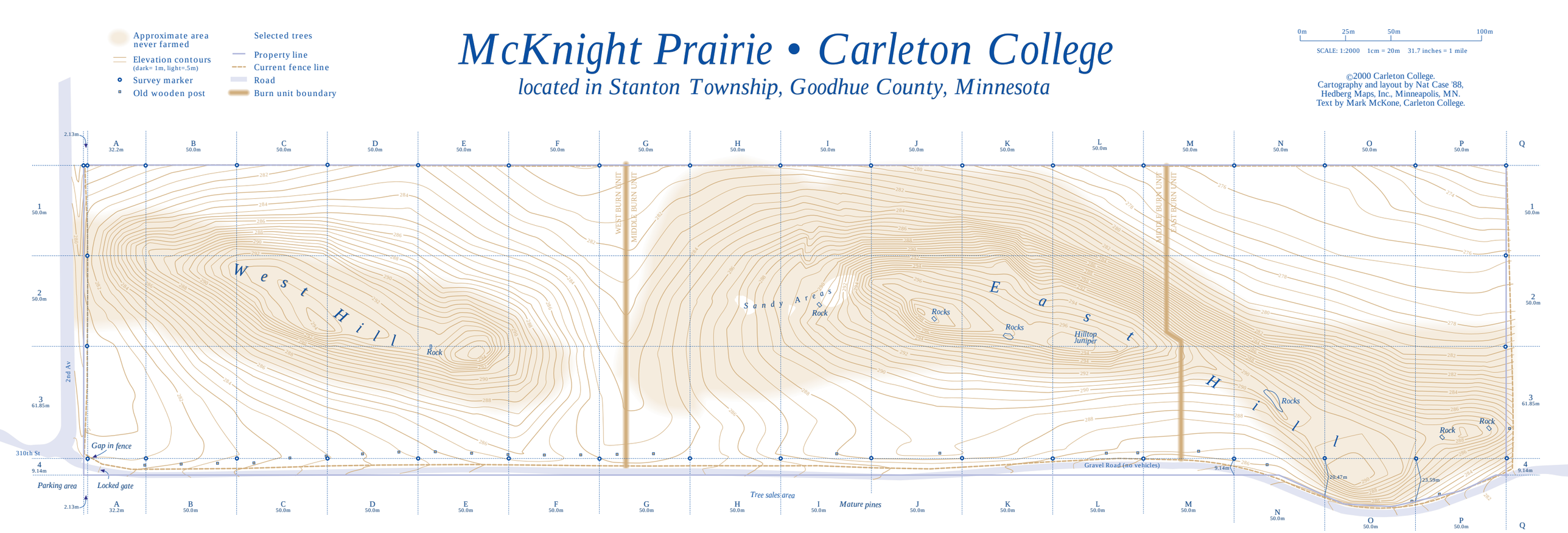
McKnight Prairie • Carleton College

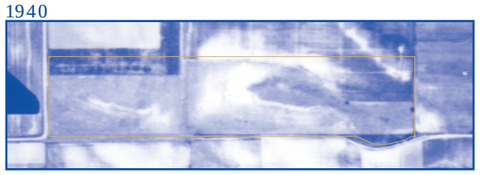
located in Stanton Township, Goodhue County, Minnesota



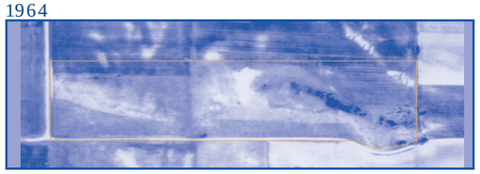
Legal description:
The south 34 rods of the W1/2 of the SE1/4 and the south 34 rods of the E1/2 of the SW1/4 all in section 18, township 112 north, range 18 west. And part of the NE1/4 of Section 19, township 112 north, range 18 west, Goodhue County, Minnesota.

