

Periodic burning is given too much emphasis in the natural development and maintenance of habitat, particularly as it relates to prairies, wet meadows and oak savanna.

1. The prairies of North America developed in the absence of fires set by man. It is well established that until the availability of horses the prairies were essentially uninhabited except for relatively small numbers of communities (e.g. Mandan) that farmed river bottomland.
2. The prairies were however occupied and grazed by millions of large grazing animals. Those herds included not just bison but large numbers of elk in the northern and higher regions. They were continually on the move as needed to locate good grazing. Most native grasses are clearly adapted to a once per year graze.
3. Natural burning did occur but burning is not particularly effective at building soil. Burning will remove excessive thatch when it exists and that can be beneficial. Burning does however release natural nitrogen and essentially wastes it into the atmosphere. Burning also destroys organic material, one of the most important components of topsoil. Burning does leave minerals and some other essential elements on the soil surface where it is available for reuse.
4. Removal of excessive thatch is occasionally necessary and nature fires will meet that need. Excessive thatch can build up in periods when the frequency of grazing is temporarily out of balance with the available forage. This could happen naturally with variations in population caused by extreme weather variations or disease. Disease in a long established population should be relatively rare. Weather extremes are not rare in the prairie regions. For example a very hard winter could leave bison herds reduced for several years. In that interval, some prairies could develop excess thatch and a fire may be needed to clear that.
5. The vegetation information recorded for a transitional zone Minnesota in the surveys of the 1850s can be misleading. For areas in transition, such as Sherburne County, the fact that the large grazing herds were exterminated 30 or more years before the survey was done would have a profound effect on the amount of brush land and even on the larger trees that were reported. In our County we know from personal observation that once grazing of land stops, brush and rapidly growing trees can drastically change the terrain in a few decades.
6. Large grazing animals, particularly those species with horns are able to clear brush, prevent the regrowth of tress and even cause the death of large trees. In a decade or less, land overgrown with brush will be drastically changed by annual grazing. Over grazing will bring about significant changes in a single season.
7. There were substantial areas of wet prairie called "marsh" north of Becker in the mid 1800s. It was reported in 1881 that between 1867 and 1880 upwards of two thousand tons of hay was harvested from marshland near Becker. It was further claimed that up to twenty thousand tons could have been made. This may be an inflated number but even if we cut the estimate in half that represents a lot of wet prairie which would have wintered a very large herd of grazing animals. A bison

- needs less than two tons of winter feed per cow. Allowing for a mixed herd of young and old, one thousand tons could feed up to 500 animals.
8. Why do so many experts accept that fire was the predominate factor in prairie maintenance? I wish I knew. Several thoughts follow.
 - a. Lewis, Clark and other early explorers of the prairie reported that Indians used fire as an aid in hunting. That is fine, but those Indian tribes had only recently developed a prairie hunting technique in the short time that horses were available. Without horses, Stone Age man cannot live on the open prairie. The settlements that did exist were of necessity close to rivers and wooded areas. Indigenous hunters had not been on the prairie long enough to be a factor in its development or maintenance.
 - b. Fire would not be of much help in bison hunting. Bison are notoriously hard to drive. Starting a fire to drive bison with or without horses would have resulted in a fast moving herd but the direction and speed taken would have been unpredictable.
 - c. It is true that a prairie which is rapidly regrowing after burn off will attract grazers. That still requires more control of a bison herd than seems probable. I.e. How would you know that bison will be coming into that area during the season and if in fact hunters did know where and when bison would travel, why would they need to prepare a prairie for them anyway?
 - d. Settlers would have used fire to remove heavy thatch from prairies before sod busting. In virtually every situation, the bison herds were exterminated in a given area a decade or more before homesteading began. In that interval, without grazing, a terrific layer of dry grass would have built up. That would be easy to ignite and spontaneous as well as settler initiated fires would have occurred very often. That might have caused people to give burning a more prominent place in the scheme of things.
 - e. Fire seems doable as a management tool. Using large grazers as a management tool might appear difficult. Persons responsible for prairie restoration might naturally favor the fire theory.
 - f. Despite many attempts burning alone does not work all that well in a transition zone like Sherburne County. The frequent and ineffective burning of the Sherburne Wildlife Refuge is a good proof of that.