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BUR OAK – AN UNCOMMON NATIVE TREE IN SASKATCHEWAN

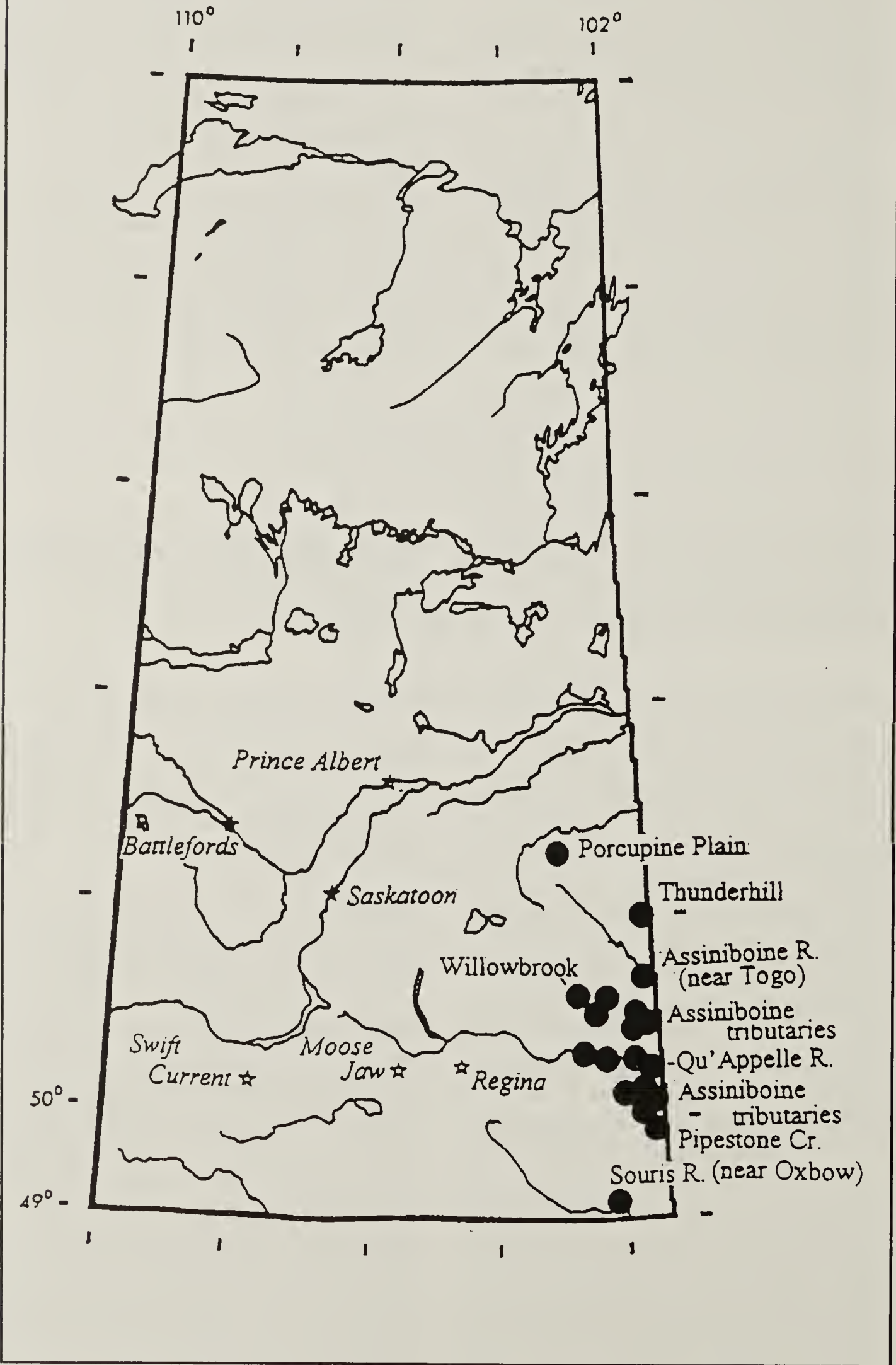
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Native oak trees in Saskatchewan? This may even surprise some naturalists in the province. But Bur Oaks (*Quercus macrocarpa* Michx.) are indeed indigenous here. They are, however, one of the least frequent and most regionally restricted of our Saskatchewan native trees. Probably only the Rocky Mountain Juniper (*Juniperus scopulorum* Sarg.) is a rarer native tree in the province.³ Natural Bur Oak stands in Saskatchewan are found at intermittent riparian sites only near the province's eastern border east of longitude 103° W, extending from near the international boundary (lat. 49 ° N), northward to Porcupine Plain, about lat. 52° 30' N (Map 1). Except for a small stand near Porcupine Plain, the known natural stands of Bur Oak in Saskatchewan are limited to the overall Assiniboine River watershed, which includes the Souris and

