ROCKY MOUNTAIN BIGHORN SHEEP DISEASE EVENT
EAST HUMBOLDT’S AND RUBY MOUNTAINS
ELKO COUNTY, NV
2009-2010
Locations of Rocky Mountain Bighorn Sheep Disease Events in Nevada

Unit 101 - South of I-80 and just west of Wells

Unit 102 - South of I-80 and just east of Elko
The 2009 population estimate for sheep in unit 101 (East Humboldt’s) is 180 animals. Approximately 140 animals have been observed in this area since January 1, 2010.

The 2009 population estimate for the Ruby Mountains is 160 individuals. The primary observations for the Ruby Mountains have been in Lamoille Canyon and 51 animals have been observed.
12/8/09 – Reports of coughing sheep
• 12/10 – 50 sheep seen / 30+ coughing and nasal discharge. Ram found dead.
• 12/13 – 3 yr Ram with severe clinical sign harvested.

1/4 – 1/9/2010 3 additional rams found dead. 75% of Remaining sheep still coughing.
• 1/10 – Mtn. goat found dead. Mtn. goats seen mixed with bighorn sheep

1/13/10 – 2 rams/1 ewe immobilized, sampled, ear tagged and administered the antibiotic DRAXXIN
• 16 others darted with DRAXXIN
TIMELINE – EAST HUMBOLDT’S

12/29 – Reports of sick sheep in clover creek. 1 dead but heavily scavenged ram found
  • 12/30 - Trout Creek, Beverley Hills, Welcome - sheep observed coughing with nasal discharge

1/2/10 - 5 ewes immobilized, sampled, radio collared and treated with DRAXXIN
  • 1 ram harvested due to severe clinical signs

1/6 – 14 - 4 additional sheep found dead
  • 30 others darted with DRAXXIN
  • 1/30 – 31 - additional 22 animals found dead
CLINICAL FINDINGS

• COUGHING
• NASAL DISCHARGE - cloudy to purulent
• LETHARGY
• WEIGHT LOSS
• DEATH
NECROPSY FINDINGS

Acute to chronic, fibrinopurulent bronchopneumonia
Consistent with bacterial pneumonia
CULTURE AND SEROLOGY RESULTS

Pharyngeal swabs and lung cultures:
• *Pasturella trehalosi*
• *Pasteurella multocida*
• *Mannheimia hemolytica*

Pharyngeal, nasal, sinus, trachea, and lung PCR:
• *Mycoplasma ovipneumoniae*

Serological titers:
• BVD 1
• PI3

Gastrointestinal parasites:
  Eimeria
  Nematodirus
  Protostrongylus
TRACE MINERAL ANALYSIS

LIVER ANALYSIS:
• Selenium – low normal to deficient

• Whole Blood Analysis
  • Selenium – low normal to deficient
WHY TREAT WITH DRAXXIN?

Concurrent disease events in MT & WA
  • MT – harvesting all animals that exhibit clinical signs
  • 75 animals harvested to date

  • WA – documenting and monitoring outbreak spread
  • Will begin harvesting animals in 1 location in mid-February
DRAXXIN ® (Tulathromycin)

Only marketed antibiotic for treatment of respiratory disease in cattle and swine. That is indicated for:

- Pasturella sps.
- Mannheimia sps.
- Mycoplasma sps.

Small dosage

Potential efficacy after single treatment

Used safely in domestic sheep, goats, wild sheep

No imminent hunting seasons
Immobilized animals also received:

- Vitamin E
- Banamine
East Humboldt Range

• 33 sheep have been found dead
• 4 animals have received necropsies
• 35 sheep have been administered Draxxin
• 5 ewes have been immobilized, sampled and outfitted with radio collars
Ruby Mountains

- 10 sheep have been found dead
- 3 sheep have received necropsies
- 19 sheep have been administered Draxxin
- 2 rams and 1 ewe were immobilized, sampled and ear tagged
NEXT STEPS

Plan for Detailed Investigations and Further Surveillance for East Humboldt Range and Ruby Mountains Rocky Mountain Bighorn Sheep Disease Events in Nevada, January – September 2010
OBJECTIVES

Compare and contrast:
BHS sub-herds w/in East Humboldt’s (EHR) and Ruby Mountains (RM)

- Evaluate animals for respiratory pathogens, general health and nutritional status
- Evaluate forage quality and trace mineral levels and precipitation history at corresponding sites

Measure effectiveness of the antibiotic Draxxin
- Survival
- Body condition
- Residual lung pathology
- Detected pathogens
- Lamb recruitment

Compare and Contrast:
Forage quality, trace mineral levels and precipitation history and animal mineral levels in other Rocky Mtn/California bighorn herds (South Snake Range, Montanas, Santa Rosas, and High Rock/Calicos) that were captured in January 2010 with results from the EHR and RM
METHODS

Mark / radio collar additional animals
  • Survival
  • Lamb recruitment
  • Establish marked control group (no DRAXXIN treatment)

In separate sub-herds/sites mark additional animals:

Rattlesnake Canyon (RM) - 0 tagged/ marked/sampled
  • (capture - n = 10; necropsy - n = 3)
Lamoille Canyon (RM) – 3 tagged
  • (capture - n = 10; necropsy – n = 1)
Willow/Trout Creek/Beverly Hills (EHR) – 5 - (4 radiomarked)
  • (capture - n = 6; necropsy – n = 1)
METHODS CONTD.

Standard necropsy and sampling to be conducted on harvested BHS and fresh carcasses

Collect forage and soil samples at all sites identified in Objective #3 will be analyzed for nutrients and trace minerals

Aerial surveys of all bighorn herds in the study during late winter 2010 to estimate lamb recruitment for each herd. Recapture and re-sample radio marked animals prior to their leaving wintering areas

Follow ewes and lambs weekly during 1st 6 weeks of standard lambing period to evaluate production and lamb survival

Information from this project will be assessed in the fall 2010 and if preliminary data support the need to continue to monitor adult survival and specifically lamb recruitment additional funding will be sought
### Draft Budget for Area 10 Bighorn Sheep/Mtn Goat Disease Surveillance

9 mos estimate

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omentum
LAMOILLE CANYON – RUBY MOUNTAINS
RAM LAMB
1/14/2010
RIGHT CRANIAL LUNG LOBE

RIGHT BRONCHUS - FIRST EXIT OFF THE TRACHEA
EAST HUMBOLDT SUB GROUP