These four aerial photos of McKnight Prairie were taken over 50 years, and it is possible to see changes in the prairie landscape over that time. For example, the large white areas in the center of the 1940 image are probably open sand. The 1930s were a time of extreme drought and it is likely that the vegetative cover was greatly reduced then. The sandy areas steadily decrease in size after 1940. Also visible is the changing amount of woody vegetation, seen as a dark band on the north slope of the east hill. Rows of farm crops can be seen in the images from 1940 and 1964, before purchase by Carleton College.

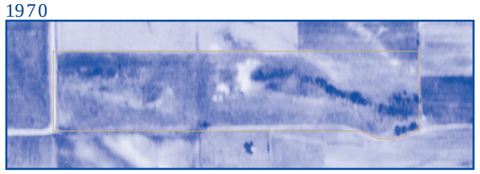
1940



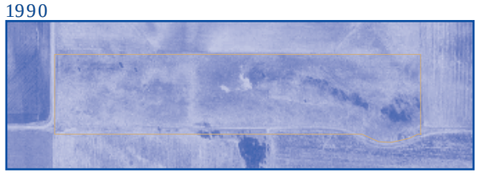
1964



1970



1990



McKnight Prairie is a rarity, one of the few prairie fragments left in southern Minnesota. It was purchased by Carleton College in 1968, funded by a grant from the Sumner T. McKnight Foundation. Paul Jensen, a professor of biology at Carleton, was responsible for identifying the site, procuring the funding for its purchase, and managing the prairie until his retirement in 1986.

SITE DESCRIPTION

The 33.5 acres (13.5 hectares) of McKnight Prairie contain diverse soils and topography. The soils at McKnight are derived from the St. Peter sandstone (explaining the high content of sand), from older glacial tills, and from a mantle of silty wind-blown material which was deposited throughout this area during more recent glaciations. The Ordovician St. Peter sandstone can be seen in exposures east of the saddle between the two main hills. This friable, fine-grained sandstone disaggregates readily into individual grains under the influence of water and wind. At one time, the McKnight hills undoubtedly retained the cap of resistant Platteville limestone that forms the caprock of the “Stanton mesas” to the south and west. After the Platteville was breached hundreds of thousands of years ago, erosion must have proceeded rapidly to reduce the elevation of the summits to their present height.

There are some relatively large rocks scattered throughout the prairie. These are glacial erratics, and are of types more commonly found in northern Minnesota and Canada. This site is well east and south of the glacial moraines of the last 20,000 years, so these rocks were deposited here by an older glacial advance (perhaps the widespread one dated to 600,000 - 700,000 years ago).

At the time of European settlement of the region in the mid-19th century, land survey records show that the entire surrounding area was prairie (except for the floodplain forest along the Cannon River to the north). The exact land use history since European settlement is poorly known, but a significant proportion of the low areas were at one time cultivated; see approximate boundaries of cultivation on the map. The hilltops were never plowed, though they were used for some livestock grazing. There has been no cultivation since Carleton purchased the prairie in 1968, and the disturbed areas have slowly been colonized by native prairie species. Some of the cultivated areas have been planted with seedlings of native plants from here or from nearby prairie remnants.

MANAGEMENT

The primary purpose of McKnight Prairie is scientific education and research. Classes from Carleton College and other educational institutions use the prairie as an outdoor classroom. Researchers investigating prairie ecology often make use of this site, since there are so few prairie remnants remaining in southern Minnesota. The goal of management is to maintain the species and communities of native tallgrass prairie.

Controlled burns are an essential part of prairie management. Without such fires, woody plant species would quickly invade and shade out the prairie plants. The fire does not kill the native prairie plants, since they have buds below the soil surface. During the growing season following a spring burn, prairie plants grow faster and flower more than plants on adjacent unburned areas. This seems to be mainly because the fire removes the buildup of litter from the soil surface, which allows the sun to warm the soil more quickly and give the plants a head start on the growing season. Often the soil on burned prairies is several degrees warmer than unburned soil for weeks after a burn.

