

My Personal Views and Opinions

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In the previous 4 articles, I have kept the discussion largely factual with references and little personal opinions or views. In contrast, this article is entirely non-factual and based solely on my personal views and opinions. Although I have generally received good feedback from previous articles, this one is not as likely to be so widely accepted.

Personally I think it is fine if you do not care about the presence of cattle genes in your bison. What I strongly object to is the hypocrisy and the secrecy behind the issue that serves little more than to propagate the problem. Everyone knows the problem/issue exists, but it seems to be taboo to even talk about it. And when they do, there are always excuses as to why it really doesn't matter. The problem is that, at least in terms of the species *Bison bison*, it does matter.

There are many individuals, groups, and organizations that work very hard and spend a great deal of money trying to save a variety of animal species. From saving the genetic integrity of the Cuban Crocodile [1] to the European wildcat [3], why not try to save the genetic integrity of the North American bison as well? Even if you do not care personally, maybe do your part for others or for the bison themselves, because I think that most of the informed industry actually does care.

I have yet to meet a bison producer that did not love these majestic animals and truly care about their preservation and conservation. Other than misinformation and being misinformed, I cannot fathom why these same producers are okay with cattle introgression, bison hybrids, and the potential genetic extinction of *Bison bison*. Why an alleged bison conservation herd owner would knowingly (or unknowingly by neglect) promote the propagation of bison hybrids? These are issues that I personally cannot understand.

In order to register a bison at available bison registries, such as the North American Bison Registry, cattle introgression testing is a requirement. Upon information and belief, animals with as many as 3 cattle nuclear introgression markers are allowed in the registry. But this information is not available within the registry under the auspices of privileged confidential information (kind of like a bison HIPAA). Thus, a registry that is generally assumed by most to represent pure-bred animals (like all other registries) withholds important information from the public (and potential buyers) that it requires as part of the registration process. When specifically asked why this information was hidden, the response was that it could affect the value of the animal. Yet, one of the purposes of the registry is to "*preserve the integrity of the species*" while at the same time hiding the integrity of the species. Hypocrisy?

Withholding this information is telling a half-truth about the animal (The truth, the whole truth, and nothing but the truth) at best and a deliberate lie at worst. If cattle introgression and the existence of cattle introgression markers is meaningless, why does the Registry require testing and why does the industry choose not to disclose this information. If cattle introgression is meaningless, why is DNA testing required for registration? It must be concluded that the industry does believe that the presence of cattle genes and introgression in bison is bad and the issue is important but for some undisclosed purpose chooses to hide and ignore it.

A recent listing showed a bison bull labeled as "DNA tested and registered with the North American Bison Registry". What does that mean to you? To most it would probably be

misinterpreted as a “pure” bison. To me it means nothing. It does not define what DNA tests were performed? Was it the full expanded nuclear DNA tests or the NBA shortened version? Was it both mitochondrial and nuclear? Were cattle markers detected? Since the Registry allows bison with cattle markers to be registered, to state “DNA Tested and Registered” may be misleading at best if the animal is a hybrid.

It is the leper in the industry that is simply ignored and not discussed.

Would you knowingly purchase a bison that you knew had cattle genes and was a hybrid animal (legally defined as a cattalo [2])? I challenge anyone and everyone that believes that the presence of cattle genes is not important to bring an animal to auction and publically state that the animal offered for sale is a known bison hybrid with cattle genes. What type of price would you expect to get for the animal? If you are not willing to do this, then you do believe that cattle genes in bison are detrimental and not beneficial to your bottom line or to the bison species. I doubt anyone will take on that challenge.

Although the industry as a whole seems to completely disregard the problem of cattle introgression and treats it as a non-issue, it is my belief and experiences that most of the individual bison ranchers do care. The problem is that they are being misled by misinterpretations, misinformation, misunderstandings, misconceptions, and general “fake news”. The Bison Associations and members need to take a more leading role in addressing this issue.

As this is my personal views, I will indulge in some hypotheticals and “what if’s” that I have in the past frowned upon. Although the following is hypothetical, it has a basis that will likely come to fruition in the not too distant future.

There are several groups currently undertaking the formidable task of sequencing the entire bison genome. This is a monumental effort that will clearly define the bison-cattle introgression issue and identify the true prevalence of modern-day cattle genes in bison, not just the markers. Along with this effort will be the creation of a new introgression test. This new test will likely identify all bison hybrids, even those that have been “hidden” in the past and unveil the true problem for the bison species.

While I applaud this effort, I fear that the results could ultimately be devastating to the bison industry.

