

4th ANNUAL BISON WORKER SAFETY & HERD HEALTH ROUNDTABLE

July 6-7, 2022

PIERRE, SOUTH DAKOTA



Hosted By



ROUNDTABLE PARTICIPANTS – 2022

Steele Bordeaux, Cheyenne River Sioux Tribe

Dario Caraveo, Pueblo of Pojoaque Bison Program

Eddie Childers, National Park Service

Del Chisholm, Taos Pueblo

Cody Considine, The Nature Conservatory

Megan Davenport, ITBC

Ferin Davis Anderson, Shakopee Dakota

Brittany Dolan, Animal Behavior Expert

Joel Donohue, National Park Service

Ellen Duysen, UNMC, CS-CASH

Moritz Espy, 777 Bison Ranch

Albert Fallis Sr., Crow Creek Sioux Tribe Wildlife

Joan Flecksing, Meskwaki Nation

Randy Hawk, Cheyenne Arapahoe Tribes

Troy Heinert, ITBC

Mimi Hillenbrand, 777 Bison Ranch

Kelsey Irvine, UNMC, CS-CASH

Ben Jarvis, Lower Brule Sioux Tribe

Rachel Johnson, Buffalo Museum

Lee Jones, US Fish and Wildlife Service

Jesse Lasater, Southern Ute Tribe

Taylor Littlewhiteman, Oglala Sioux Parks and Recreation Authority

Charles Lytle

Misha Mazurkewycz, Ponca Tribe

Michael McCown

Karina Miller, Sisseton Wahpeton Oyate

Alexander Morton-Hatten

Harleigh Moore, Osage Nation Bison Herd

Wheatie Nelson, ITBC

Mahmoud Nour, Purdue University

Roundtable Participants (continued)

Jessica Post, UNMC

Risto Rautiainen, UNMC, CS-CASH

Chris Roper, Chris Roper Services

Joseph Rupnick

Marie Sam, Picuris Pueblo

Myстера Samuelson, UNMC, CS-CASH

Rudy R. Shebala, Navajo Nation

Todd Schimelfenig, Ponca Tribe

Matt Schwarz, US Fish and Wildlife Service

Joe Shepard, Forest County Potawatomi

Jenn Sorenson

Terry Stentz, UNMC

Joanna Studt, ITBC

David Sullivan, Ag Health and Safety

Miranda Terwilliger, National Park Service

J Houston Thompson, National Park Service

Vanessa Torres, National Park Service

Ronald (Tony) Wahweotten, Prairie Band Potawatomi

Delvecchio Wilson, ITBC

Don Woerner, DVM, American Bison Research and Education Center

Ilana Xinos, National Buffalo Museum



ROUNDTABLE AGENDA



4th Annual Bison Worker Safety & Herd Health Roundtable and Crow Creek Bison Herd Tour

July 6-7, 2022

RedRossa Italian Grille Ballroom, 808 Sioux Ave., Suite 200, Pierre, SD or Via Zoom

Agenda – Wednesday July 6, 2022

Time	Topic	Presenter
8:00 am CDT	Breakfast	
8:15	Welcome, Introductions and Plans for Bison Worker Safety Project	Mystera Samuelson UNMC, Director - Animal Behavior Core
9:00	Planning for Safety in Field Necropsy	Brittany Dolan
9:45	Break	
10:00	Buffalo Bugs – Intro to Parasitology	Delvecchio Wilson , ITBC
10:45	Safety During Processing: From Plant Design to Operation	Chris Roper , Chris Roper Services, Roger Fraqua , Flower Hill Institute, Ross Cline , Butcher House Meats – Osage Nation
11:30	Lunch	
12:15	Resources for Safe Buffalo Hunts and Field Harvests	Joanna Studt and Megan Davenport , ITBC
1:00	Pesticides, Wildlife, and Safety: The Good, The Bad, and the Ugly	Matt Schwarz , US Fish and Wildlife Service
1:45	Break	
2:00	Bison Health Surveillance, Sampling, and Biosecurity	Lee Jones , US Fish and Wildlife Service
2:45	Best Practices for Moving Buffalo Anywhere They Want to Go	Troy Heinert , ITBC
3:30	Panel Discussion – Bison Producers Answer a Live Survey of Best Practices for Worker Safety and Herd Health	Wheatie Nelson , Moderator ITBC Ben Janis , Lower Brule Sioux Tribe Jesse Lasater , Southern Ute Tribe Maria Sam , Picuris Pueblo Karena Miller , Sisseton Wahpeton Oyate Joe Shepard , Forest County Potawatomi
4:30	Final discussion & reminders for day two	Mystera Samuelson UNMC, Director Animal Behavior Core

ROUNDTABLE AGENDA CONTINUED



Agenda – Thursday July 7, 2022
Crow Creek Bison Herd Tour
Crow Creek Department of Wildlife and Natural Resources
22504 SD Hwy 34
Fort Thompson, SD 57339

Time	Topic
7:00am CDT	Leave Hotel for Crow Creek Bison Herd Visit Contact Mystera Samuelson if you need transportation to the site.
8:00am	Meet on Site for Tour
12:00pm	Lunch Break
12:30pm	On-Site Fecal Float Tutorial
1:00pm	Final Discussion

Thank you to all who presented and participated at the 4th Annual Bison Worker Safety and Health Roundtable. During this meeting enduring partnerships were established, and the best practices that were discussed can be implemented to protect the safety and health of bison herd workers and their animals.