Pipestone drainages. Even the Porcupine Plain site is located not far north of the watershed divide between the Assiniboine and Red Deer River drainages.

The extent of this species range has been underestimated in a number of well-known publications. The recently published Flora of North America, Volume 3, incorrectly mapped the range of this species as barely touching Saskatchewan's southeasternmost corner.¹⁰ Also the recent handbook, Plants of the Western Boreal Forest & Aspen Parkland, misstated the Saskatchewan range of Bur Oak as being only along the Qu'Appelle River system.⁷ Breitung, Boivin and Scoggan cited the species as occurring in southeastern Saskatchewan north to the Qu'Appelle River Valley, noting its occurrence also along the Souris and Pipestone valleys.^{2, 1, 11}

Map 1. *Quercus macrocarpa* (Bur Oak): Native Records in Saskatchewan.



Worldwide, there are over 400 oak species, with about 90 in North America north of Mexico, 10 in Canada, but only one, Bur Oak, native in the Canadian prairie provinces of Manitoba and Saskatchewan. Bur Oak (also known by the common name “Mossy-cup Oak”, and in the west sometimes “Scrub Oak”), ranges the farthest west and northwest of any of the oaks characteristic of the eastern deciduous forests of North America. See Map 2 for the overall range of the species in North America.

The generic name, *Quercus*, is a classical Latin word for oak. The specific epithet, *macrocarpa*, refers to the large fruits (i.e. acorns) of this species. The common name “Bur Oak” was apparently ascribed because the acorn fruits, with their fringed cups, appeared similar to chestnut burs. The alternative common name, Mossy-cup Oak, is also descriptive of the strongly-fringed

acorn cups (see Figure 2). The common name, Scrub Oak, reflects this oak’s low, stunted growth habit at the western edge of its range.

In Saskatchewan, Bur Oak inhabits open-wooded or shrubby flood plains, wooded slopes of river and stream valleys, and sometimes the adjacent, more upland, shrubby or grassland-edge sites. The higher slope and upland occurrences often appear associated with springs. At its southernmost location in Saskatchewan, along the Souris River, where it is limited to about a 30 km stretch roughly 15 km on either side of Oxbow, Bur Oaks are often located along side coulees or minor tributary creeks as well as on the main riverbanks. Here the stands are mostly small and discontinuous. In the Pipestone Creek valley and along its small tributary creeks, about 80 km to the north, Bur Oak stands are relatively frequent,

Map 2. Distribution of Bur Oak (*Quercus macrocarpa*) in North America.



extending westward from the Manitoba border to past Wapella. Somewhat further north, Bur Oaks have their greatest Saskatchewan frequency in the eastern Qu'Appelle River Valley and its tributaries, occurring both on the main channel banks and along tributary creeks. Bur Oak populations extend westward in the Qu'Appelle Valley only as far as Round Lake (north of Whitewood and south of Stockholm). The fairly numerous herbarium records of oaks from the Souris River, Pipestone Creek and Qu'Appelle River date back to the 1930s.