We have been breeding cattle genes into the bison species and creating hybrids for over 100 years, knowingly since 1995. In all probability, currently employed introgression assays are only detecting the tip of the iceberg. We know we can breed-out some of the introgression markers but not the actual cattle genes, so that we know current assays (mtDNA and nDNA tests) do not detect all introgressed bison. In previous articles I have given examples of how introgression markers, but not necessarily the genes, can be undetected. There are only 3 possible outcomes when the bison genome is defined:

1. **The status quo.** It may be found that there are some pure bison and some introgressed bison, but the majorities are pure. This is the current situation with introgression being detected in 10-25% of the bison population (although some individual herds may be much higher). The industry will be left with the same situation as now: whether to continue to breed hybrids and generate new hybrids until there are no more pure bison left or to stop the

continued pollution of the bison genome. Ultimately the status quo will result in one of the other possible outcomes becoming realities.

I think this scenario is wishful thinking. In all probability, the percentage of bison hybrids is likely to be much higher. I think the issue will be how close to 100% will the level of introgression be? Hopefully a few of us will try to keep the species from going extinct. I personally think that this is the most unlikely end result.

2. **There are no pure bison.** This is a very strong possibility. As noted, all modern day bison can be traced to the 5 foundation herds, 4 private herds and 1 wild herd (Yellowstone), representing few distinct blood lines. Three of the 4 private foundation herds are known to have bred bison-cattle hybrids (cattalo) and the wild herd (Yellowstone) was interbred with 2 of the 4 private herds. Although there is only evidence the 3 of the 4 actually bred cattle and bison, they all traded animals amongst themselves. The original cattalo breeders admitted they could not tell the hybrids from the pure bison. Thus all modern day bison are related and potentially exposed to hybrids. When did the bison and cattalo get mixed? Was it before the trading between the foundation herds occurred or after?

If it is determined that there are no pure bison, that *Bison bison* is genetically extinct and replaced by a new subspecies (maybe *Bison bison bovidae*), the industry will be left with a similar question: does the industry continue to ignore the introgression of cattle genes or does it make an attempt to at least limit the amount of introgression in bison? Do we try to at least keep the remaining species as “pure” as possible or further pollute and dilute the new species? Do we continue to say it doesn’t matter?

3. **There are very few pure bison.** This is also a very strong possibility and potentially the most damaging to the entire industry. Suppose only 3-5% of existing bison are found to be pure or maybe only limited to a few isolated populations like Yellowstone or Elk Island? It would not take long before some conservation group has the species *Bison bison* listed as a threatened or endangered species. This is certainly a strong possibility if it is found that there are few non-introgressed animals. I don’t think the industry has the political clout over the conservation groups to stop such a determination. The ease of getting *Bison bison* listed as a threatened or endangered species is probably heightened now that it is the Official United States Mammal. What would happen then?

Bison would become invaluable like the mounted Margay cat I have; as an endangered species it can never be sold or traded. It is mine to keep and collect dust. You would not be able to sell your bison or any of its products including the meat. You would be required to have all your bison tested to insure they were not “pure” and only be able to sell hybrids. The pure bison would be yours to keep as pets or given away to a Federal agency or non-profit assigned with keeping the remaining pure bison pure.

The hybrids (introgressed bison) would not be able to be sold as bison, since bison are an endangered species. Maybe they could be sold as bison hybrids or as cattalo since that is how the Federal government defines bison appearing hybrids [2]. This is not a far-fetched suggestion as a bison with cattle genes is technically, legally, and scientifically a hybrid and the US Government defines a cattalo as “any hybrid animal with *American bison* appearance resulting from direct crossbreeding of American bison and cattle” [2].

While these possible outcomes may seem absurd it is only because you have not seriously considered them or looked at the potential legalities of it all.

This is the end of my series on introgression. Of the 1400 valid emails that these articles were sent to, approximately 500 (about 1/3) opened the email. About 75 of the 1400 put me in their block list and the remainder (approximately 800) never even opened the emails. Nevertheless, I have made my best effort to try to educate those that have an interest and that might just care. I have done my part, it is now your turn to do your part.

I hope you have enjoyed the series.

[Click here to discuss this topic or add your comments](#)

Articles coming in the series:

None. There are no other articles in the series.

Past Articles in the series:

1. [Understanding Bison-Cattle Introgression](#)
2. [How Introgression is detected](#)
3. [Does it really matter that bison have cattle genes?](#)
4. [Finding Pure Bison](#)

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<https://www.ncbi.nlm.nih.gov/myncbi/browse/collection/47298674/?sort=date&direction=descending>

References

[1] Milian-Garcia Y, Ramos-Targarona R, Perez-Fleitas E, Sosa-Rodriguez G, Guerra-Manchena L, Alonso-Tabet M, et al. Genetic evidence of hybridization between the critically endangered Cuban crocodile and the American crocodile: implications for population history and in situ/ex situ conservation. *Heredity* 2015;114:272-80.

[2] United States Code of Federal Regulations. 9 CFR 352.1(g) Definitions. 2018.

[3] Witzemberger KA, Hochkirch A. The genetic integrity of the ex situ population of the European wildcat (*Felis silvestris silvestris*) is seriously threatened by introgression from domestic cats (*Felis silvestris catus*). *PloS one* 2014;9:e106083.