ROUNDTABLE PRESENTATIONS AND DISCUSSION

Introduction and Welcome

Mystera Samuelson

University of Nebraska Medical Center, Central States Center for Agricultural Safety and Health (CS-CASH), UNMC Animal Behavior Core

Plans for Bison Worker Safety Project

The Bison Worker Safety and Herd Health project has been funded for five more years!

- Roundtables will continue as part of this project.
- Plans include creating mentorships or scholarships that will allow members of tribes with new bison herds to travel to established tribal bison herd sites to learn from the experts.
- Please contact Mystera Samuelson (mystera.samuelson@unmc.edu), Megan Davenport (megan@itbcbuffalonation.org), and Joanna Studt (joanna@itbcbuffalonation.org) if you are interested in hosting or participating in this program.
- Please reach out to Mystera Samuelson with any topic ideas or if you want to give a talk at future roundtable meetings.



Brittany Dolan

Pathology and Research Associate, SeaWorld San Diego

clearlyplanetoocean@gmail.com

PLANNING FOR SAFETY IN FIELD NECROPSY

Necropsy: Determine cause of death using gross and histological examinations

- Goals:
 - Get insight into cause of death and quantify human impact – anything we may be doing
 - Improve understanding of the species and how to manage them sustainably
 - Understand pathology of disease: how it moves from species to species or even animal to animal
 - Identify changes in the environment
 - Determine if an animal is safe to consume
- General Safety Dos and Don'ts
 - Do **NOT** participate if pregnant, immune compromised, sick, or feel uncomfortable
 - Do **NOT** ignore an injury (either preexisting or obtained while performing the necropsy)
 - Do **NOT** neglect your physical needs
 - Do **NOT** underestimate yourself
 - **ALWAYS** wear your PPE until necropsy is done
 - **ALWAYS** take precautions:
 - Tie your hair back and remove jewelry/loose items
 - Wash hands often
 - Know what to do if someone gets hurt and where the first aid kit is
 - Eat and drink before and throughout procedure
 - Properly dispose of sharps

PPE

- Closed-Toed Shoes, ideally waterproof, the higher up the better protection
- Tyvek (can be very hot so beware of overheating) or apron
- Eye Protection (goggles, sunglasses, etc.), Mask (N95 recommended for bone dust), Rubber/Nitrile Gloves

Items Critical for Remote Necropsy Kit (bare minimum)

- Backpack or toolbox
- Knives or scalpels (knife sharpener if only bringing one)
- Paper and Pencil (Necropsy report notes, make notes as you go, you won't remember later!)
- Ruler (plastic)/Scale Bar
- Plastic Bags for Samples, dirty clothes and instruments
- PPE – use your best judgement for how often replacing things like masks and gloves
- GPS/Google maps/ Way to tell your general location
- Sharps container (particularly if anything is disposable). Plastic water bottle works great in the field!
- Soap and disinfectant, clean clothes, and extra water and snacks

Items Ideal for Remote Necropsy Kit (great if you can have it but can be done without)

- Camera (disposable, or smartphone where legally permitted)
- Measuring tape
- Cryovials and/or Whirl paks, Swabs, Conical tubes, Plastic jar with fixative (formalin is the preferred fixative)
- Forceps/tweezers, Scissors (poultry or surgical)
- Cooler and Ice
- Cutting board, Meat hooks, Loppers (hedge trimmers) – Specifically used to help cut through ribs, ribs can be disarticulated instead, Hand saw
- Shovel (might want to bury an animal if can't dispose of it another way)
- 5-Gal bucket and old towel

Personal Gear Recommendations:

- Foul weather gear and other field appropriate clothes
- Sunscreen, Sunglasses, Bug Spray
- Medications and other personal items as needed

Preparation for Emergencies

- Know what your options are and plan before something happens!
 - Methods of communication, doctors nearby or on call, etc.
 - Make sure someone knows where you are going to be (someone outside who is not going with you)
 - Be familiar with your equipment and communication abilities. Make sure everyone going knows how to use all equipment!
 - Talk to your team about their training (necropsy experience, animal handling, etc.)
 - Expand your training (wound management, wilderness first aid, etc.)
 - First Aid Kit!
- Zoonoses – transfer of diseases between humans and animals works both ways
 - Bacteria, fungus, viruses – Not all can be transferred, but many can be
 - Assume everything is dangerous until you know it is not!
- Wound Management
 - Keep open wounds covered for entire necropsy or don't necropsy
 - If you tear your skin, let it bleed as long as it is safe to help flush out anything that may have entered through wound
 - Wash with soap and water
 - Consult a physician – make sure they know you work with wildlife
 - Bug bites/minor aches/pains/wounds can be treated in the field
 - Symptoms of zoonotic disease can show up later
 - Anything more than a minor injury needs medical attention or consultation
 - When in doubt talk to a physician!
 - Even minor injuries can become emergencies quickly in the field!