North of the Qu'Appelle River system, intermittent stands of Bur Oak may be found along various tributary creeks of the Assiniboine River that extend west into Saskatchewan. The species was collected from about 18 km southeast of Saltcoats in 1946 by Robert Barnhart. A relatively large 3-acre stand on the Mike Tereschuk farm about 12 km (7 miles) south-southeast of Willowbrook was recorded in 1981 by Donald Hooper.⁵ Donald Hooper and Jim Jowsey collected this species in 1992 from 16 km southeast of MacNutt. In 1973, John Hudson first recorded Bur Oak from the Assiniboine River south of Togo; my notes from this area in 1986 describe only occasional, rather scattered, small "trees" mostly less than 4 m high. This Togo site is now protected as part of the Assiniboine River Ecological Reserve.

In 1980, Donald Hooper documented native stands of Bur Oak on Thunderhill, on the Manitoba border about 19 km northeast of Arran, SK.⁴ My notes about this site describe numerous oak trees occurring locally in rich aspen-oak deciduous woods, especially on the south and southwest slopes below the southern crest of the hill's summit-plateau. Donald Hooper related that his brother, Ronald, had noted the oak stands at Togo, Thunderhill, and at various other sites to the south, over a decade earlier when on insect-collecting forays. He had been interested in possible Saskatchewan

occurrences of insect species characteristic of more eastern oak forests. (See note on oak-feeding insects in this issue.)

The northernmost known Saskatchewan record of native Bur Oaks, 11 km northeast of Porcupine Plain, was also recorded by Donald Hooper, in 1980.⁴ His information plus my notes about this site, described a small stand of only eight, apparently old, scrubby, naturally-occurring oak trees remaining on a stony, rather steep, south-facing, poplar/hazelnut dominated slope along the north shore of a small, deep lake. These trees represent the remnant of a formerly larger oak stand reportedly present when George Love originally homesteaded this land, now owned by his son, Reg.

Anecdotal historical information supplied by local residents and descendants of pioneers, suggests that Bur Oak was likely more common in eastern Saskatchewan in pre-settlement days than at present. Early settlers apparently cut some oaks for firewood, lumber and fence-posts, and upland stands were sometimes cleared along with other brush for farmland.

Besides the native stands recounted above, Bur Oak has been variously planted on farmsteads and in urban areas as ornamental or street trees. Lineman recorded a few escaped seedlings growing in three locations in the South Saskatchewan River valley within Saskatoon.⁹ Such escaped plants may well occur elsewhere, but none are known to have approached reproductive stages and therefore are not considered truly naturalized.

Bur Oaks are medium-sized deciduous trees that may reach heights of 20-25 m in optimum portions of their range, but are seldom taller than 15 m anywhere in Canada or the American Great Plains. Towards the species' western and northwestern range-limits such as in eastern Saskatchewan, the plants are mainly shrub-sized to only small trees 5-10 m tall, and often scrubby in

appearance (i.e. stunted and straggling with branches crooked or gnarly) rather than the handsome trees with straight trunks, large ascending branches and rounded canopies often seen farther east. While under ideal conditions Bur Oak trunks may reach diameters of over 60 cm, in Saskatchewan they mostly are less than half that size. The deep taproots and strong spreading lateral roots of oaks make the trees wind-firm.

The twigs are stoutish, yellowish-brown to gray, initially somewhat hairy, and often develop corky wings. Their buds are round-tipped and hairy. On older branches and trunks, the bark becomes thick, rough, deeply furrowed, and grayish, with darker, scaly, corky ridges. The leaves are alternately arranged, simple, and pinnately lobed, with mostly 5-9 rounded lobes. The leaves are mostly about 15 cm long and 8 cm wide, but sometimes are much larger, reaching 30 cm lengths. The leaves of Bur Oak are notably variable in size, shape and lobing pattern (Figure 1). Overall leaf outlines vary from obovate with the median sinuses usually deepest, to fiddle-shaped with a larger, scarcely-lobed terminal portion and small lower lobes, or sometimes rather cross-shaped with the terminal and pair of median lobes larger. The rather thick, leathery leaves are shiny dark green above and paler grayish-green beneath, and sparsely to densely covered by minute, star-shaped, whitish hairs.

