EMAILS BETWEEN JUDY HOY AND JUSTIN GUDE, HEAD OF RESEARCH FOR MDFWP

A concerned citizen contacted the MDFWP Education Specialist in Helena, Kurt Cunningham regarding the birth defects on game animals and received the following email from him.

Subject: FW: Question?
Date: Fri, 10 Jan 2014 01:38:18 +0000

----------, (Name withheld by request.)

The feedback I received from FWP's head of research and the state scientist with MTs Natural Heritage program is that this information is from an animal rehabber in the Bitteroot . And she is focusing on underbites?

Justin Gude (FWP's head of research) states that "We (many FWP employees) have attempted to replicate her measurements of underbites in wildlife (which is what she is mostly measuring), and we cannot. Also she estimates that the deer she has measured have an average underbite of 1mm. I do not think that is significant biologically (even if it is statistically) because they can move their jaws."

Hope this helps.
Kurt Cunningham, Education Specialist
Montana Fish, Wildlife & Parks
406.444.9939
kcunningham@mt.gov

The State Scientist with the Montana Natural Heritage Program did not tell anyone anything except to call the MDFWP. He is a good friend and I asked him.

Our first study was concerning the reproductive malformations, which took far more measurements than the underbite, so why he said underbite in wildlife is what I was mostly measuring is a puzzle and totally inaccurate. Also with regard to them not being able to replicate my measurements. Did that mean that many FWP employees are incapable of reading a ruler? All you have to do to replicate the measurements of underbite, overbite or normal bite that I did is read a ruler. His last sentence is not applicable because all the study animals were dead and definitely couldn't move their jaws.

The following exchange of emails between Justin Gude, Head of Research for MDFWP, and myself, is an example of the misleading and often erroneous things that MDFWP personnel stated to people who inquired about the birth defects. I omitted the name of the person who inquired because they didn't want to be known to the MDFWP. The following email exchange is interesting especially because the MDFWP consistently stated that the 413 fawns measured (we measured both normal and abnormal) had an average underbite of 1 mm. Actually that is horrible (for the fawns) because a normal bite is less than 0 mm from our measurement point on the extreme anterior of the dental pad. A normal bite on a fawn is from -0.5 to -2.0 mm because the lower incisors contact behind the anterior of the dental pad. So the average on 413 fawns normal and abnormal is +1.0 mm, which indicates a lot of them had an underbite or lot had a very severe underbite. All this is explained in the emails below.

From Judy Hoy to Justin Gude, Head of Research for Montana Department of Fish, Wildlife and Parks on February 14, 2014 concerning the above email.

-----Original Message-----
From: bjhoy@localnet.com [mailto:bjhoy@localnet.com]
Sent: Friday, February 14, 2014 10:37 AM
To: Gude, Justin
Cc: bjhoy@localnet.com
Subject: Apparent misunderstanding

Dear Justin,

It was recently brought to my attention that you told someone the following;

Hoy estimates that the deer she has measured have an average underbite of 1mm.

Neither my colleagues nor I have ever stated the deer or any other ungulate population we have documented with underbite have an average underbite of 1mm. We have always stated the prevalence of underbite, overbite and normal bite in percentages of the total number of specimens measured. For example, we recently reported the prevalence of those conditions in percentages for 7 species of ruminant in our 2011 study concerning brachygnathia superior and other facial bone malformations. Did you read the study? I am certain I sent it to you.
Also, I recently reported to the MDFWP biologists the prevalence of underbite was 38% on hunter-killed elk of both sexes a colleague and I measured from the 2013 hunting season. This is the way it was reported to MDFWP biologists;

13 Normal 62%, 8 Brachygnathia Superior 38%, 0 Short lower jaw, Total Elk = 21

I can't even determine a method for averaging the measurement for underbite on animals, especially hundreds of animals, in the manner you stated. Consequently your statement is somewhat misleading (to be nice). I have shared all of our findings, data and many pertinent photos with you. Is there a reason you

are making misleading statements about me (and by association quite a number of highly respected veterinarians and biologists who have assisted me)? If there is something in our 2 studies or in my reports to you that you do not understand, please tell me, rather than saying I report things I have never reported and don't even know how to calculate.

