Controlled fire and grazing in South Florida pastures

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Fire has a long history of shaping Florida's ecosystems. In southern Florida, spring lightning strikes would burn off brown, dead vegetation just in time for summer rains. These recently burned areas would then become lush with regrowing vegetation. Maintaining this disturbance of periodic fire is crucial for Florida's scrub and prairie ecosystems. In modern times, we can apply fire in a controlled manner to replicate the historic effects fire provided in these natural systems.

Cattle production can go hand in hand with the controlled use of fire. All over the world, cattle are known to be attracted to the regrowing forage in recently burned areas. This new growth has higher crude protein compared to mature and dormant grasses. Here in South Florida, we are exploring how controlled fire can be used in pastures to influence cattle behavior and alter their use and distribution.

We applied two different controlled burn methods to several pastures. In the first method, we burned the entire pasture once in a three-year period. The second method we burned a different one-third of the pasture each year in rotation (Figure 1). This second method has commonly been called "patch-burn grazing". Rotational use of fire in pastures helps prevent overgrazing in a given burned patch over consecutive years. Both methods allow us to put fire on the ground, which helps knock back woody plants and remove dormant, less nutritious grass.

We equipped cattle with collars containing GPS units to track their movement within the pasture (Figure 2). Examining grazing behavior between these two methods from the first study year, we found that cattle in the patch burn group spent more time grazing in the burned patch compared to the unburned patches of the pasture. Our initial hypothesis was that this effect would be short lived once summer rains occurred. However, we saw this effect last throughout the year (Figure 3). In the fully burned pastures, cattle spent equal time grazing different areas of the pasture (Figure 4). This was expected because most of the pasture should be equally nutritious after an entire pasture burn. These results suggest we can use controlled fire to make areas more attractive to cattle and encourage them to move from areas they would otherwise congregate and degrade, such as around stock tanks or shade trees.

In terms of grazing evenness, in the patch burned pasture, we expected more evenness in the recently burned area compared to unburned areas. Since fire removes dead vegetation and can make forage more palatable, in theory, the burned patch should be evenly attractive. Whereas the unburned areas likely had clumps of attractive and unattractive forage. While we did see a few hints of more grazing evenness in the burned patch, we did not discover anything conclusive. In the fully burned pasture, a similar grazing evenness was observed.

The use of controlled fire can provide many benefits to ranchers. These benefits include the reduction of woody plants and improved forage palatability along with the ability to attract cattle to other parts of the pasture they might avoid. Patch-burn grazing also benefits habitat for game and wildlife species since cattle will graze disproportionately in recently burned patches, reducing the grazing pressure on unburned areas leading to taller grasses that can provide shelter for wildlife.

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For more information please contact Dr. Boughton at boughton@ufl.edu or online at www.rangelandwildlife.com.

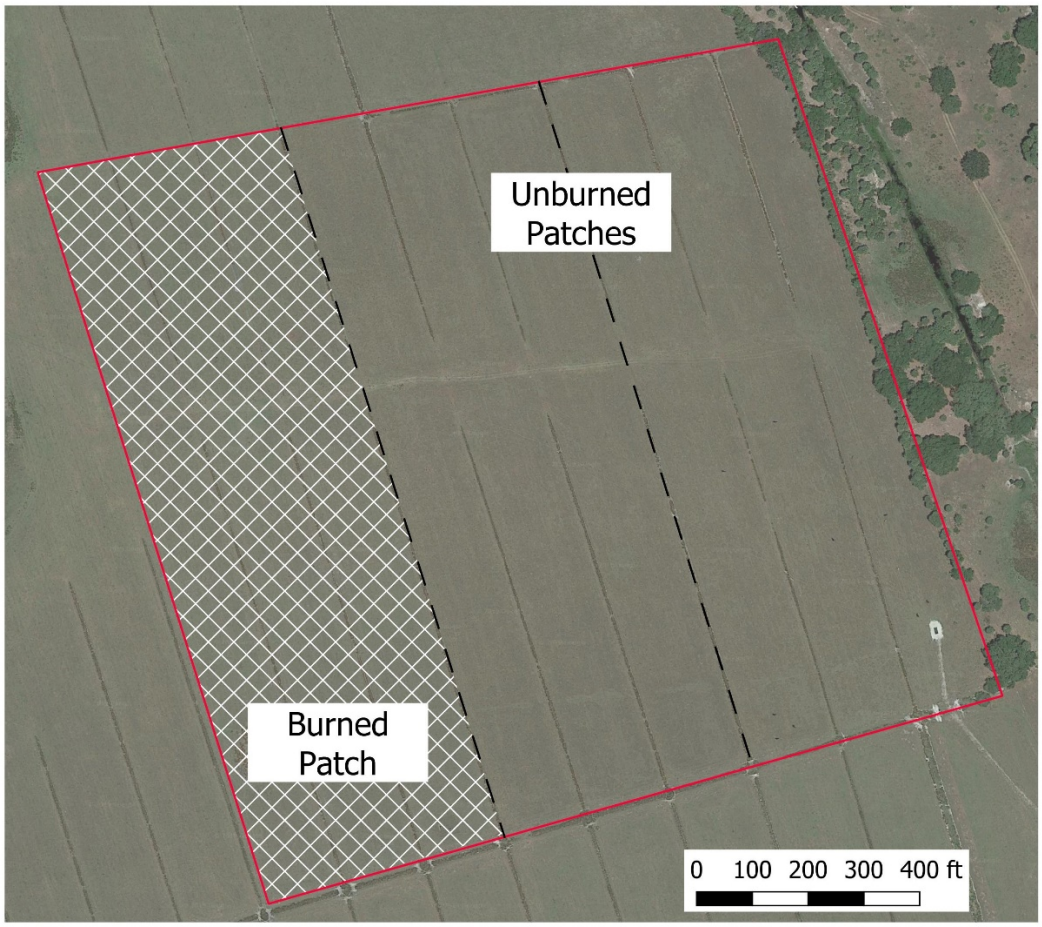

Figure 1. An example “patch burn” pasture. White cross hatches indicate recently burned patch. Red boundary lines are fence lines. Black dash lines indicate interior pasture patches.

