



# How Temperature May Affect Horses: Using Ethograms to Examine Horse Behavior Based on Variations in Weather

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## Introduction

Around 5,000 years ago horses were first domesticated, it was then the interaction between man and horse began. Horses are simple yet intricate beings thus learning their behaviors and patterns aids in understanding research such as Catharina Carlsson et al. who studied how horses can assist in measuring authentic interactions between clients and staff in social work or Marta Borgi et al. who studied the effectiveness of equine assisted therapy for children with autism spectrum disorder and found that the children working with the horses had an improvement of social interaction as well as a mild effect on the their motor skills. By comprehending the behaviors of horses we can begin to understand equine - human interactions. This study looks at understanding the behavior of horses through observations starting with their relationship with varying weather conditions. An underlying aspect this study will also examine is the comparison of mares and geldings behavior.



Fig.1 Photo of Geldings (Tucker and Ghost)

## Preliminary Results

Preliminary Results yield that the horses exhibit these behaviors more in temperatures averaging 67 degrees Fahrenheit (19.4 degrees Celsius)

- Grazing
- Standing in a pack ( 3 or more horses)
- Sounds (neigh, snort, grunt, nicker etc.)
- Rolling around in dirt

Preliminary Results yield that the horses exhibit these behaviors in temperatures averaging 53 degrees Fahrenheit (11.7 degrees Celsius):

- Standing still
- Sleeping (standing up)
- Tailing swaying
- Bending back hind leg

## Materials and Methodology

Horses – n=11 (5 mares, 6 geldings)

Research conducted using the following procedures:

- Maintain a proximal distance about 10 – 15 ft away from the horses to insure there was no interference with the horses behavior.
- Observe the horses and write down all the common characteristics displayed.
- Create a chart (ethogram) in excel with a list of the horses and the common behaviors.
- Separate the ethogram into two charts, an ethogram for geldings (males) and an ethogram for mares (females).
- Use a recording device (i.e. cell phone or camera) to record the all the animals behavior each day for 5 minutes.
- Record the temperature for each day the horses are observed.
- Analyze the footage and fill in the ethogram. (i.e. each time a horse does one of the behaviors listed, record it in the ethogram.)
- Compare the final data, look to see if there is variation in how the horses behave depending on the weather. Also look for differences in the gelding's behavior and the mare's behavior.

## Conclusion

Based on the preliminary data collected from the ongoing research, the findings illustrate how horses adapt to the environment around them, it is natural for a horse to spend majority of its day eating small meal of plants and grass, this is also known as grazing. The preliminary results express this fact as well as the observation that on days when the weather is considered to be colder than usual (below 60 degrees Fahrenheit, 15.6 degrees Celsius) the horses in the study tend to graze less and stand still more. A possible reasoning for this is due to the horses ability to thermoregulate their bodies as a mechanism to conserve heat and energy. In order to thermoregulate, horses will reduce the blood flow to their outer extremities such as the ears, legs, muzzle etc. to maintain temperature of their core. While in temperatures higher than 60 degrees Fahrenheit (15.6 degrees Celsius) the horses did not exert energy by running around the pastures rather they preferred to casually stroll, graze, and bend one of their hind legs throughout the day. These behaviors indicate that the horses are comfortable, the bending of one of their hind legs in particular means that the horse is in a relax state. As of now, the preliminary results do not yield a noticeable difference in the behaviors of mares or geldings in how they respond to the weather.



Fig. 2 Photo of Mares (Hannah, Gracie, and Cowgirl)

| April 12th |                 | 59/33 degrees F; muggy, windy, cold |                         |                          |                |                             |                    |                |             |                           |        |              |              |          |         |
|------------|-----------------|-------------------------------------|-------------------------|--------------------------|----------------|-----------------------------|--------------------|----------------|-------------|---------------------------|--------|--------------|--------------|----------|---------|
| Horses     | Gender          | List of Behaviors                   |                         |                          |                |                             |                    |                |             |                           |        |              |              |          |         |
| Name       | Gelding or Mare | Grazing                             | Leg bending (back legs) | Leg bending (Front legs) | Standing still | Standing still w/ head down | Standing in a pack | Rolling around | Laying down | Head shaking while eating | Sounds | Tail swaying | Tail lifting | Sleeping | Yawning |
| Ghost      | Gelding         |                                     | X                       |                          | X              |                             |                    |                |             |                           | X      | X            |              |          |         |
| Scout      | Gelding         | X                                   |                         |                          |                |                             | X                  |                |             |                           |        |              |              |          |         |
| Tucker     | Gelding         | X                                   | X                       |                          |                |                             | X                  |                | X           |                           |        | X            |              |          |         |
| River      | Gelding         | X                                   |                         |                          | X              |                             | X                  |                |             |                           | X      |              |              |          |         |
| Orin       | Gelding         | X                                   |                         |                          |                |                             |                    |                |             |                           |        | X            |              |          |         |
| Drummer    | Gelding         |                                     |                         |                          | X              |                             |                    |                |             |                           |        | X            |              | X        |         |
| Hannah     | Mare            | X                                   |                         |                          |                |                             |                    |                |             |                           |        | X            |              |          | X       |
| Gracie     | Mare            | X                                   |                         |                          |                | X                           |                    |                |             |                           |        | X            |              | X        |         |
| Belle      | Mare            |                                     |                         |                          | X              |                             |                    |                |             |                           |        | X            |              |          |         |
| Cowgirl    | Mare            | X                                   |                         |                          | X              |                             |                    |                |             |                           |        | X            |              | X        |         |
| Princess   | Mare            | X                                   |                         |                          | X              |                             |                    |                |             |                           |        | X            |              |          |         |

Fig.3 Example of Ethograms used during the study.

## References

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