Performing a Field Necropsy

- Take stock of the situation (time of day, what is around, weather, wildlife)
- Get photos of the scene (whole scene with animals)
 - Animal identifier and scale
 - Make sure images are in focus, clear, and identifiable (not too zoomed in)
 - Be at 90 degrees to what you are focused on and avoid creating a shadow
 - Get fingers, objects, and tools out of image
 - Take pictures of: scene with animal, all aspects (laterals, dorsal, ventral) if animal can be rolled, body cavity, major organs, anything unusual
- Get GPS/location information
- Prep your gear/sample bags/delegate roles
- Conduct external exam
 - Look at animal as a whole (nutritional condition, wounds, fur/skin, ectoparasites, eyes, mouth, obvious cause of death?)
 - Note the age of the wounds (fresher or older/starting to heal)
 - Carcass Condition:
 - Fresh: Looks like it did when alive, no bloating, minimal skin degradation, little to no odor
 - Some animals may appear dead but are alive – check eye reflex and/or check for a heartbeat
 - Mild to moderate decomposition: Bloating, mild to strong odor
 - Advanced decomposition: Strong odor, skin sloughing, be very careful when opening as that is a release of pressure, make sure not pointing toward anyone
 - Mummified: Skin dry and leathery, some fur may still be present
 - Skeletal: Primarily bones, some tissues may remain, but not body cavity
- Conduct internal exam
 - Ideally start on left lateral side (lay animal on right side)
 - Remove skin and fat then carefully open ribcage
 - Observe/photograph body cavity with organs in situ before removing them
 - Remove organs and observe individually – loaf to view internal tissues
 - Collect tissues, small pieces in fixative and other frozen samples as requested

- Work with vets, agencies, and researchers to determine what is priority for your population
- Collect samples as you go/appropriate – Timely sample collection is critical!
- Assemble data for veterinary consult
 - Describe don't diagnose!
 - Use terms anyone can understand, compare what you see to things anyone would recognize
 - Be as objective as you can while being subjective (things like color are inherently more subjective)
 - Describe color, shape, smell, texture/consistency
 - Examine the outside of the organ as well as the inside (loafing gives a thorough view of entire organ)
 - When possible: measure anything unusual and collect samples containing both normal and abnormal tissue
 - Take lots of pictures!
- Send samples

Recognizing Abnormal Tissues:

- Red flags:
 - Visible parasites or fungus/spores
 - Malodorous (smells bad especially when fresh) or bloating
 - Severe emaciation or atrophy/abnormal adipose (fat tissue)
 - Discharge/purulent coming from any orifice or wound
 - Subcutaneous blood (not normal if animal was not wounded) or blood clots
 - Tan/yellow nodules inside rib cage/under skin or tissues with nodules, cysts, or abscesses
 - Unusual behavior prior to death
 - Loose hair/abnormal hair/feathers
 - Unevenly colored organs/tissues
 - Lots of free-floating fluid in body cavity
- Trust your gut! If it looks off, it probably is. If you don't know why it died, do NOT eat it!

Post Necropsy

- Wash everything thoroughly
 - Do not use water sources like rivers. Use a bucket with soapy water and dump away from water sources
 - Pack carefully and bring home to wash/soak in bleach
 - All tools should be washed in soap, rinsed, and later with disinfectant
- Pack dirty clothes in plastic and wash ASAP ideally in hot water
 - Having a set of clothes dedicated to necropsy is best
- Shower and inspect your hands/body for injuries. Avoid contact with people and animals until you are clean!
- Replenish supplies
- Coordinate with veterinarian or researcher to preserve and send samples

Take precautions early and often! Trust your instinct! Be objective and take care of yourself and your team

Treat injuries immediately!

- If medical attention is needed, tell your doctor you necropsy/work with wildlife
- Card to carry to show physician
 - Brucella, rabies, toxoplasmosis or parasites, common diseases within your population

Use discretion when considering an animal as a food source

QUESTIONS:

- Are buffalo immune to things like West Nile and Lyme Disease? Is the meat safe?
 - Don't think they are unless there is something unique about buffalo.
 - A lot of parasites would be a red flag as would pale meat (anemic) or neurological symptoms (can't walk normally, head tilt, pupils dilated evenly, responsiveness, isn't engaging in normal behavior, weird twitches, etc.).
 - Make sure meat is thoroughly cooked.
 - Include your local veterinarian in the necropsy when possible. Another concern would be anthrax especially in the sudden death of a bison.
 - Don't move animal, look over whole situation before touching anything.
 - Always wear all PPE. Pay attention if your neighbor notices any potentially unusual behavior.

BUFFALO BUGS – INTRO TO PARASITOLOGY

What are parasites?

