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SOUTHERN IOWA OAK SAVANNA ALLIANCE

IN THIS ISSUE...

SAVE THE DATE *December 14th, 9a.m. annual SIOSA meeting at Graceland University, room 106 Resch Science Hall*

Message from the SIOSA President

Hope you are enjoying the holiday season. The year is about over and it has been a good one for SIOSA. Here are some of the highlights.

SIOSA is headed into a new cooperative agreement with the U.S.F.W.S. that will be effective through June 2014. We will receive $95,000 from the U.S.F.W.S. for savanna restoration. This is almost double what we expected. Thank you Gregg! There are projects in the works, some scheduled for this winter and next spring, but we will be looking at many more for next fall and beyond. At the last board meeting we agreed to look at a project in southeast Madison County, and one in Marion County. It will be exciting to see all these projects unfold and get more folks involved.

We had two burn workshops this year, one in March and one on the last weekend of October. The October workshop was attended by many who had been with us before and a few new ones. It was a perfect fall day. Only a short time was spent in the classroom reviewing the burn plan for the day and then we headed out to Slip Bluff County Park. Rich and Gregg had two small fire breaks, plus got a chance to try out the equipment. At that point we stopped for lunch and spent some time getting to know each other. After lunch we headed to the west side if the park and a twelve acre plot Rich wanted burned. Fire breaks were blown free of leaves, people were put in place, and a back fire was lit. It didn't take long for things to get exciting. The conditions were very dry so the fire spread quickly send some Shingle Oaks, still holding their dry leaves, up in flames. In just a few minutes it was all over but the smoke. We mopped up, left Rich's Assistant Travis, to watch over things, and headed home, Each of us left with knowledge and experience on how to do a controlled burn. It was a great learning day! Thank you Rich, Gregg, Jen, Travis, and Mark for all your help making the day possible.

On Saturday January 14th, in classroom 106 in the Resch and Science Hall at Graceland University, from 9 to 2 we will be having our annual planning session. One topic of discussion will be setting up an informal burn association. Jen has started work on a website for it and we have a core of folks that want to be involved. I encourage you to come help us plan 2012. We can always use people like you and your great ideas.

Have a great holiday season and a happy new year!
See you in the woods...

Casey

Buckeye Butterflies Breeding in Decatur County by Sibylla Brown

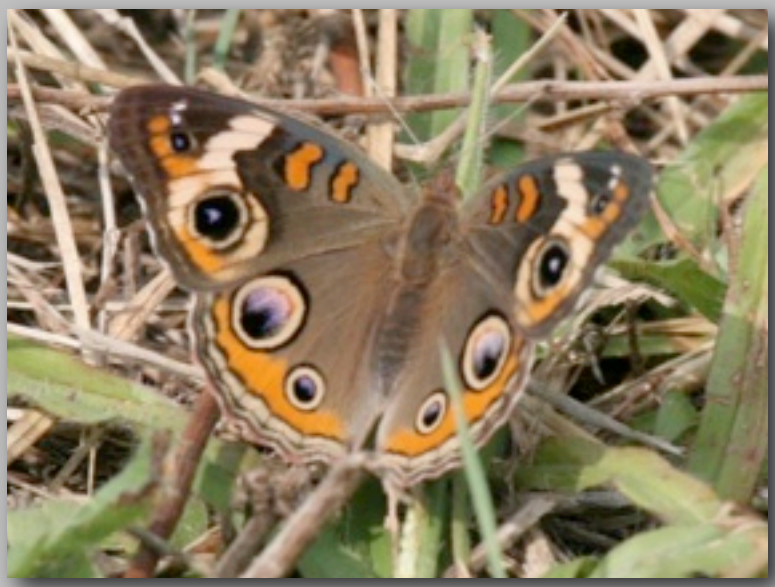

Figure 1: Common Buckeye

One of the most common butterflies at Timberhill is the Buckeye (*Junonia coenia*), a medium sized brown peacock butterfly. Distinguished by the bold pattern of eyespots, white bars and orange cell bars on its wings this species is found throughout the United States (except the northwest) but is most common in the southern states. Buckeyes do not overwinter in Iowa and specimens seen here are ones that have migrated north from the south in late spring. It is presumed that they migrate south in the fall. The description in Butterflies of Iowa poses the question do they breed in Iowa? They do in Decatur County.

