

CANADIAN BISON REGISTRY

Together Towards Tomorrow

**Terry Kremeniuk
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TOPICS FOR TODAY

- CBA Registry – The Journey
- Genomic Testing
- The Opportunities



The Journey

- CBA Bylaws Under Animal Pedigree Act
- 1990 - 50th Member Of CLRC
- Phenotypic Assessments
- Protect Genetic Purity of Bison/Pedigrees
- Active Registration First 10 Years
- Registration of Foundation Stock Extended to 2011. Insufficient Numbers to be Sustainable
- Industry Hit with Hard Times /BSE/Drought
- COSEWIC Recommendation to Classify Plains as Threatened

The Journey

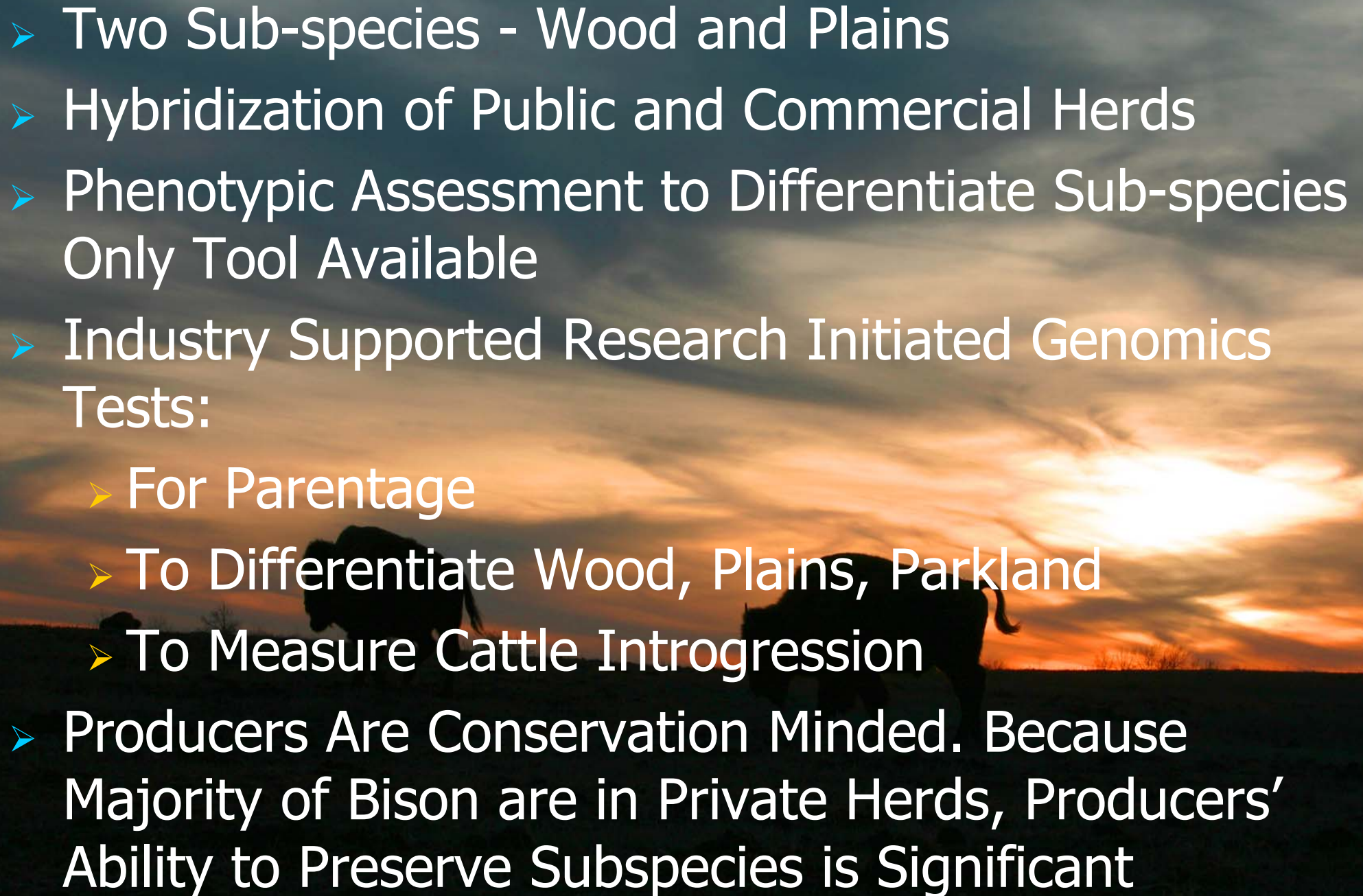
- Phenotypically Based Conservation Herd Registry
- Concerns About Subjective Nature of Assessments Yielded Limited Success
- About 1750 CLRC Registry Transactions
- Through Research New Technology was Being Applied to Other Livestock Sectors
- Genomics Seen As an Opportunity to Understand and Evaluate the Bison Genetic Balance Sheet
- Requirement for CBA Bylaw Amendments