- Living animals (like ticks) that live on other animals in an unhealthy relationship (one gains while the other loses)
- Infected animals might be unhealthy looking, they might be sick or show abnormal behaviors
- Bison with lower amounts of parasites have more confidence, they are exploring more and eating food further out
- Some are endoparasites (living internally) and some are ectoparasites (living externally)

Endoparasites:

- *Cooperia* sp.
 - Causes blood loss
 - Difficult to get rid of
 - Grow in intestine, eggs laid in feces, uptake orally
 - Care: Work with veterinarian for treating which might include food management
- *Eimeria* sp.
 - Causes coccidiosis which can cause diarrhea and weight loss
 - Grow in intestine, eggs laid in feces, uptake orally
 - Care: Fluids, antibiotics, Veterinary care
- *Haemonchus* sp. (barber's pole worm, wireworm, stomach worm)
 - Can infect host without needing a disease
 - Causes blood loss
 - Grow in stomach, eggs laid in feces, uptake orally
 - Care: vaccine, selective breeding,

Ecto- and Endo- parasites working together

- *Oribatida* (moss mites) and *Moniezia* (tapeworm)
 - Eggs implanted in feces, mites eat eggs and grow parasite before infecting cattle

Ectoparasites

- *Ceratopogonidae* (Biting Midges)
 - Vector for blue tongue disease an emerging disease
 - Blood sucker, saliva toxins
- *Boophilus* spp. (Blue-cattle tick)
 - Might be a vector for brucellosis (still being studied)
 - Vector for diseases

Data collection

- Feces
- If tranquilized: comb through fur – take pictures of any arthropods
- Parasites love babies because of their lower immune system
- Infection rates will skyrocket in winter
- Provide great nutrition, pasture rotating, looking out for ticks and other ectoparasites, discussing with vet about fecal and blood samples
- Keep an eye out for new papers as parasitology in bison and cattle is starting to emerge
- Free range have fewer parasites

Questions and Discussion:

- When would you recommend administering medications like dewormers?
 - No more than once or twice a year to prevent parasites from developing immunity. Late winter just before calves born and spring or fall for dewormer. Other options like prescribed burns and rotating cattle can help.
- How long do parasites live in the feces?
 - They can be dormant for up to a year. They don't need anything when they are an egg and come to life after uptake by host.
 - Don't underestimate the power of the sun; you can break up the feces and eggs and larva are will get exposed to UV rays. However, you also need to consider environmental factors like humidity.
- Do you treat the bison like you do the normal cattle?
 - Treat with dewormer and vaccinations once a year. This is tough to do without proper facilities. Some smaller facilities bring in metal panels and dart animals a few at a time.
 - Injectables, pour on, and blocks that can be put in feed or water can help if unable to do the others.
- What is the probability of parasites being in the wildlife and moving into cattle?
 - Probability of parasites in free living wildlife is low. Diseases would be more of a concern. There is more worry for enclosed cattle. Make sure there is good nutrition and rotation of pastures.
- For new facilities, work with a vet to see what parasite load is and use dewormers that won't hurt the good bugs that you want to keep.
 - A lot of times medication is not always the answer. Having the right environment and managing the herds can be a more effective treatment. Natural immunity and medications can be better for promotion of the "good bugs" that help keep the herds healthy and safe.
- Sample collection of fresh or dried feces can be a huge help, especially if you don't know what parasites you are looking at.



Joanna Studt

Intertribal Buffalo Council

Joanna@itbcbuffalonation.org

Megan Davenport

Intertribal Buffalo Council

megan@itbcbuffalonatio.org

RESOURCES FOR SAFE BUFFALO HUNTS AND FIELD HARVESTS

4 steps to a safe hunt and field harvest

- Orientation and education
 - Everyone should have some type of orientation and education
 - Pictures and diagrams can be very helpful especially for new hunters
 - Recommend a formal orientation but can be less formal depending on crew
 - Possible ITBC necropsy and cultural harvest training next year (grant applied for)
 - Working on a Hunter Education Project for Tribes
 - Network with other agencies and tribes to see what they are doing
 - Know what you are hunting and knowing the difference between a cow, mature bull, and yearling bull
 - Learn about collared or off-limits animals
 - Avoid accidentally shooting more than one and avoid one near the herd or trees
 - Be aware what healthy tissues look like, take any requested samples
 - Strive for a clean, one-shot kill
 - Heart or lung is the largest vital area
 - Know your target!
- Proper equipment
 - Rifle size recommended 30 caliber or larger
 - Typical hunting gear – dress for the event and temperatures
 - Processing equipment: at minimum a field harvest kit (knives, saw, sharpening stone), game bags, coolers
 - Means of transport to processing area if needed
- Sufficient and experienced staff
 - Proper orientation and education for all involved
 - Ideally 3-5 people (spotter, 2 skimmers, one shooter)
 - Processing at minimum field dress the animal (3-4 individuals with good skinning knives)
 - Hide, head, offal must be properly taken care of as soon as possible
- Additional Resources and Considerations
 - Safety - Online courses available in most states and through National Rifle Association
 - License/Tag – Varies and typically coordinated through Tribal Wildlife Department
 - Time of Year – Best time is in the winter (better hides, less stress)
 - Be prepared before you take the field. Have a plan for what will be done with meat, hide, head, and offal
 - Online resources including bison orientation videos and hunt orientation packets by different states

Questions and Discussion:

- We don't have bison hunts, but hunting is a big aspect of wildlife program. Educate hunters about field dressing. Brought in a bison to use as an example. It was a good way to teach before doing harvests in the field.
- What interests is there in trainings related to field and cultural harvests?
 - We do offer hunts. Usually right around 30 harvests in a year. Youth workers teaching about the hunts and how to take care of things. Guides to help with the harvests.
 - I like the cultural aspect of it. Every tribal program proud of the herd they provide for traditional means. Cultural really sends up a flag and makes me want to pay attention.
 - Arlo Iron Cloud had a presentation last year about traditional processing.

