Optimizing Bison Health and Well-Being
Support:

Five-State Ruminant Consortium
South Dakota State University USDA/NIFA

USDA Tribal College Research Grants
Oglala Lakota College
Sinte Gleska University
Sitting Bull College

Intertribal Buffalo Council

University of Nebraska Medical Center
Central States Center for Agricultural Safety and Health
Oglala Lakota College
Ale Higa
Sinte Gleska University
Lisa Colombe
Sitting Bull College
Mafany Mongoh
Limiting production parameter in certain regional bison herds is:

**Low reproductive efficiency**

**Reflected by:**
- low calving percentage
- prolonged calving intervals
Considerations

Vision/Notions vs Opportunities
Optimizing Health and Well-Being:

1. ID animals
2. Records
3. Cull non-productive animals
4. Nutrition
5. Salt and mineral supplementation
6. Control parasites
7. Facilities
1. Animal Identification
2. Maintain Production Records

- Animal identification
- Body weight
- Age distribution
- Fertility
- Pregnancy status
- Body condition
- Disease exposure status
- Parasite exposure
3. Cull non-productive animals

Cull Animals

- Infertile
  - Open
  - Low potential

- Nonproductive
4. Meet Nutritional Requirements

- **Energy** - Limiting nutrient related to reproduction in cattle

- **Determine Body Condition**
4. Meet Nutritional Requirements

Body condition: 1-5
Body condition impacted reproduction
4. Meet Nutritional Requirements

- Cows with low BCS (≤3) were 2.4 times more likely to be open than cows with higher BCS (>3)
5. Trace Minerals

Copper Balance in Bison:
Trace minerals:
- Variation is common between and within different areas

Copper (Cu) deficiency:
- Primary Cu def- dietary Cu levels inadequate
- Secondary Cu def – Cu absorption is inadequate (high levels of molybdenum)
# Effect of Mineral Supplementation to Correct Mineral Imbalances

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<td>Zinc</td>
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<td>103 ppm 142 ppm 111 ppm 127 ppm 81 ppm 49 ppm 39 ppm 45 ppm 40 ppm</td>
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**DIFICIENT**/MARGIN/NORMAL/HIGH/TOXIC
Copper Balance in Bison:

**Signs:**
Vague and nonspecific

(chronic diarrhea, anemia, poor growth rates, poor body condition, failure to reproduce)
SGU Bison Herd
Mineral Supplementation

Before vs. After Copper ppm in South Pasture
6. Parasitism is Prevalent
Parasite burdens

Moderate to heavy levels of endoparasites

- Coccidia
- Monezia
- Strongyles
- Trichuris
- Nematodirus
- Strongyloides
OSPRA Bison Herd
Large Roundworms (Strongyle-type)

Ova/gram of feces

Date of Collection


0  2  4  6  8  10  12
SGU Bison Herd
Large Roundworms (Strongyle-type)

Date of Collection

June 2012
Nov 2012
Feb 2013

Ova/gram of feces
7. Provide Adequate Facilities
• **How to:**

  – **Construct appropriate facilities**
Gathering and Handling Bison

• Optimal for health management practices

• Close contact with the animals.
Roundup

• All animals
  – Identification
  – Body weight
  – Age
  – Body condition score

Females
  – Pregnancy status
  – Lactation status

Bulls
  – Scrotal circumference
  – Breeding soundness examination
Alternatives to Handling Bison to Conduct Practices:

• Without gathering the herd and handling bison individually

• Implement some of the practices

• Herd level
Alternatives to Handling Bison to Conduct Practices:

- Control parasites
- Maintain body condition
- Maintain mineral balance
- Not individual animal ID
Alternatives to Handling Bison to Conduct Practices:

• Assess herd health parameters:
  – Collect samples at harvest
    • Feces
    • Blood
    • Liver

  Submit samples to a diagnostic lab
Harvest Sample Collection

- **Nutritional analyses**
  - Liver - mineral status
  - Rumen fluids - VFA
  - Pasture clip – nutritional evaluation

- **Disease exposure status**
  - Blood

- **Parasite status**
  - Fecal specimen

- **Bull fertility**
  - Scrotal circumference
  - Testicular lesions
Many opportunities to positively-impact herd health and well-being
Summary

1. Identify individual animals
2. Maintain herd records
3. **Cull** non-productive animals
4. Manage herd **nutrition**
   - Forage supplements
   - Mineral supplements
   - Limit herd size
5. Implement **parasite control** program
6. Provide adequate facilities
7. Implement **best practices**
   - Low stress animal handling
   - Worker safety
Team

Oglala Sioux Tribe
  Trudy Ecoffey
  Michael Thompson
  Rob Goodman
  Al Fast Wolf
  Bergil Kills Straight
  Milt Around Him
  Harvey Tallman

Taos Pueblo Tribe
  Delbert Chisholm

Oglala Lakota College
  Ale Higa

Black Hills State University
  Shane Sarver

Sinte Gleska University
  Lisa Colombe
  Sherry Red Owl

• University of Nebraska-Lincoln
• Clayton Kelling
• Christina Topliff
• Roberto Cortinas
• David Smith
• Gary Rupp
• Richard Randle
• D. Scott McVey
• David Hardin

• University of Wyoming
• Steve Paisley

• Cornell University
• Donald Schlafer

• Texas A&M University
• James Derr
Team

Lower Brule Sioux Tribe
  Ben Janis
  Shaun Grassel

Fort Peck Tribes
  Robert Magnum

Northern Cheyenne Tribe
  Mark Roundstone

Crow Creek Sioux Tribe
  Wayne Big Eagle

Sisseton Wahpeton Oyate
  Alva Quinn

Rosebud Sioux Tribe
  Wayne Frederick

Standing Rock Sioux Tribe
  Mike Faith
  Jeff Kelly

Sitting Bull College
  Mafany Mongoh
  Jackie Bigger

Custer State Park
  Chad Kremer
  Gary Brundige

Badlands National Park
  Eddie Childers

Wild Idea Buffalo Co.
  Dan O’Brien

Pearson Livestock Equipment
  Jack Johnston
Support:

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South Dakota State University USDA/NIFA

Intertribal Buffalo Council

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