Table 3). The uplands surrounding the junction of the Souris and Assiniboine rivers in south-central Manitoba were apparently sparsely wooded in the late 18th and early 19th centuries when several posts were established (Kavanagh 1946). Most wood was hauled from distances in excess of 10 kilometers (6 miles) (Carter nd).

At the junction of the Red and Assiniboine rivers (Fig. 3), timber became scarce in the 1820's shortly after the Red River settlement was established (Keating 1825). By the 1840's, firewood was being hauled from as far away as 100 kilometers (63 miles) (Morton 1950).

Wood and charcoal from archaeological excavations at the mouth of the Souris (Zwiazek and Shay 1984) and from Upper Fort Garry at the Red and Assiniboine junction (Monks 1984, Shay 1984, Shay unpubl.) shed further light on these imports (Fig. 3, Table 3). It seems that much of the timber for building was brought from a distance while local river valley species supplied the firewood. In fact, 60% of the wood pieces found at Upper Fort Garry (Shay unpubl.) must have come from the boreal and conifer-deciduous forests more than 100 kilometers to the south and east (Fig. 2). Such woods included spruce, pine, larch and cedar and/or fir. On the other hand, parkland species were used for fuel. Poplar and/or willow, oak and ash made up 94% of the charcoal sample (Table 3, Shay unpubl.).

ENVIRONMENTAL IMPACTS OF PLANT USES

The lifestyles of the native hunters and gatherers, the native farmers and the European fur traders had different impacts on local vegetation, the spread of wild species and the introduction of exotics. The nomadic buffalo hunters apparently had the least impact on their environment. Apart from their selective harvesting for food, medicine and other purposes, the most dramatic effects on the northeastern prairie probably resulted from prairie fires (Nelson and England 1971). Native tribes set fires for hunting and other purposes although deliberate burning was not universally practiced. Indeed, the Assiniboin explicitly prohibited setting fires (Denig 1930).

The densely-settled farming villages used greater quantities of local firewood and building timber than the nomadic tribes (Griffin 1977). Selective cutting and firewood harvesting must have seriously, if temporarily, depleted local forests.

In contrast, the early fur traders wrought significant changes on the landscape. The depletion of local timber supplies and the spread of exotic European crops and weeds have been mentioned, and these trends accelerated throughout the 19th century with expanding population and settlement. The rapid spread of European plants is well known although botanists have long been intrigued by the idea that native peoples extended the range of certain indigenous species. In 1905, Blankenship suggested that the wide distribution of wild sunflower (*Helianthus* spp.), goosefoot, and marsh elder in Montana was related to their use as food by natives.

TABLE 3. Wood and charcoal from 19th Century fur trade forts in southern Manitoba. The wood and partially-charred wood probably comes from construction and crafts; the charcoal represents the residue of heating and cooking fires.

Tree type	Souris Mouth ¹			Upper Fort Garry ²		
	Souris & Assiniboine rivers		Wood	Charcoal	Red & Assiniboine rivers	
	Vegetation	Wood			Vegetation	Wood
	local	>10 km			local	>100 km
Elm (<i>Ulmus</i>)					x	x
Ash (<i>Fraxinus</i>)	x		x	x	x	x
Box-elder/Maple (<i>Acer</i>)	x			x		
Poplar-Cottonwood (<i>Populus</i>)	x		x	x	x	x ⁴
Basswood (<i>Tilia</i>)				x	x	
Willow (<i>Salix</i>)				x	x	
Oak (<i>Quercus</i>)		x	x	x	x	x
Conifer					x	x
Spruce (<i>Picea</i>)		x	x	x	x	
Pine (<i>Pinus</i>)				x	x	
Larch (<i>Larix</i>)		x		x	x	
Cedar or fir (<i>Thuja</i> or <i>Abies</i>)				x	x	

¹ recent excavations at the junction. Date ca. 1793-1805; n = 74 pieces of wood and partially charred wood, n = 111 pieces of charcoal (Zwiasek and Shay 1984).

² recent excavations of two privy/refuse pits within the fort, n = 310 pieces of wood, n = 31 pieces of charcoal.

³ identity uncertain. ⁴ poplar and/or willow.

In 1931, Gilmore discussed the range extension of several eastern plants into the central plains including sweet flag (*Acorus calamus*), black walnut (*Juglans nigra*), prairie crab-apple (*Pyrus ioensis*), and wild plum (*Prunus americana*). The buffalo berry (*Shepherdia argentea*) may have moved eastward when its dried berries were carried from camp to camp (Gilmore 1931).

The problem of past range extensions is one in which botanists and archaeologists can profitably work together. Modern distribution maps of the plains flora (Barkley 1977), coupled with detailed paleobotanical studies (e.g., McAndrews 1966) and analyses of plant remains from archaeological sites (e.g., Benn 1974, Nickel 1977) should help to explain some of these distributions.

POSTSCRIPT

But what of the prairie's future? What of the mines and dams, the power lines and blowing sands? Alvin Josephy (1975) addressed the IVth Prairie Conference on the environmental threats to the northern prairies - huge strip mines and the controversial Garrison Diversion. Both issues are still with us a decade later. Such manifest pressures on the land are not easily reduced and we as a society seem incapable of coping with them. Our prevailing attitude is far from the sacred ties which bound native peoples to the land that sustained them.

Our attitude to and impact on the land was summarized by Aldo Leopold (1966:xix):

We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect. There is no other way for land to survive the impact of mechanized man, nor for us to reap from it the esthetic harvest it is capable, under science, of contributing to culture.

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