

## Necropsy and Veterinary Report

**Date:** July 11, 2010

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**Location/Event:** Owyhee HMA, Tuscarora Gather

**History:** On arrival at the temporary holding corals this morning several horses were noted to be down or dead in the pens. The horses that were down were generally exhibiting neurologic signs and signs of colic (abdominal discomfort). There were 2 additional horses (young studs) that were stuporous and ataxic. These horses were all treated with banamine by injection. Plans to ship horses to the BLM facility were immediately cancelled for the day and the gather activity was suspended by the COR until the situation at hand could be addressed.

The horses had all been gathered the previous day. Approximately 230 total horses gathered that day. On arrival at the trap many appeared to be tucked up, lacking abdominal fill of feed and water, and moderately dehydrated. However, the body condition of the horses was generally good with most having a Henneke body condition score of 4 or 5. There were several horses, mostly young wet mares, that were in a condition class of 3. Horses had been sorted during the day and provided with water and mixed grass/alfalfa hay in each pen. Weather conditions were mild for the season during the gather (partly cloudy, temps about 70s-80s when the horses were brought in)

### **Examinations:**

On arrival at the temporary holding corral, approximately 6:30AM 2 grey mares in the small wet mare pen were down, showing signs of colic. The 16YO grey had been observed lying down twice the previous day but did not appear painful at that time. The 8YO grey mare was also showing signs of colic. Both had obviously been down and struggling for several hours during the night. Both were treated with banamine first thing in the AM. Both were retreated approximately 4 hours later. The 8YO was showing neurologic deficits and no signs of improvement. She was euthanized. The condition of the older mare waxed and waned throughout the day. She was treated a total of 4 times, stood for short periods of time and was observed drinking a small amount of water on two occasions. Her clinical signs were mostly attributed to colic pain. About 50% of the time she was bright, alert and responsive (BAR) but reluctant or unable to rise. After her final treatment, she was BAR and sternal at the end of the day.

A 3YO black stud in the end stud pen was found dead against a panel (see necropsy reports below).

A 5MO bay colt was down and unable to rise in the middle mare side pen. He was treated with banamine. On re-examination 2 hours later the colt's condition had deteriorated. He

was unresponsive, given a hopeless prognosis for survival and euthanized as an act of mercy.

A 2YO palomino stud was found in the large stud pen, bleeding from the mouth. He was mouthing the air and a panel, was disoriented and unaware of his surroundings, he circled left when moved and was severely ataxic. He apparently had sustained a serious head injury and possible jaw fracture during the night. These serious injuries were considered incurable and he was euthanized following the initial examination as an act of mercy.

A 2MO old colt and 6YO mare were found dead in the wet mare pen first thing in the morning (see Owyhee Mortality Log and necropsy report below).

A 6YO roan mare died suddenly during sorting of other horses in the pen (see necropsy report). This mare had been moderately lame the previous day so had specifically been re-examined in the morning and was showing no signs of neurologic impairment at that time.

Two young studs (flea bitten grey and black) were found to be standing but dull, weak, ataxic and unresponsive. A big bay stud was exhibiting signs of colic; he was up and down throughout the day, treated twice with banamine. The grey and the bay were treated with banamine, twice during the day. The black stud could not be approached in the pen and sorting the pen through the chute was not warranted to treat that individual at this time.

The leppy colt from the grey mare that was euthanized was sorted into the alleyway near the loadout, hand fed and watered and appears to be doing well.

### **Necropsy #1**

Jerrie Bertola accompanied me during this necropsy examination.

3 year old, black stud had been found dead in a corner of the pen this AM. Carcass was moderately bloated. There were small amounts of subcutaneous fat present. On opening the abdominal cavity the serosal surfaces were tacky. The small bowel was distended and discolored dark red in places. The small bowel was grossly distended with gas, no fluid was present. The small colon contained well formed, brownish/green fecal balls that were course and fibrous with very little moisture content. Portions of the small colon appeared moderately impacted. The cecum contained unformed dry manure material that was very dry. About half the cecum contained this material. The large colon contained scant pasty manure. The stomach was empty. No other abnormalities were noted.