Flowering occurs in late spring shortly after the leaves unfold. The individual flowers are minute and non-showy, as is characteristic of wind-pollinated species, such as oaks, not adapted for attracting insect vectors. Male and female flowers are separate but borne on the same tree – a situation termed monoecious. Cross-fertilization is favored. The male flowers are found in catkins – dangling spikes with naked flowers (floral bracts falling off early) borne along a slender flexible axis. The catkins hang down in small clusters. The female flowers are solitary and scattered, or somewhat paired. All flowers have a 4-8-lobed calyx that, in male flowers, encloses 4-8 stamens and, in female flowers, encloses a single, 3-carpellate pistil, with the ovary topped by a short, thick style bearing a 3-lobed stigma.

The entire female flower is surrounded, or enclosed, by an involucre of small overlapping scales that develops into a hardened cup of fused scales around the base of the nut-type fruit (the matured ovary). This “nut-in-a-cup” is characteristic of oaks and is called an acorn. The acorns of Bur Oak are about 2-3 cm long, and the nut is deeply set, often halfway or more, into the hard cup covered with knobby, fused scales conspicuously fringed (Figure 2). The acorns ripen in a single year. Gravity is the main means of dispersal and in late autumn the heavy acorns fall to the ground near the parent tree, or they may float away in water.



Figure 1. Various Leaf Forms of Bur Oak (Quercus macrocarpa).

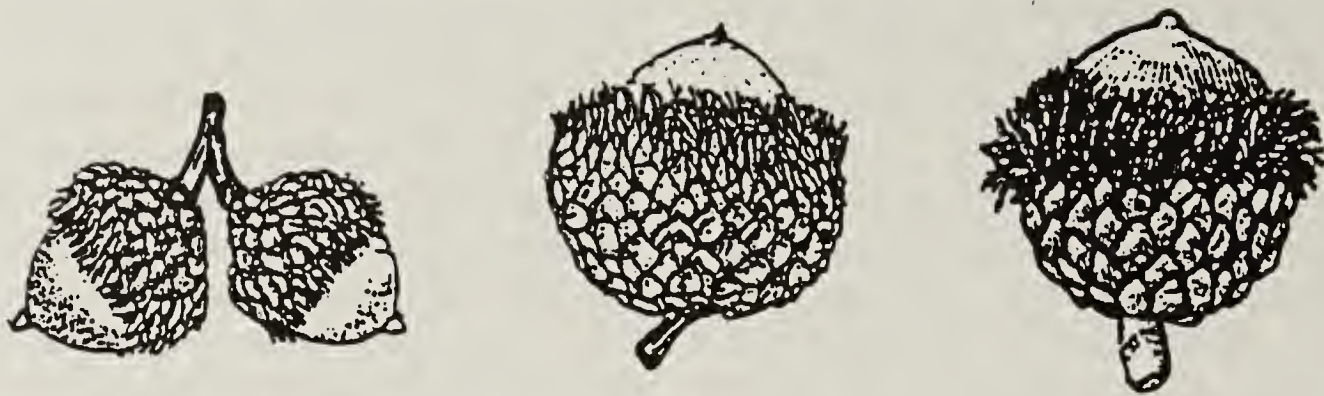


Figure 2. Acorns of Bur Oak (*Quercus macrocarpa*).

In addition, they may be gathered, carried and effectively dispersed by animals, especially squirrels. The long-term mutually beneficial relationship between oaks and squirrels has been noted.

Bur Oaks provide habitat for other species and food for wildlife, especially squirrels, but also ground squirrels, hares, rodents and deer. They also have been of economic value to humans. The inner white kernels of the acorns are sweet and edible, especially after drying, and were eaten by the Ojibwe as well as European settlers.⁸ The wood is hard and tough, similar to White Oak, making the lumber especially in demand for furniture, interior-finishing, and flooring. Because of its elasticity, it was desired for ship-building and barrel-making. The high tannin content of the bark makes oaks useful for tanning animal hides.⁷ Bur Oaks are also planted as ornamental trees. They are strong and durable, though slow-growing yard and street trees, and if well watered and cared for, become stately in appearance.

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