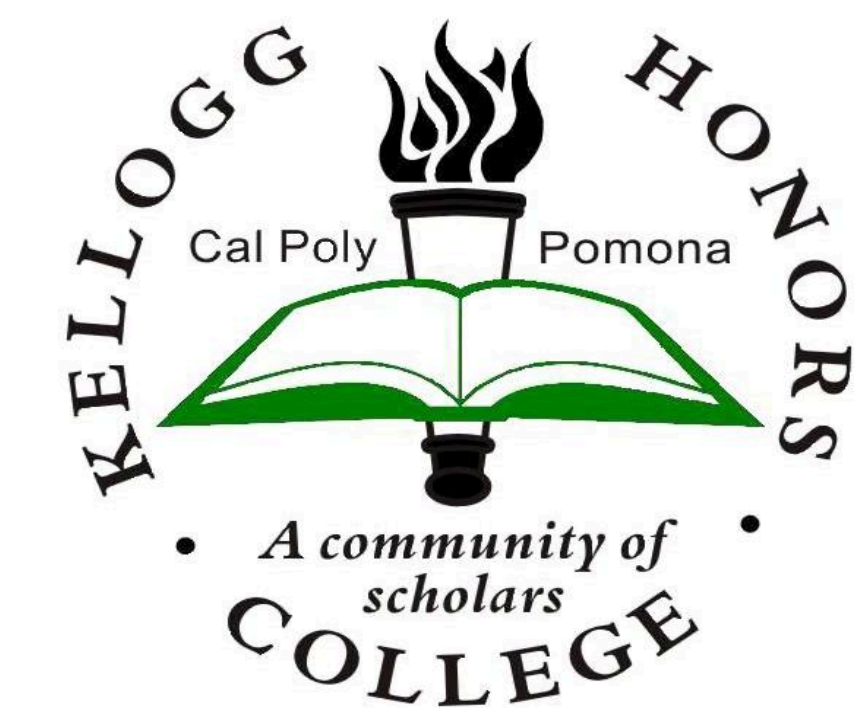


# Comparing stress behaviors observed in a flock of sheep when housed in pens and after separation and placement in pasture



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## Abstract:

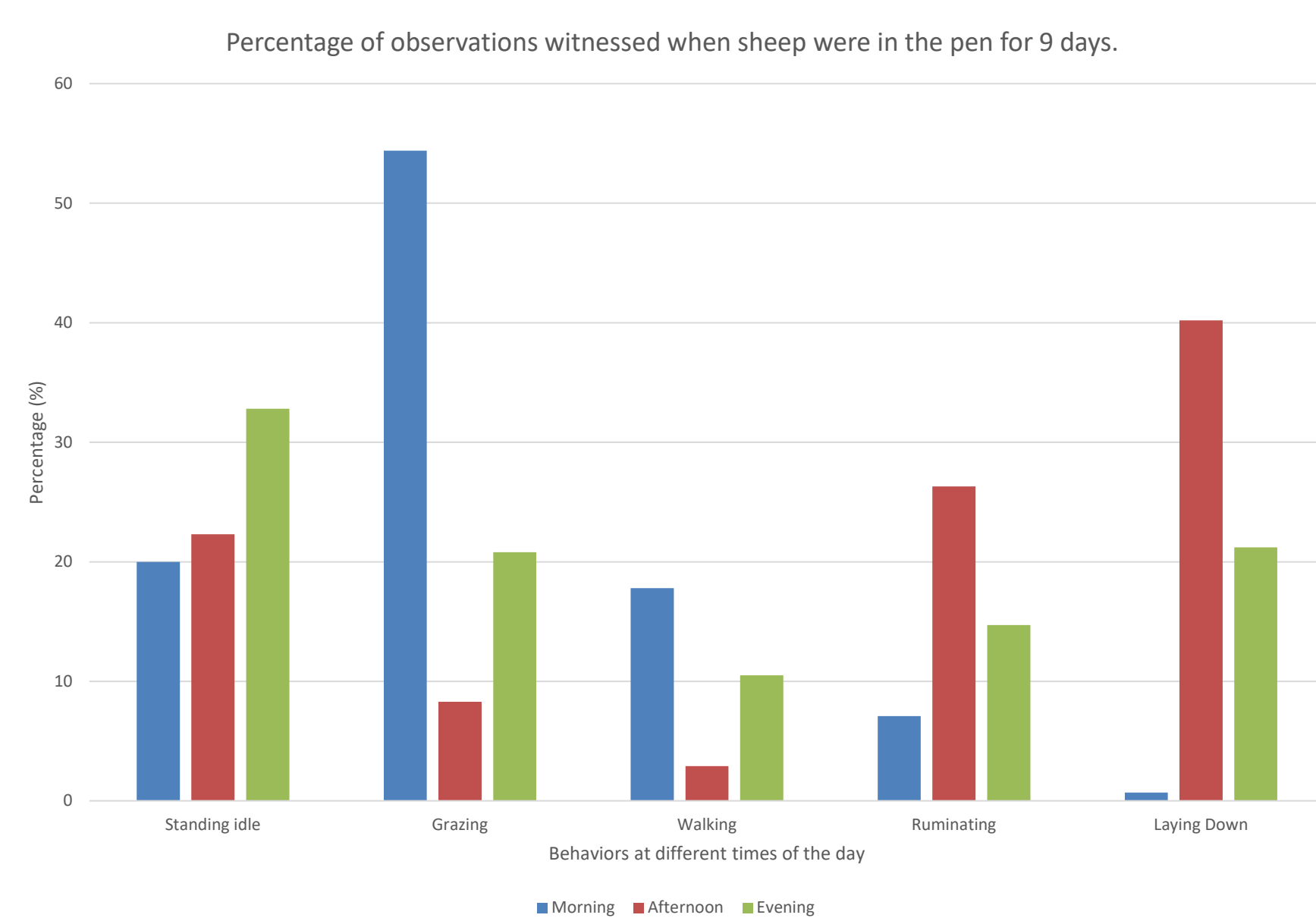
Sheep are a prey species and are flock animals as a result. When sheep are prevented from fleeing from perceived threats, such as physical barriers like fencing, they can become agitated. Agitation is generally noted as increased vocalization, continual trotting or galloping, pacing, stamping, and head-butting. In this study, 5 sheep were selected out of a flock of approximately 90 and their behaviors, including those indicating stress, were observed for 30 minutes morning, afternoon, and evening. The observations were taken for 10 days and aggregated. Then, 36 sheep from the flock of 90 were placed into 18 different pens holding 2 sheep each. The behaviors of the sheep were observed, as well as any signs of agitation or stress, during the same intervals for 6 days. The first day that the sheep were placed into the pens in pasture, there was increased vocalization and pacing. The remaining days of observation, there was no significant display of stress behaviors with the exception of one sheep. One sheep forcibly escaped its pen and then entered a different pen on three occasions, indicating stress. The remaining sheep did not display behaviors that indicated agitation or stress after being placed in pasture