McKnight Prairie has been burned periodically since 1971. There are currently three burn units (see map), and they are burned in rotation so that a unit is burned approximately every four years. The burning has only been partially effective in setting back trees and shrubs. Particularly on the north slopes of the hills, there is considerable invasion by aspen (*Populus tremuloides*) and sumac (*Rhus glabra*). These are occasionally removed by hand to check their spread across the prairie.

SPECIES DIVERSITY

The vegetation of McKnight Prairie is highly diverse. Over 240 species of vascular plants have been identified, and new species are still being discovered. Most of the prairie plants are now uncommon in the area, and several are on the Minnesota list of Threatened or Special Concern species.

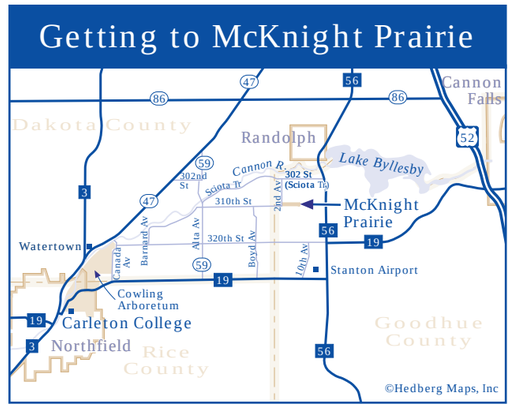
Grasses (Family Poaceae) dominate many areas of the prairie. The tallgrass species include Indian grass (*Sorghastrum nutans*), big bluestem (*Andropogon gerardii*), and switchgrass (*Panicum virgatum*). There are also fine stands of midgrasses such as little bluestem (*Schizachyrium scoparium*) and needlegrass (*Stipa spartea*).

Wildflowers are in bloom on the prairie from April through September. The legumes (Family Fabaceae) are important because they are able to fix atmospheric nitrogen by means of symbiotic bacteria that live in their root nodules. There are over 20 legume species here, including characteristic prairies species such as leadplant (*Amorpha canescens*), prairie clover (*Dalea* spp.), and bush clover (*Lespedeza* spp.). Members of the composite family (Asteraceae) are especially common in late summer; look for the yellow goldenrods (*Solidago* spp.) and sunflowers (*Helianthus* spp.), and both purple and white asters (*Aster* spp.).

Many animal species live in or regularly visit McKnight Prairie. Grassland birds are common, including declining species such as dickcissels (*Spiza americana*). Loggerhead shrikes (*Lanius ludovicianus*), listed as Threatened in Minnesota, are occasionally sighted and at one time nested here. The mammals include diverse species of rodents, most notably prairie voles (*Microtus ochrogaster*, listed as a species of Special Concern in Minnesota). Plains pocket gophers (*Geomys bursarius*) are abundant underground herbivores, and their mounds can be seen throughout the prairie. Gopher mounds are important locations for recruitment of prairie plants from seed. The gophers are preyed upon by badgers (*Taxidea taxus*), which are rarely observed but leave characteristic large disturbances in the soil when digging for prey.

The process of documenting McKnight’s large number of insect species has begun with surveys of ants and butterflies. See the Arb web pages at www.carleton.edu/campus/arb for the latest lists of insect survey results.

Getting to McKnight Prairie



VISITORS

Visitors are welcome, but care must be taken to avoid damaging the prairie or interfering with ongoing scientific work. Please do not remove any animal or plant material (including seeds), and stay away from areas that are flagged. Groups of visitors larger than 10 are required to register their use with the Carleton Arboretum office (507-646-5413).

Mark McKone, Director of McKnight Prairie
Myles Bakke, Manager of McKnight Prairie

ACKNOWLEDGEMENTS

Paul Jensen (Professor Emeritus of Biology) and Mary Savina (Professor of Geology) contributed to the text. Preparation of this map was made possible by funding from the Richard S. Cole Memorial Fund.