Restoring Savannas with Help from the Bison.
A year ago, I posted an article about winter bale grazing.
Winter bale grazing is a hay feeding technique that improves pastures.
In that article I mentioned that I was working on savanna restoration at our Snake River Farm.
This article is about savanna restoration.
If you are interested in the earlier article just scroll down our Facebook page to early 2017.
A savanna is a grassy terrain with spaced trees and shrubs. By definition, the trees and shrubs are spaced such that at least 10% but not more than 50% of the ground is shaded. In the north central US, the dominant savanna trees are White Oaks. The most common savanna shrubs are fruit bearing trees such as wild cherries and crab apples.
This combination of acorn producing oaks, fruit producing shrubs, with underlying grasses and forbs is one of the most productive natural systems on earth.
A productive savanna provides food and habitat for a great variety of birds, animals, insects and soil building microbes.
Savannas are pleasing to humans also. In fact, most parks and playgrounds are actually savannas.
In nature, savannas are produced primarily by free roaming grazing animals. Prehistorically, bison and elk herds produced a broad swath of savannas from Texas to Canada.
When I was a boy, the small farms of mid-America maintained savannas as pastures.
Those small farms have disappeared rapidly over the past fifty years.
Since then, many Minnesota savannas have been cleared and converted to continuous cropland. But many other savannas have become overgrown with brush and weedy trees.
You can easily spot thousands of small savannas if you know what to look for. You can identify an overgrown savanna by looking for “open grown” white oaks. Those white oaks are now crowded by younger trees and bushes.
An “open grown” oak has horizontal or lateral branches. Those branches, which are now shaded, grew when the oak was standing alone.
The first photo shows the liberated oaks in an area that we thinned last year. Notice the old spreading oaks. We cut hundreds of Red Oaks that ranged from six to thirty inches in diameter to free these few savanna trees. Unthinned woodland is shown on the right in the photo and in the background.
The second photo shows a single open grown White Oak that is still surrounded. It was much more crowded than the photo shows. In order to get a good view for this demonstration photo we cut away at least fifty trees and shrubs.
The tall, grey trunked tree in the foreground is a Black Cherry. When finished, only the old oak, a few cherry trees and a juvenile oak or two will remain.
The next time you drive in central Minnesota from Little Falls to Rochester, check out the wooded areas. That includes the suburbs. Look at the trunks of the trees. You will see countless trees of small diameter and straight upward stems. Look deeply into the woods for open grown oaks. The oaks were there long before the majority of the other trees. The weedy trees germinated and took over since the farmers cattle disappeared.
Oaks live long and grow slowly. White Oaks grow much slower than Red Oaks. Most weedy trees like Box Elder, or poplar or some elms grow rapidly.
I have been on this farm for fifty years. Cattle left most of the wooded pastures sixty years ago. I resumed grazing about 20 years ago. My herds have done a good job of naturally restoring wet meadows and lowland pastures but the overgrown savanna areas have been tougher to restore. Many excess trees, primarily red oak, have become well established. Red oaks are inferior to white oaks in numerous ways. Unrestrained, the reds grow faster than white oaks and tend to crowd them out.
Savanna restoration on our farm means thinning wooded areas and restoring the ground surface to pasture. Thinning is a very labor-intensive operation. Of course, it is best to do selective thinning that leaves the desirable trees and shrubs undamaged.
I try to achieve the 10% to 50% savanna shading ratio by leaving the open grown white oaks and the fruit bearing trees, primarily cherries.
I also try to save birch trees whenever I can. We have both white birch and the less common yellow birch. There are also many young maples. Both the red maple and the silver maple species are desirable.
I only rarely spare elms.

American elms are short lived because of Dutch Elm Disease.
Siberian elms are an invasive weedy species.
Unfortunately, wood is of little commercial value.
We use as much wood as we can for winter heating.
A neighbor with a portable sawmill cuts all the boards we can use.
My main purpose in writing this article was to explain how winter bale grazing fits in.
I am getting to that.
Forest soils are naturally thin and much lower in nutrients than prairie or pasture soils. I use winter bale grazing to jump start the prairie restoration.
I strategically place large round bales under and around the thinned savanna area.
By spending time eating the bales the bison improve the savanna in a several ways.
1. The bison manure and urine enrich the soil and feeds the microbes in the soil.
2. The wasted hay adds a second source of enriching nutrients that are higher in fiber and hence break down more slowly.
3. The manure and the trampled hay pack are great erosion protection.
4. The bison hooves trample and plant forage seeds that are in the hay.
5. Bison naturally rub their coats and sharpen their horns on small trees and shrubs. This helps to control the unwanted regrowth from stumps and brush.
The third photo shows several bison under a freed White Oak. This photo is actually a close up of the first photo. In this third photo the bull near the center is violently rubbing his horns on the White Cedar tree. This is one of several ways that horned grazing animals naturally “thin” the savanna. They also do so by rubbing their hides on the trees and shrubs to remove their winter coats. They eat spring buds and fall fruit from small trees by walking the plants down to a handy height.
The fourth photo shows a cow bison’s horn that has been rubbed plat against trees.
The fifth photo is a test for you.
The photo shows hundreds of trees but only two of those trees belong in the savanna. The first is in the near center-left. Look harder to spot the second White Oak, farther in, right of the first oak, about in the center of the photo.
I will remove virtually all of the hundreds of trees and shrubs in this photo to restore a proper savanna.
A savanna is one of nature’s most productive and beneficial landscapes. It is the terrific at converting and sequestering carbon. The trees and ground plants convert huge amounts of carbon annually. But beyond that nothing is better at storing carbon than highly productive prairie soil. A grazed pasture of deep rooted plants can store unlimited amounts of carbon. That carbon is in the form of organic material and stable soil humus. Fertile soils are extremely important to all life on earth.
Best regards. Tom