In order for butterflies to breed a site must have the plants the larvae feed on. Of those preferred by Buckeyes Bastard toadflax, wild petunia, and slender false foxglove are all abundant at Timberhill. In late August and September the longitudinally striped caterpillars with their pattern of branching spines were easy to spot feeding on slender false foxgloves, *Agalinis tenuifolia*. These annuals are stimulated by fire and are particularly abundant in the old corn field in our West Creek unit. Large clumps bloom throughout the field in late summer.

Figure 2: Buckeye larva on slender false foxglove

Figure 3: Buckeye chrysalis

This photo of the hard outer shell of a Buckeye chrysalid from which an imago, the perfectly formed butterfly, emerged in September, 2011. Buckeyes have 2-3 broods between May and October. The chrysalid stage lasts only two weeks in the fall. Presumably that gives the adult stage plenty of time to head south. However, we were still seeing occasional adult specimens as late as November 4. Shouldn't they have headed south by then?

Want to learn more about Timberhill Oak Savanna?

Click or visit the following link:
http://www.timberhilloaksavanna.com/blog/

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SOUTHERN IOWA OAK SAVANNA ALLIANCE

Grass Growth and Response to Grazing by M.J. Trlica [1] (1/06)

Quick Facts...

1. Leaves are more palatable than stems, and new growth or regrowth is more nutritious than older tissue.
2. Grasses are most negatively affected when grazed during their reproductive period and least affected during dormancy.
3. Spring growth can be grazed if plants are given an opportunity to regrow without being used again.
4. Sufficient photosynthetic tissue must remain on plants for production of carbohydrates to meet growth and respiration demands of the plant.

Grasses are the dominant plants in most forage-based enterprises throughout the world. Whether livestock graze native rangeland or tame pastures, grasses usually are the basis of the energy and nutrients for animal growth and maintenance. Grazing livestock should harvest only part of the perennial forage crop to maintain the health and vigor of grasses.

Energy and nutrients from forage-based diets produce approximately 80 percent of the red meat products consumed in the United States. Animal gains from forage-based programs usually are less expensive than from any other current program. Animal products come from lands that usually are not suited for production of other food or fiber for human consumption. These lands include rangelands that usually are not capable of being cropped and pasturelands that are not suited for long-term intensive crop production because of low productivity, high erosion risk or other problems. Manage these lands to sustain perennial grass production.

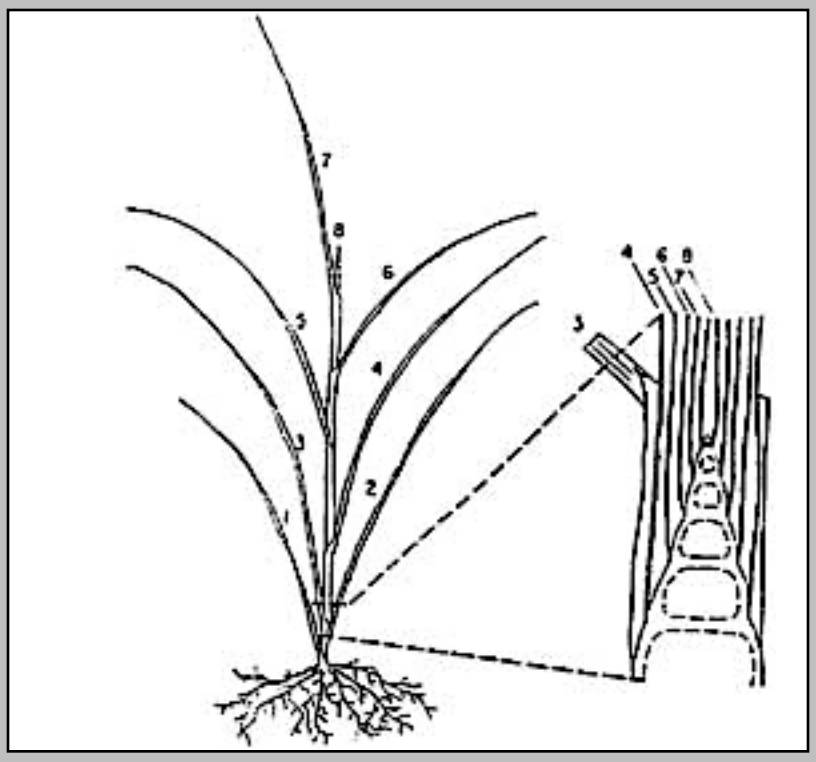

Figure 1: A vegetative grass tiller. Leaf 1 is oldest and leaf 8 is just being exerted. The enlarged area of the crown shows the apical meristem that produces the leaves.