Wood

Plains



Sub-species Preservation

- Two Sub-species - Wood and Plains
 - Hybridization of Public and Commercial Herds
 - Phenotypic Assessment to Differentiate Sub-species Only Tool Available
 - Industry Supported Research Initiated Genomics Tests:
 - For Parentage
 - To Differentiate Wood, Plains, Parkland
 - To Measure Cattle Introgression
 - Producers Are Conservation Minded. Because Majority of Bison are in Private Herds, Producers' Ability to Preserve Subspecies is Significant
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- The background of the slide features a sunset sky with warm orange and yellow tones. In the foreground, the silhouettes of several bison are visible against the horizon, adding a naturalistic and thematic touch to the presentation.

The Journey

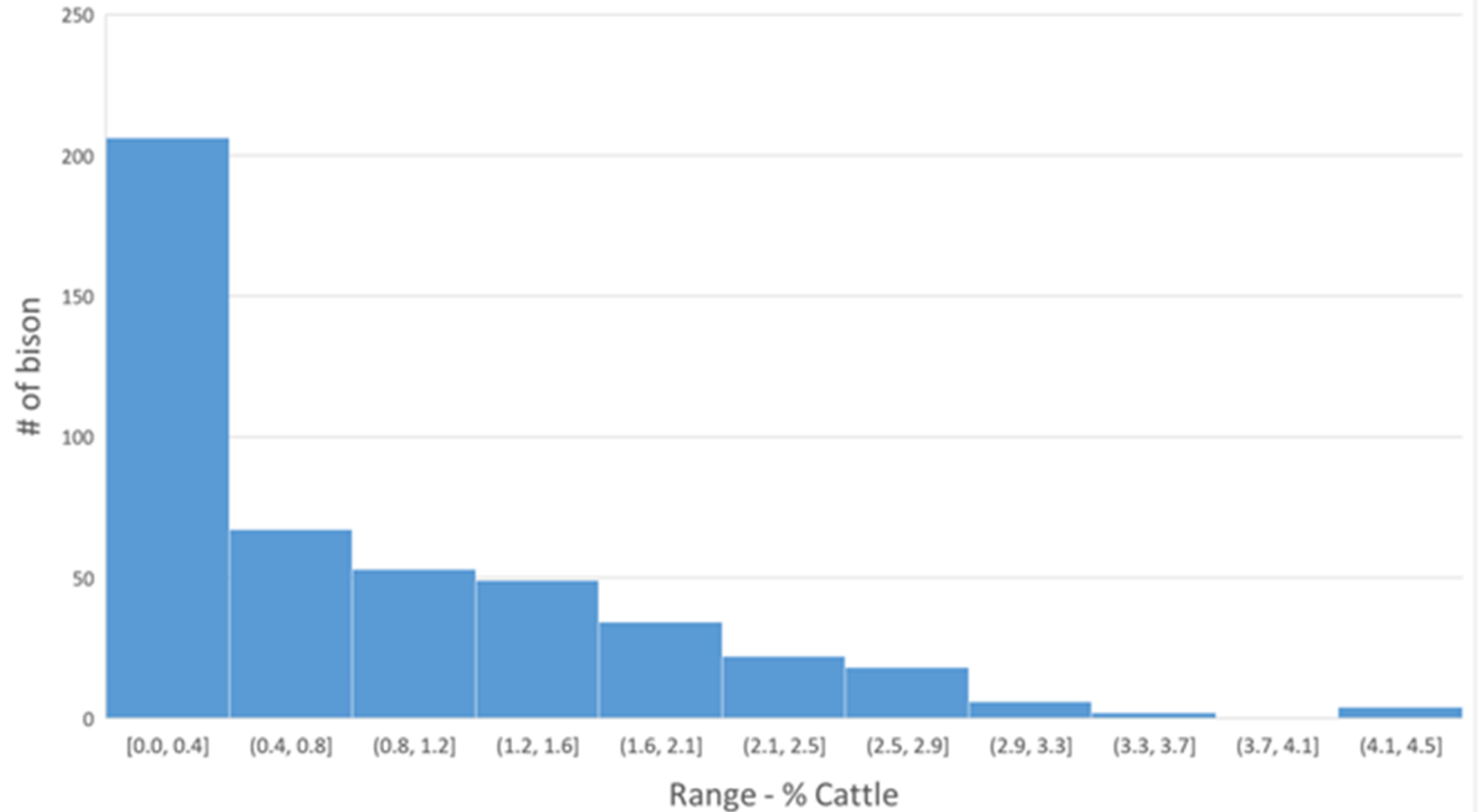
- 2017 Began Project to Use Genomics Testing for Parentage, Subspecies, and Cattle Introgression
- World Class Industry Participants
 - Neogen (Previously Delta Genomics)
 - University of Alberta/Mitacs
 - Texas A & M
 - Agriculture Canada/Alberta Agriculture
 - Parks Canada/Canadian Museum of Nature
 - Producers
- Samples from Parks, Producers, Researchers, and Museums for Testing.