Figure 2. Cow being fitted with collar containing GPS unit.

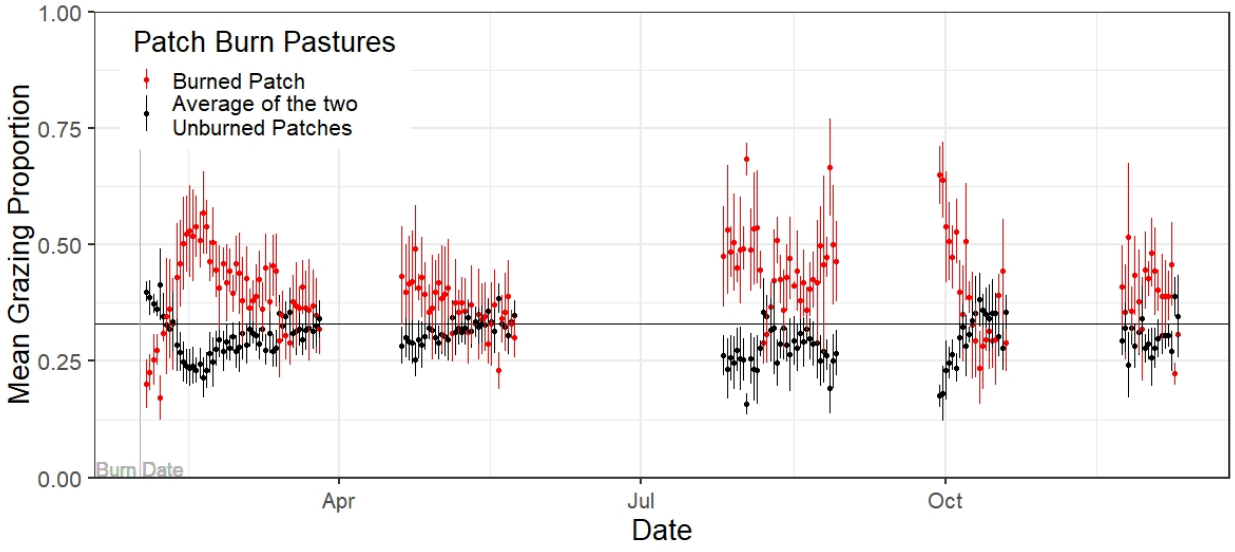

Figure 3. Daily average grazing usage in patch burn pastures. Horizontal black line represents theoretical equal grazing between patches. The higher the value, the more time spent in that patch.

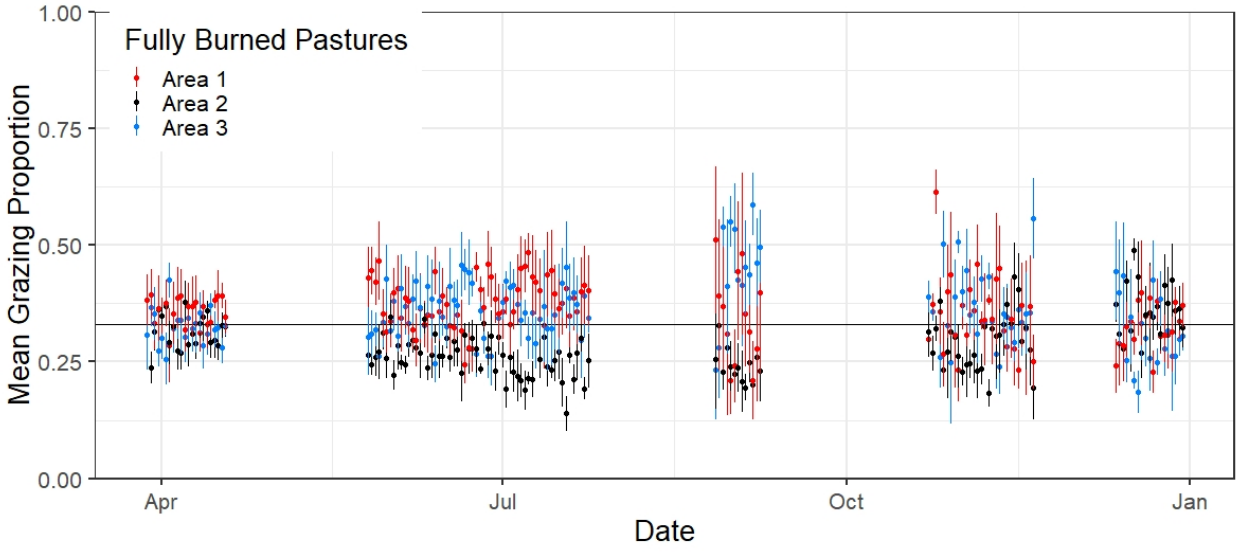

Figure 4. Daily average grazing usage in fully burned pastures. Horizontal black line represents theoretical equal grazing between areas. The higher the value, the more time spent in that area.