### **Necropsy #2**

Jerrie Bertola accompanied me during this necropsy examination.

6 year old, dark bay mare had been found dead in the lactating mare pen this AM. The carcass was only slightly bloated. There were large amounts subcutaneous and abdominal fat present. This fat was dark yellow. There was a large amount of subcutaneous edema. Findings in the small intestine, small and large colons, cecum and stomach were the same

as those for the first necropsy examination described above. There were no other abnormalities noted.

### **Necropsy #3**

Alan Shepherd accompanied me during this necropsy examination.

6 year old, red roan mare, reportedly died suddenly following a brief seizure that occurred during sorting of other horses in the pen. Approximately 2 hours earlier this mare had been seen acting normally. There were moderate amounts of dark yellow subcutaneous and abdominal fat present. The small colon contained moist, green, unformed fecal material. The large colon contained a large amount of wet, normal looking fecal material. The cecum contained very scant amounts of fibrous plant material and a large amount of free fluid. The stomach contained water and feed material. No other abnormalities were noted.

### **Differentials/Dx:**

The findings of the first two necropsies suggest these horses died from complications related to short term (few days duration) water starvation and dehydration. These horses had physiologic if not physical impactions of the small colon and cecum. Water starvation (also called water deprivation) in this case is supported by the history of the area and observations of the BLM staff and helicopter pilots.

Results of the third necropsy and the clinical signs of other horses in this group suggest the third horse died from complications related to water intoxication following water starvation. This condition (also called water toxicity or water poisoning) is characterized by neurologic signs attributable to severe electrolyte imbalances (primarily hyponatremia) and cerebral edema.

### **Summary/Conclusions:**

The history of this area is that water holes being used recently are drying up and horses were blocked from accessing a singular access point to a river that has historically been a watering point during dry conditions. There are seeps in the area that are also drying up. The river access point is very narrow, steep and long because of high canyon walls. These conditions support the diagnosis of water starvation with subsequent dehydration. Although not common, water intoxication has been previously documented in wild horses following water starvation. These animals have severe electrolyte abnormalities (primarily severe hyponatremia) but do not necessarily have a whole body deficiency in electrolytes. The intra- and extra-cellular sodium balance is affected such that sodium is sequestered intracellularly, serum becomes hypo-osmolar and cerebrospinal fluid becomes hypo-osmolar resulting in swelling of the brain. Dehydration is present but not attributable to fluid losses. Environmental temperatures are only a minor factor for the horses at this time. Coincident with the neurological condition are the effects on the

gastrointestinal tract, physical or physiologic impaction, colic and the typical colic sequelae.

Treatment with banamine is palliative, to relieve pain as much as possible and encourage animals to eat, drink and move about. These benefits are of course balanced against the risk of using this medication in a under hydrated animal.

Treatment of water starvation is providing water. Prevention of water intoxication is primarily oriented toward providing only small amounts of water initially, but this is not possible with large groups of wild horses on the range or in a corral setting. It is very difficult to identify which horses are most affected by the under hydration and the signs of water intoxication range from very subtle to sudden and obvious. Restricting access to water may create even more problems in more horses than providing free access to water. Even with intensive nursing care as can be provided for domestic animals it can be difficult to save affected individuals. Similarly, specific treatment with diuretics may cause more problems that it cures. These treatments are best done while monitoring specific electrolyte levels several times a day. This kind of intensive nursing and supportive care is not practical with an ungentled wild horse under any circumstance.

In this instance the water intoxication was unforeseen as the water starvation only came to light during the time the horses were falling ill. The recommended course of treatment is providing a moderate amount of hay initially (followed after 24 hours by free choice hay), free choice access to water and a choice of an electrolyte solution as a free choice alternative. Banamine can be used to relieve pain, particularly in horses with signs of colic. Animals which are unresponsive, deteriorating despite treatment or showing severe neurologic signs should be euthanized as an act of mercy. This is the course of treatment being followed at this time.