Plains Wood Composition Table

Plains Score	Category
93.75% - 100%	Plains
81.25% - 93.74%	7/8 Plains 1/8 Wood
68.75% - 81.24%	3/4 Plains 1/4 Wood
56.25% - 68.74%	5/8 Plains 3/8 Wood
43.75% - 56.24%	1/2 Plains 1/2 Wood
31.25% - 43.74%	3/8 Plains 5/8 Wood
18.75% -31.24%	1/4 Plains 3/4 Wood
8.75% -18.74	1/8 Plains 7/8 Wood
0.0% - 8.74%	Wood

Cattle Introgression

Histogram of cattle introgression in 461 bison analysed during test validation



Total Tests

	Total Tests		
As of Aug 31	23	22	21
Parentage	723	324	173
Sub-specie	929	212	20
Cattle Introgression	469	184	24
Total Tests	2121	2019	970

Testing Profile

	Testing Profile			
As of Aug 31	2023	2022	2021	
# of Tests Requested	2121	2019	970	
# of Different Producers	23	17	7	
# of Different CBA Members	21	14	6	
# of Different Non CBA Members	2	3	1	
# of Orders	56	42	13	
# of Animals Submitted for Testing	1109	1082	451	

The Opportunities

- Bison Genetic Insights Provided Through Genomic Research and Initial Testing Results
- Tests Available For Commercial and Public Herds
- Use the Tests to Conserve Wood and Plains Subspecies to Support Benefits of Hybrid Vigor
- Renew Bison Registry to Support Industry
- Create Commercial Value Through Selecting Bison for Breeding Programs to Achieve your Business Goals – Weaning Weights, Rates of Gain, Carcass Yield, and Other Variables Identified Through Benchmarking Program

Conservation Herd Registry Requirements

Conservation Herd Registry

Name

Contact Information

Herd Profile Declaration

- | | | |
|------------|------------------|--------------------|
| - Wood | # Breeding Bulls | # Breeding Females |
| - Plains | # Breeding Bulls | # Breeding Females |
| - Parkland | # Breeding Bulls | # Breeding Females |

Individual Animal Listing

- Identification – RFID, Dangle Tag
- Subspecies - Plains Wood Parkland
- Sex – Male Female
- Birthdate
- Subspecies Score - Plains Wood Parkland
- Cattle Introgression Score -

Additional Information/Photograph

Update Herd Profile Annually

Requirements to Make it Happen

- Producers Will Make It Happen As They Are Conservation Minded
- Cost Effective, User Friendly, Secure, Scalable Bison Registry Platform
- Seamless Data Migration from Other Sources.
- Ability to Collect Data for Improving Production Performance and Business Management
 - Birth Date/Weaning Weight/Slaughter Date
 - Shipping Weights/Movement/Treatments etc.
- Report Generation for Decision Making

Next Steps

- Partner with the National Bison Association to Establish A Bison Conservation Herd Registry & Individual Bison Registry
- Identify a Platform That will Support the Bison Registry and Information Management Requirements
- Identify Financial Resources
- Involve Producers in its Development
- Guidance of the Conservation and Pedigree Committee
- Execute the Plan



The End