Chris Roper

Chris Roper Services

croper@chrisroper.com

SAFETY DURING PROCESSING: FROM PLANT DESIGN TO OPERATION

Plan early to make sure building facility strong enough

- Hold, contain, get them into a chute
- Typically advise a welded steel pen at least 7 ft tall
 - Even 6 ft they can climb
- Sheeted panels and alleys
 - Cut the views down to keep the animals calmer
- Some of the best systems are built in place and welded together
- Build catwalks on pens for worker safety
 - Think, how can workers get in there? How can they close gates?
- Lots of things to think about when designing
 - Think about shadowing and light changes as they affect how animals move
 - Think about ramps especially ones going into kill boxes, want to keep surface as level as possible, make ramps long and gradual if they are needed
 - Recommend a crash gate for kill/harvest chutes
- Captive bolts typically don't work on bison
 - Inspected facilities typically only get one shot, need to make sure you are doing it right and humanely
- Size more than weight is a factor especially in facilities used to handling beef
 - Need rail systems tall enough to handle a big bison (16+ feet of height to get head off floor to properly bleed and harvest)
- Make sure to follow each state's rules for inspections, as every state is a little different, especially if moving animals between states
- Plan for multiple species in coolers
 - Can have beef, bison, pork, even sheep in the same cooler
 - Can't have deer and other wild ungulates in the same cooler as everything else
 - Different species can't be touching
 - Bison aren't going to hang as long, or you will have lower yield
- Packaging systems that can handle the cuts you want
 - Family is going to be different from retail is going to be different from school, etc.
 - Are you going to do any added value products (jerky, snack sticks, sausages, bratwurst, etc.)?

Questions and Discussion

- Is there anything in the last few years that has changed for plant design in relation to Covid?
 - Awareness has changed vastly. Post COVID, 3 dozen Tribal plants are being planned or under construction. Need to think about goals when deciding what type of plant to build. Limits to mobile processing. Varies depending on goals and ambitions for processing.
- Modular Facilities, is there a significant cost savings?
 - No, is the short answer. Still must have fixed utilities. Can be set up to start with small number and add on. You can do a similar scenario with brick and mortar. If looking to feed just your tribe or your community you can scale back significantly. Modular is one recommended to look at. Factory finished so don't need the same amount of labor to get set up.

Matt Schwarz

US Fish and Wildlife Service

matt_schwarz@fws.gov

PESTICIDES, WILDLIFE, AND SAFETY: THE GOOD, THE BAD, AND THE UGLY

Pest and Pesticides

- Pest – Any animal or plant that is harmful to human concerns or is where you don't want it to be
- Pesticide – Any substance or mixture
 - Pesticide = Active ingredient(s) + Inert ingredient(s)
 - Poisons intentionally released into environment
 - Important to know:
 - Mobility (is it water soluble?)
 - Half-life
 - Metabolites
 - Bioaccumulation
 - Direct toxicity
 - Indirect toxicity
 - Consider targets vs. non-target species
 - Maximize harm to target while minimizing harm to non-targets
 - Safety
 - Sustainable approach – consider ways to minimize chemical use
 - Study your application
- FWS Programs
 - Law enforcement
 - National wildlife refuges
- For wildlife mortality event contact local tribal warden or FWS Refuges

Environmental Contaminants Program

- Environmental reviews
- Pesticide consultations
- Technical assistance on pesticide monitoring

Applicator is responsible for carcass searches

Report wildlife mortalities

Some container labels are incomplete

- Check pesticide use limitation areas

Abuse or intentional misuse (case study)

Non-target wildlife mortality

- Known cases are only the tip of the iceberg
- Case needs to be discovered, reported, collected, and necropsied
- Please report if you come across anything

Response even if there is no law enforcement case

- Report, request technical assistance, submit carcasses

FWS welcomes partnerships with Tribes

QUESTIONS:

- What was the reason for getting rid of the prairie dogs?
 - Application aimed at complete annihilation.
- Suggestions on how to limit surface death or prevent raptors from eating poisoned rodents?
 - Following label instructions will help prevent. Using other chemicals.
- What about pesticides on hay?
 - Not sure, there is a database. You can look up for South Dakota. Don't have the experience to share on pesticide use in hayfields but others do have answers.

- How prevalent is threat of plague?
 - 8 sites in SD, believe all are susceptible to plague. Throughout range.
 - Comment on what to look for and what PPE to wear?
 - Spilled bait, lots of eagles, most baits have a dye associated with them, colored droppings.
 - To what extent should soil or water samples be taken to expedite cleanup?
 - Report as spill incident. Most of time need to sample critter. Take good notes, especially if the animal needs to be euthanized. In some cases, sampling may be required.
 - How likely are pesticides assimilated into soil, plants, eaten?
 - Depends on the chemical. Know ones registered for use in your area. Know chemical through label and safety data sheets. Do your own research as well.
-



Lee Jones

US Fish and Wildlife Service

lee_c_jones@fws.gov

BISON HEALTH SURVEILLANCE, SAMPLING, AND BIOSECURITY

Agents of disease:

- Viruses, bacteria, fungi, parasites, prions
- What is the host, what are the agents of disease infecting?