Growth and Development

A grass plant is a collection of plant parts, like a tree or shrub, made up of growth units called tillers. Each tiller produces roots and leaves. Vegetative tillers consist primarily of leaves (Figure 1), whereas reproductive tillers produce a stem, seedhead, roots and leaves (Figure 2). The basal area of the stem, where roots often arise, is the crown.

The crown usually has a number of buds (growing points) that produce new tillers and roots. New tillers are anatomically and physiologically connected to older tillers. Therefore, several connected tillers may all live and share water, carbohydrates and nutrients. If one tiller dies, an adjacent tiller with established roots and leaves usually lives.

Some tillers stay vegetative, while others become reproductive and produce seedheads. Whether a tiller becomes reproductive depends on environment and hormones produced in the plant.

For example, a reproductive tiller may remain vegetative if the growing point (terminal meristem) is removed by grazing. Vegetative growth, therefore, is favored by some grazing, which reduces the number of seedheads produced and may stimulate the formation of new tillers. Vegetative tillers usually are less stemmy and more nutritious than reproductive tillers.

Seed production may be valuable, however, if the operator wishes to harvest a seed crop or if there is a need for seed to produce new seedlings in the stand. Seed production is not always essential for stand maintenance, as many grasses reproduce by vegetative means such as tillering or production of new stems from underground rhizomes.

Carbohydrate Reserves

Grasses commonly store carbohydrates when most leaf growth is complete. Even though leaves still have a high photosynthetic capacity and sufficient leaf area for photosynthesis, there are few demands for new growth. Therefore, carbohydrates accumulate in roots and crowns and serve as storage organs for growth the next spring. These carbohydrate reserves also are necessary for plant respiration during winter dormancy when photosynthesis is not possible but crowns and roots remain alive.

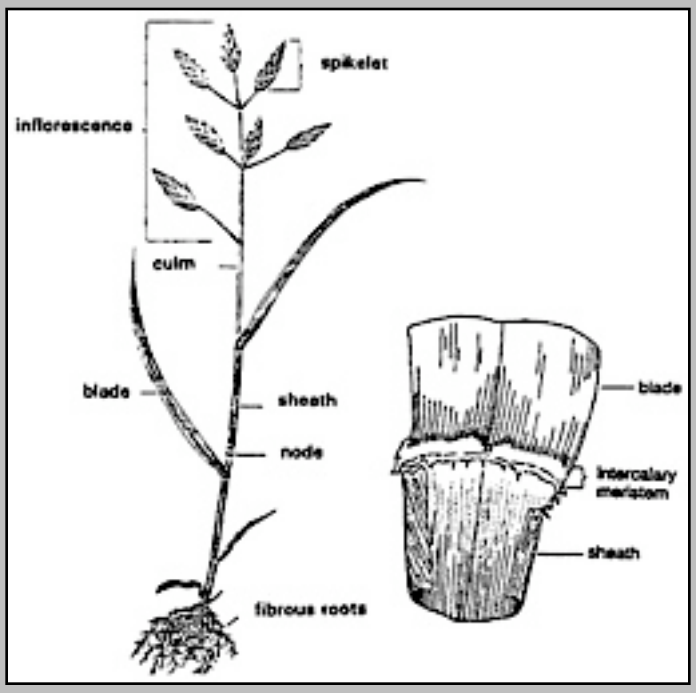

Figure 2: A reproductive grass tiller. This tiller has a stem (or culm) and seedhead that differs from the tiller in Figure 1. Intercalary meristematic tissue at the base of the leaf blade, near the ligule (insert), allows for leaf expansion.

Management Implications

There are three important factors that affect how grasses respond to grazing: 1) **frequency**, 2) **intensity** and 3) **season**. Range ecologists and physiologists have found that as grazing increases, grass productivity typically declines. Frequency can be more important than intensity. A plant that is harvested often has more photosynthetic tissue removed and little opportunity for regrowth. These plants may enter a period when soil moisture, temperature and growth stage limit regrowth and little leaf area remains for photosynthesis. Thus, their ability to replenish reserves or produce additional new tillers is restricted.

Figure 3 shows what can happen to carbohydrate reserves and growth if a plant is defoliated once. If a plant experiences several defoliations, reserve levels and forage production might decline further. A plant that is grazed intensely during early spring and given a deferment during the remainder of the growing season may produce additional growth and be more vigorous than a plant that receives less intense defoliations throughout the growing season.