## Introduction:

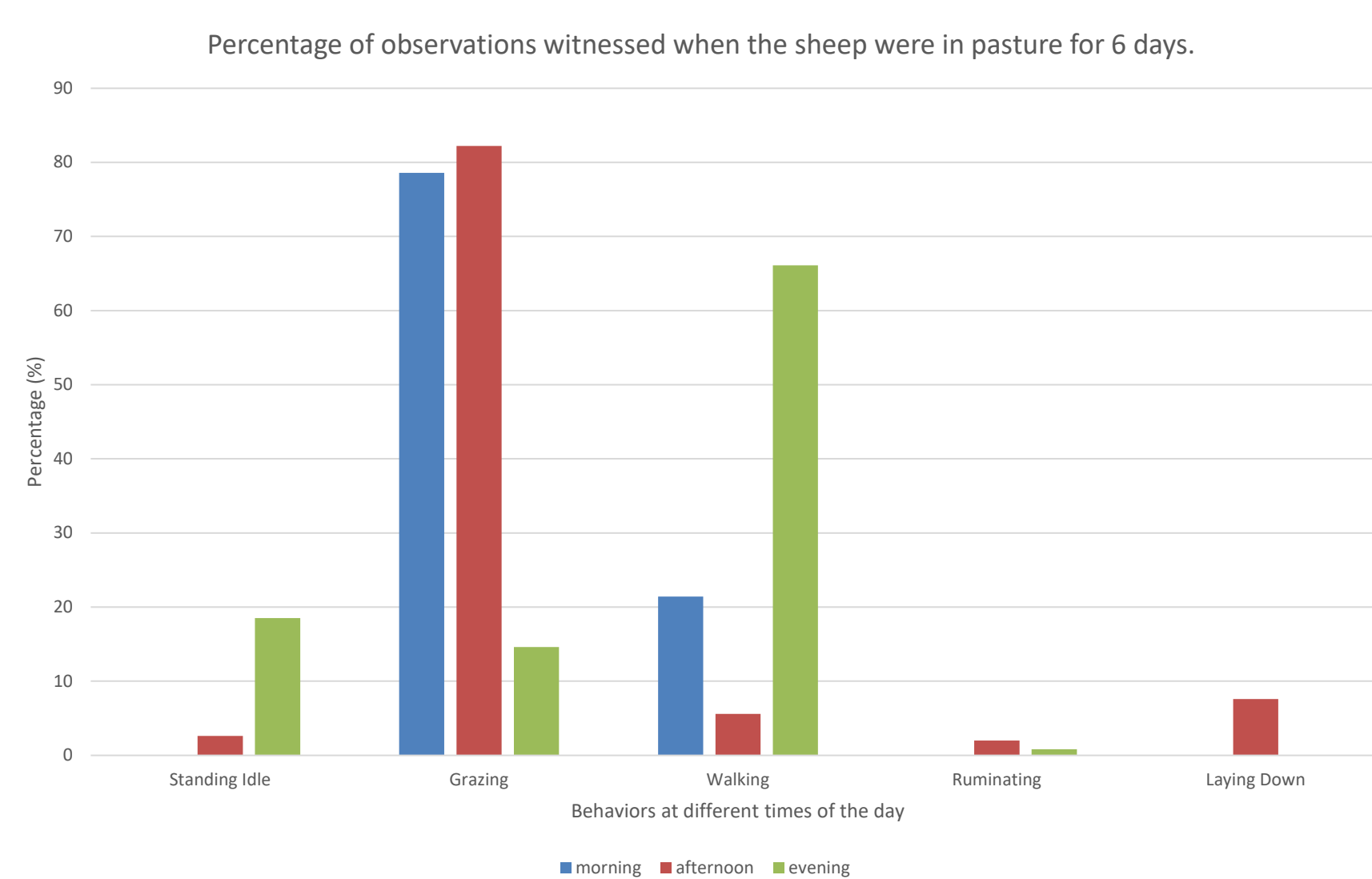
- Sheep flock as a defense mechanism against predation
- When sheep are unable to flee, they become agitated
- Agitation is marked by increased vocalization, defensive aggression and pacing
- Daily observations of general behavior and stress behaviors were made morning, afternoon, and evening on the flock in a single pen, and again when housed in pasture in pairs

## Methods and Materials:

In the first part of the experiment, observations were made on 5 sheep morning, afternoon, and evening for 30 minutes while the sheep were housed in a large, single pen. The pen housed a flock of approximately 90 sheep. The 5 sheep chosen for observation were initially selected to represent the behaviors across the entire flock, and the selected sheep were continually observed minute-to-minute for 30 minutes. Observations were made on the general behaviors of the sheep: grazing, ruminating while standing, laying down (ruminating or not), walking, and standing idle (with no rumination). In addition, stress behaviors were noted: vocalization, head-butting, and pacing. 36 sheep from the original flock were selected and placed into pens located in pasture that held 2 sheep each. If different behaviors were observed during the same minute, the behavior that predominated the time span was noted. Observations were made on 3 pens at a time (6 sheep total) morning, afternoon, and evening for 30 minutes. The same observations were made and noted as those from the first phase of the experiment, including stress behaviors.



Graph 1: Percentage of observations seen in the pen. The chart includes 9/10 days to exclude the one day the sheep were in pasture.



Graph 2: Percentage of observations seen in pasture.



Figure 1: Sheep in the pen



Figure 2: Sheep in the pasture

## Discussion:

Due to several contributing factors that could produce behavioral changes in the sheep, a conclusion could not be made regarding the source of the changes. On general comparison of the percentage of behaviors seen during the time intervals, there are stark differences. Differences pertaining to grazing time, walking, and laying down were expected as the sheep had a constant food supply in pasture and they were in an open, new space. Stress behaviors were observed in the majority of the 36 sheep on the first day of the experiment when they were put onto pasture. This was expected and therefore data was not collected until 3 days following placement. The remaining observations showed no increase in stress behaviors in the sheep, with the exception of one. One wether forcibly pushed himself underneath the entrance gate of his pen on 3 separate occasions. The wether also forced himself into a different pen each time as well. The gate required reinforcement to keep the wether confined. This was the only significant stress behavior observed. Otherwise, the sheep acclimated to pasture and separation well.

## Future Direction:

- Use younger sheep, preferably lambs
- Limit the number of experimental factors
- Incorporate blood samples to monitor cortisol levels

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**Acknowledgements:** Dr. Ondieki Gekara, Dr. Cord Brundage, Oliver Sycip, Cal Poly Pomona Sheep and Swine Unit, USDA, and Kellogg Honors College