Zoonoses: Diseases that affect the health of both animals and humans and can be transmitted between the two

- 75% of emerging infectious diseases in humans have an animal origin
- As host dies these ectoparasites are looking for a new host – you don't want that to be you!

Biosafety: Protecting yourself and others from being infected with disease agents

- Assess the risk!
- Understand the disease landscape in your area
- Use the right people for the job
- Wear the appropriate PPE and use the right tools for the job
- Take the time to do it safely!

Biosecurity: A comprehensive approach to prevent the inadvertent introduction of disease agents to new locations where they may cause outbreaks of newly emergent and epidemic disease.

- Containment!!!
- Protect family, friends, neighbors, pets, livestock
- Think about disease transmission routes to be smart about transmitting it
 - Better to assume the worst. You should think about all routes

Disease Surveillance

- Observations:
 - Know your herd – Watch for changes
 - Signs are often subtle
 - Separation from other animals
- Look for carcasses
- Have a plan
 - Sampling (safely or with a vet)
 - Biosecurity
 - Management (managing people, land, and critters)

Mycoplasma bovis in Bison

- Adults mostly affected
- Outbreaks reported in feedlot, pasture, ranch bison
- Stocking density and management intensity may affect spread and herd impacts
- Recovery is variable and low
- Clinical presentation is variable – Death may be the first sign
- Evidence strongly suggests it is a primary pathogen in bison
- Depending on the status, immune system, and how long the animal has been fighting it, underlying health status it might look different. Multi organ disease.

Lot of new diseases coming in

- Causes:
 - Newly introduced animals
 - On site cattle
 - On site bison feedlot
 - Receive regular visits from rental trailers or trailers/equipment from other farms
 - Fomites (inanimate object transporting disease agent): trucks, trailers, feed equipment
- Antibiotic treatment is poorly effective
- Autogenous vaccine form bison has been developed but has a low reported efficacy
- USDA digging into this right now

- There are many different strains that may cause disease in different species
- Does not appear to infect healthy humans
- Detection is difficult
 - Serology may be poorly sensitive and or specific
 - Nasal swabs may be the best test in live animals but still probably only meaningful at herd level
 - Preliminary evidence suggests that deep nasal swabs better than shallow
 - Mortality surveillance is best indicator of this disease in a herd
- What we don't know:
 - Carrier state (asymptomatic? Subclinical?)
 - Incubation period - when are they infected, how old before bacteria is detectable, how old before disease becomes evident

Containment best way to prevent spread

- Create safe and secure work areas
- Assigning roles and responsibilities
- Leave your phone out of the hot zone!
- Don't forget PPE for helpers – minimum gloves and boot covers!
- Get trained or bring in an expert for necropsies
- Before you leave:
 - Final washup – soap and water, baby wipes, hand sanitizer
 - Disposable PPE
 - Dissolvable laundry bags for your clothes
 - Final site check

No such thing as Zero Risk! Keep that in mind

Just because it is small and cute doesn't mean it is safe!

Questions and Discussion:

- Could we have grown this organism through our livestock handling procedures in the last 50 years?
 - The antibiotics probably didn't do as much as we thought they did, but we have probably done a lot of harm. It is possible. We want to fix things and make it better but sometimes we mess up.
- If you must handle a carcass what kind of quarantine before going back to working with the herd?
 - Do we need to do it? Can we do it differently? Be aware of risks for bringing something back to herd or family. Not a simple answer, depends on the disease, and involves personal choice.
- What is the trend in emerging diseases all about and what can we do about it?
 - Learning is key, understanding the connection between animal health and human health. I think climate change is driving it. Best thing we can do is learn.



Troy Heinert

Intertribal Buffalo Council

troy@itbcbuffalonation.org

BEST PRACTICES FOR MOVING BUFFALO ANYWHERE THEY WANT TO GO

You can move buffalo anywhere they want to go.

Need to make it their idea

3 C's

- Confident in your skills
- Calm
- Careful

If you get into their space, they will remind you that you don't belong there

Facilities

- Ensure you have adequate facilities for what you are trying to accomplish
 - Make sure it is tall enough - They can jump very high
 - Make sure it is heavy enough
 - Make sure gates swing and latch properly
- Know your escape routes
- Know your potential bottlenecks and high-stress areas
- Be sure all gates, equipment, corrals are in proper working order
 - You want gates that stay closed when you close them behind you
- Use the buffalo's natural instinct in your design

Be thoughtful of that first big capture pen – put some angles or bends or circles in there, something that's going to stop them.

- Have something beneficial so they don't equate the facility with something bad (ex. Feed supplement, water, etc.)