Seasonal Impacts

Grasses can produce large amounts of nutritious leaf growth during spring months. Leaves continue to age and die; therefore, a portion of the leaves can be harvested through livestock grazing with little effect on the plant. However, enough photosynthetic material must remain for production of carbohydrates to meet growth and respiration demands of the plant. If grazing removes too much leaf material, growth rate is slowed materially, and additional reserves may be required for regrowth (Figure 3). Root growth usually is affected by heavy defoliation, which makes the plant less competitive and more vulnerable to drought, because roots may not penetrate to depths where adequate moisture exists.

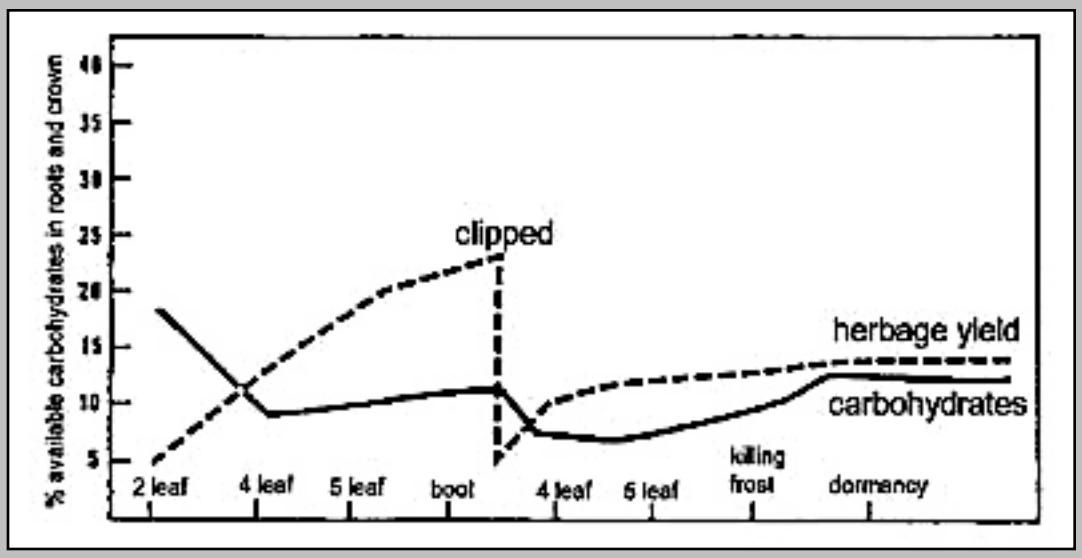

Figure 3: Growth and carbohydrate reserve level of a grass as affected by defoliation.

Livestock grazing during the growing season can affect regrowth of grasses. When moisture no longer is available and temperatures are too high or too low for rapid growth, regrowth is reduced considerably by grazing. Therefore, grazing in this pasture should be discontinued or reduced. If defoliations continue, little leaf area may remain throughout the growing season, and plants could enter dormancy with less vigor and lower reserves. This could significantly reduce growth the following year.

Grasses can withstand greater defoliation during early and rapid growth stages than they can later in the growing season, after most growing is complete and little opportunity for regrowth exists (Figure 3). Plants produce more leaves than stemmy tissue in the spring. These leaves contain abundant supplies of energy, protein and other nutrients necessary to meet most grazing-animal requirements. Grasses can be used heavily during this period, but discontinue or reduce grazing in time to allow for regrowth of leaves for photosynthesis and carbohydrate production. If grasses are grazed in the reproductive phase, use them less intensely than during spring growth. Little opportunity for regrowth exists during midsummer, so sufficient leafy material should remain after grazing to maintain carbohydrate levels within the plant.

Grazing during the fall and winter periods, after plant growth is complete and plants are dormant, can be much heavier than at other periods of the year. This old material is of little value to the plant, as photosynthetic capability will be low, at best. This older and dead material is low in some essential nutrients, particularly protein. Energy content, however, remains moderate to high. Removal of dead leaf material and stems during dormancy has little direct effect on the plant.

However, mechanical injury to crowns can occur through trampling. Removal of mulch and litter may cause greater temperature extremes near the soil surface. This may adversely affect growth the following year. Although fall and winter grazing has the least detrimental effect on grasses, there may still be some negative impact if grazing is heavy.

Grazing strategies

Develop flexible grazing management strategies that allow plants a rest or deferment after grazing. This is necessary for regrowth and to maintain sufficient leaf area for growth and maintenance.

Heavy grazing throughout the growing season usually is the least desirable grazing strategy. A management strategy that incorporates rest periods and movement of animals through different pastures usually is more desirable for grass growth than season-long grazing. If you know the amounts, kinds and locations of available plants (cool- and warm-season grasses), and what grasses grazing animals prefer, you can develop a strategy that meets the needs of plants and animals.

