Livestock production is a major enterprise on Texas rangelands, especially in the Edwards Plateau region. More recently, prescribed fire has been used, and studies have evaluated cattle use of burned versus unburned vegetation patches. However, there is a paucity of studies examining combinations of livestock species grazing together on patch burned areas. This study’s objective was to examine cattle, sheep and goat’s spatial and temporal grazing patterns on areas where patch burning was implemented on a ranch within a Mesquite-Oak Savanna ecosystem in Menard County, Texas, USA.

**RESULTS**

- Cattle and sheep were more attracted to the most recent burned pastures compared to goats in both the 2019 and 2020 burn events (Fig. 3).
- Cattle and sheep increased their visits on the 2020 burned pasture immediately after the burn. Then they reduced their use of the burned pasture and switched to unburned pasture as time since the burn was implemented increased. In 2020, goats grazed the recently burned pasture, however, for the 2019 burns, they chose unburned areas to graze more frequently (Fig. 3).
- Goats had greater use percentage of large woody vegetation types than sheep and cattle but did not show significant differences by hours per day.
- All three livestock species had increased visits to large woody vegetation types from 4PM to midnight potentially because of resting, bedding, or seeking shade.

**CONCLUSIONS**

- This study provides an opportunity to evaluate how the different livestock species use the landscape after patch burning.
- Previous study indicated cattle were strongly attracted to the burned patches and consumed grass standing crop. Results from our GPS collar data shows not only cattle but also sheep were attracted to the burned pastures, goats increased using burned pasture during the peak biomass season and goats had greater preference for woody vegetation types.
- Mosaic patch burning can be implemented as a rangeland grazing management tool to influence grazing patterns.
- This study will assist in providing information to land managers on how patch burning and multi-species livestock grazing would influence their management of these grazing lands.
- Future work will focus on interpolation of livestock distribution over larger temporal scales by species and seasons, in addition to paired comparisons of GPS locations with camera trap observations of livestock and wildlife species.

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