Processing Buffalo

- 3 C's
- Have an adequately trained crew – you can't do this by yourself
 - Train them if needed, be thoughtful of how you train your crew
- Try to avoid being in the same pen and/or alley
- Chute with crash gate
 - Will save you lots of heartache
 - Needs to be heavy
 - Great investment and it will last you
- Clear path for exit
 - Don't have too many people standing around if they don't need to be there
 - Don't get so congested that if something happens people will get hurt

Transportation

- Consider
 - Where am I going?
 - How long will it take to get there?
 - What are the demographics?
 - What are the road/weather conditions?
 - Is my equipment suitable for the job?
- All these questions should go through your mind when you load buffalo. Last thing you want to be is upside down in a ditch with a load of buffalo

Preparing for the Road

- Visual inspection of rig
- Spare tires and tools
- Ropes, wire, padlocks, water buckets, hay
 - Use your padlocks. The time it takes to lock the padlock is a lot shorter than if something gets out
- Knowledge of the laws governing the transportation and relocation of buffalo
 - Leave the paperwork with the buffalo!
- Paperwork

Trucks and Trailers

- Adequate power and brakes
- Make sure you have enough room
 - Don't overload your trailer, know your demographics
 - Bulls should be hauled so they can't move or alone
- Slam latches and sliding or rolling rear doors is preferred
- Solid top
- Adequate ventilation
 - Could be cool where you are loading, but could be hot where you are going
- Biosecurity – make sure your trailer and equipment are clean
 - Having a clean trailer is going to start to be very important as diseases increase

Loading the Truck

- Attach ropes to close gates from outside of the trailer where possible – again try not to be in the same place as them
- Place knowledgeable assistants in key areas prior to loading
- Give them a straight shot as possible
- Ensure trailer is adequately illuminated – especially at night but even during the day
- Avoid entering trailer or loading alone if possible
 - You get knocked down with no one there or no one knows, bad things could happen
- Bring them as a group that will fit in designated compartment

Get them rolling

- Triple check all gates and latches are secure
- Stop as little as possible
- Inspect them at stops without being invasive
 - Walk around to check tires, check gates, look in there but don't touch or make eye contact. If they are laying let them lay unless they are upside down
- Avoid unloading until the final destination, if possible
- Have hay and water available for longer trips, especially for younger animals

Unloading

- Try to unload in the daylight
- Open cut gates from outside of trailer when possible
- Give them a clear view of where they are going
- BE PATIENT!!!
 - They'll come off when they are ready to come off
 - If they aren't ready, leave the gate open, they'll come off when they are ready

Prepare for the worst, hope for the best and you will usually land somewhere in the middle

Learn the warning signs of buffalo

Always have an emergency plan

Transporting buffalo requires focus and patience, but also requires confidence in your abilities

Questions and Discussion:

- How do you clean and sanitize for biosecurity?
 - Scoop your trailer. Best to do it after each load. Don't let it pile up or get hard. Disinfect it. Use Clorox water in a spray pump like for mosquitos. Truck washes. Have your trailer dry. When it is wet that's where those organisms will live.
- When you move calves with their moms do you separate them or move them together?
 - If they are a baby calf you try not to move them. If you have to, put one mom and calf in a compartment. If they are older put all the cows in one compartment and the calves in the back compartment. Let the babies out and get them out of the way then let the cows out. Let them mother back up. Try to keep demographics as close as you can for what you are moving.



PANEL DISCUSSION:

BISON PRODUCERS ANSWER A LIVE SURVEY OF BEST PRACTICES FOR WORKER SAFETY AND HERD HEALTH

Facilitated by: Wheatie Nelson

Panelists: Ben Janis

Jesse Lasater

Maria Sam

Karena Miller

Joe Shepard

Do you conduct roundups for your herd and if so, what is the main goal of roundups?

Maria: Yes, the main goal is to deliver dewormer and assess health conditions, sex them, weigh them, tag any new animals. Do this once a year, want to maintain natural immunity, mainly do this because of small land base. Will do fecal floats quarterly to help determine treatments, what's appropriate without overtreating.

Karena: Yes, once a year, primarily for vaccinations. Tag our culling animals. Try not to have anything over 11. Maintain bull/cow ratio. Enough animals culled for the year for all intertribal uses for the year. Sex and age every animal, replace missing tags.

Jesse: We do roundups every year, usually in the fall. Main reason is to sex, tag or retag, overall health check including weights, worming medicine for liver flukes, vaccine. We don't bring them in for weaning; let that happen naturally. For the most part the herd is on their natural cycles.

Joe: We are pretty much hands off. We'll do a round up if things aren't looking good.

What are any lessons learned from the roundups pertaining to worker safety and efficiency?

Maria: As much staff as you need. No more, no less. Extra people are just in the way and can potentially get hurt. Having an escape route. Being mindful and aware of your surroundings. Communication is key. Buffalo running everywhere and people running everywhere. Noises haven't seemed to bother them. It's more the movements. Train your staff if they aren't trained yet, give everyone a job. One person in charge. 9 times out of 10 things are not going to go as smoothly as you want. Expect the unexpected. Think on your feet and adapt to what is happening. Knowing the signs of an irritated animal. Be aware of bison and how they behave.

Karena: Communication. Everybody knows their spot, knows their job before they get there and when they get there reminded. Less people around, try not to have an audience. The less people the less distractions. Fewer people and animals get hurt with the hydraulic crash gate. Be sure to have someone who knows how to run all the levers. Open the gates so not pushing the animals they go in on their own.