Management plans should use the forage resource and maintain it through time. Grazing plans, however, must be flexible. Consider differences in growing conditions across years as a result of drought or wet cycles, depletion of forage supply by wildlife or Insects, and other rapidly changing environmental conditions. Consider these along with the impacts of grazing livestock to determine what effects the combined impacts will have on plants.

Try to avoid rigid plans that require moving animals from one pasture to another on given dates. Other environmental factors certainly will influence grass growth and use at any point in time. Base your decision to move stock on how much the grasses are used and how much green leaf material remains, not on a predetermined date.

[1] Colorado State University professor, rangeland ecosystem science. 9/99. Reviewed 1/06.

SPECIES SPOTLIGHT Meadow Vole

Scientific Name: *Microtus pennsylvanicus*

Image source: http://blog.tomlinsonbomberger.com

IDENTIFICATION Meadow voles look similar to field mice but have a stouter body shape as well a shorter tail. The meadow vole has a rounded nose as well as rounded ears that are nested in their brown or black fur. They are on average 3 - 5 inches long and weigh somewhere in between 3/4 - 2 1/2 ounces. Voles are often confused with moles. Voles build trail systems above-ground, creating small trenches, whereas moles build tunnels below ground creating mounds on the surface. Another helpful difference between the two rodents: voles are vegetarian and moles eat meat.

DISTRIBUTION/SITE CHARACTERISTICS The meadow vole has an expansive range across North America. It inhabits parts of Alaska and lives as far south as New Mexico. More specifically the meadow vole can be found in woodlands but more often is found in grassland habitat with moister soils. Meadow voles are known to live communally in extensive ground networks and interestingly will tend to share a common latrine. Meadow voles dig shallow burrows and their nest, usually made of grasses, is made in an enlarged chamber of the burrow. Voles also form runways or paths in dense grasses.

LIFE EVENTS Gestation lasts between 20 - 23 days. The vole is born hairless and their eyes and ears do not open until day 8. Vole litters are typically made of up 4 - 6 young. Voles have been found to live up to 2 years but usually do not make it past 16 months.

Image source: http://americananimalcontrol-mnwi.com

FOOD HABITS/PREDATORS Meadow voles eat a variety of grasses, sedges, forbs, and agricultural plants if available. Owls, hawks, snakes, minks, skunks, marten are just a few of the vole's common predators.

FIRE EFFECTS Voles have been found to survive *low-intensity* prescribed fire by finding shelter in burrows (even if they are not vole burrows) or remaining in their nests during the fire. In grassland/prairie sites in western Illinois, meadow voles more most abundant in fields that were burned 2 years previously and second most abundant on 3 year post-fire plots. Vole communities are less successful on sites that have been recently burned, most likely from loss of protective cover/food source.

FROM THE ARCHIVES: LAKE FALL TURNOVER
11/11/85

This time of year many area lakes and ponds are undergoing an important change called fall turnover. Fall turnover is important in that the oxygen returned to the bottom allows fish and other creatures to inhabit that portion of the lake through the winter months when it is needed. This turnover is also important in that it circulates nutrients throughout the lake.

There are three temperature zones in a lake during summer stagnation. The Epilimnion is the warm surface water which extends to a depth of 6 to 7 feet, but may vary depending on the lake. This is the only zone in the lake which circulates during the summer. The second zone is called the Mesolimnion. It extends to a depth of 10 to 12 feet, but again it may vary. There is enough oxygen for life here but no circulation occurs. In this zone the temperature drops rapidly with depth. The third zone, extending to the bottom, is called the Hypolimnion. In this zone the water temperature is cold and there is little or no oxygen. Most life occurs within the top two zones.

Water is similar to air in that it increases in density as it cools, and reaches a maximum density at 4 C (32° F). When it reaches 4° C, it expands and its density decreases so it becomes lighter. This is why ice cubes float. Water is the only liquid which acts this way, and lucky for us too, this prevents lakes and ponds from freezing from the bottom up!

Fall turnover occurs when the water in the Epilimnion cools and sinks to the bottom. The bottom water then rises because it is warmer and lighter. Aided by fall winds, the water in the lake begins to circulate and oxygen is returned to the depths. Eventually the entire lake cools to 4°C, except the top 4 or 5 feet which continues to cool until the top freezes.

This entire process is reversed in the spring to cause spring turnover. Although not as intense as in the fall, spring turnover also circulates oxygen and nutrients. But, come June and July, the temperature zones will reappear setting the stage for next year's fall turnover.

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Annual Membership Rates

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THANK YOU for your support!

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