Jesse: Once they are worked up, they are going to stay worked up for a while. If you only bring them into the corral to be worked on, they will remember and fight you. Drop hay in the catch pens a week or more out. Closing them in the pen for a couple hours or a night and letting them back out. Bring them in by baiting with the hay so they come in on their own. Do small groups at a time. Don't run, the sudden movements can get them worked up. Keeping the time in the chute and squeeze to a minimum. Designated individual for each spot. Bring in fewer animals and do more groups. Less stress on the animal. Communication. Beforehand get everyone on the same page. When they are in the chute, we try not to yell too much don't use electric unless absolutely necessary. Avoid dark spots, lighten them up where possible. Use tarps to get a little motion behind them and get them moving. Cat walks, try to minimize traffic.

Joe: Corral system works best if it didn't have corners. They always seem to get stuck in a corner. Otherwise just echoing what everyone else said.

What do you do for sorting and holding separate

Maria: Portion of herd with the animals we wanted into biggest corral and waited for animals to move into smaller and smaller areas until just the animals you want. Be patient and let them think it is their idea. Can circle ones in the chute back in or out to the field if needed and portable panels.

Joe: Corralling them according to calves, young bulls, cows, bulls. A lot less harmful on the corrals.

Karena: Multiple holding pens with one large one in the center that can be split. Hold them by age class. Any animals held for USDA turned into feed lots while others are loaded.

Jesse: Well designed and thought-out corral system and strong. Have a couple spots where we can kick out ones being unruly. We have different holding pens in the corral, work them through a series of gates to separate out ones that are needed.

How long does it take to do the roundup?

Maria: A day for our herd size. Try not to keep them in the pens overnight.

Karena: About 3 days for one farm that has over 300. Another farm with around 150 animals takes a day. Will go until dark and sometimes a little after. Depends on weather and animals.

Jesse: About a day. Prepare for the unexpected usually start about 9 and done by 3 or 330.

Do you give safety briefings at staff roundups?

Maria: Yes, right before we start and maintain communication.

Karena: No, we've been fortunate enough to have the same crew for years and everyone knows their part.

Jesse: Yes but could be more in depth.

Joe: Don't get hurt.

Do you feed grain to your herd?

Joe: No, but we do cake in the winter and put out protein.

Karena: No but do put out mineral blocks and cake.

Maria: No.

Jesse: No, grass fed.

Do you field harvest?

Maria: Yes.

Karena: Our program does not, but we have other programs that come in and do and they bring in experts on it. We just field dress them.

Joe: Hunts include field dressing and taking them to the locker.

Jesse: No, process at a USDA plant about 3 hours away. Occasionally will do a field harvest for ceremonial purposes.

Do you vaccinate?

Jesse: Yes.

Maria: No.

Karena: Yes, for brucellosis, pink eye.

Joe: No.

Do you have a parasite program?

Maria: Yes, main objective of roundup is deworm and fecal floats.

Jesse: Yes, deworming and monitor.

Karena: Use pour on, don't have a program per se.

Joe: No.

Do you have an emergency response on call for roundups?

Maria: No, volunteer EMTs we could call up, I guess.

Karena: No, a lot of fish and wildlife staff took extra training and are on board with us.

Joe: No.

Jesse: We don't have EMTs on site, but staff are trained in first aid.

For any new hires or new people coming on do you have an orientation?

Maria: All on the job training.

Karena: We've had the same crew forever. If we had to, we would.

Joe: Same crew as well.

Jesse: No real formal orientation, but hands on work and trial and error, learn as you go.

How many of you have an emergency response for escape from pasture?

Jesse: Go out to talk to them, sometimes have a truck. They recognize my voice. Most of the time can pressure them by walking near and not running and they go back in where they came out.

Maria: Same, if the whole herd gets out usually fewer people or one person who is familiar to the herd is best. Be slow, be patient, let them see you and move on their own.

Karena: We have staff living at each farm. Depends how many are out, have numbers to call in case more get out than one person can get back in.

Joe: Usually local rancher will let us know, just get behind them, they know where they got out and they will go back in.



CROW CREEK BISON HERD TOUR

Albert Fallis Sr.

cc_wildlife@hotmail.com

The Crow Creek Nation was generous enough to give those in attendance a tour of their bison herd facilities. We began at the processing facility which they were hoping to open in the next couple weeks. It is a brand-new facility that will be state inspected. Currently it can hold 20, but they can expand in the future if needed. They will be able to grind the meat, make patties, make a variety of jerky flavored and not, among other capabilities. They are hoping to be able to open the facility up to other Tribes wanting to come and process their buffalo.

Next, we went out to the pasture and current corral where they elaborated on their projects to improve the facility and their hopes for the future of the herd and facility. While they are a federally recognized Tribe, they are not federally funded and have worked to get grants and do things that will make them self-sustaining. However, they do want to work together and bring Tribes together.

They have just started building a new corral as their old one is very weathered and in need of an upgrade. Their new corral will be all metal as opposed to the mostly wooden one they have now. Future projects include electronic ear tagging and DNA testing as ways to identify and better maintain their herd.

“You can’t do things by yourself, even as a Tribe, you need to reach out to other Tribes...we are all one people.”