You made several other quite strange statements to the same person, including "the animals can move their jaws" and I "mostly measure underbites." The animals we measure are dead, so obviously, they can't move their jaws! Also, when the jaws are closed on an animal, alive or dead, the teeth mesh and the jaw can't be moved without breaking the teeth. Unfortunately, I am getting old and am not strong enough any more to make a dent in the teeth, let alone break them enough to move the jaw.

I take 20 or so measurements on each animal, if it is not damaged. How is that measuring "mostly underbites"? Also, our first study concerned the reproductive malformations on the males and the skewed sex ratio. Except for also being a developmental malformation, that has nothing to do with measuring underbite.

If there is something in our 2 studies or in my reports to you that you do not understand, please tell me, rather than stating to others that I say things I have never said, I have never reported and in one case, don't even know how to calculate.

Thank you,
Judy

From: "Gude, Justin" <Jgude@mt.gov>
Date: February 14, 2014 10:58:33 AM MST
To: "bjhoy@localnet.com" <bjhoy@localnet.com>
Subject: **RE: Apparent misunderstanding**

Judy,

I am not sure who you are talking about that I spoke to, but yes it is true that I have conveyed that your measurements have shown that the average underbite averages (at the upper end) approximately 1mm. I take that from the figure 3 in your article (attached) at the top of page 6. I do realize you cannot measure all specimens, and that is reported in your article. I do not see how this is misleading, please explain this to me. I do not mean to misconstrue the data in your article, please let me know if that is what I am doing. If there is a reason I should not refer people to this figure or these results please let me know.

And when I talk to people about ungulates moving their jaws, which potentially could help them deal with an underbite of 1mm, I mean when they are alive. I did not mean that this had something to do with the way you took the measurements on the deceased animals.

Justin

Dear Justin,

I own my mistakes and I did make a mistake because I didn't realize that Figure 3 on page 6 of our 2011 study (Hoy JA, Haas GT, Hoy RD, Hallock P (2011*) Observations of Brachygnathia Superior in Wild Ruminants in Western Montana*, USA. Wildl Biol Pract 7(2): 15-29. http://dx.doi.org/10.2461/wbp.2011.7.13 **) apparently did average the measurements of the bites of all the measured fawns. One of the coauthors of the study, Dr. Pamela Hallock, made the figure. I don't know how to do this and I didn't realize that the figure actually said what Justin Gude said it did. I can see that the figure shows a continual increase in underbite between 1998 and 2010, but I didn't know it also indicated an average underbite of 1 mm. Actually, it appears that the average underbite on the 413 fawns measured was close to 1.5 mm in 2008 and 2009 and then it went back down to around 1 mm in 2010. Also, the fact that that the bite on all 413 measured fawns, including normal and abnormal had an average underbite of 1 mm proves that there had to be a fairly high prevalence of fawns with an underbite. I measured normal bites from the front of the dental pad back to the upper edge of the lower incisors and used a minus measurement, which was usually -1 to -1.5 depending on the size and age of the fawn. That is why on Figure 3, it indicates that any measurement at -0.5 and lower is indicative of a normal bite. I must strongly stress that even A FAWN WITH A 0.0 MEASUREMENT HAS AN UNDERBITE, because the lower incisors ARE SURROUNDING THE DENTAL PAD AND NOT CONTACTING IT. I was told by veterinarians I consulted that any amount (or measurement) of underbite is an underbite and a serious birth defect on a grazing animal. They said that if the lower incisors were forward of and not contacting the dental pad, the animal has an underbite and any amount of underbite affects a grazing animal's ability to bite off foliage and get adequate food. This is why every website on the Internet concerning domestic livestock states all animals born with an underbite should be culled. Those websites also state that grazing animals with an underbite do not grow or gain weight as well as those with a normal bite, resulting in lost revenue to the livestock owner.**

The other factor here is that the lower incisors on a fawn with a normal bite actually contact the dental pad at least 1 mm behind (to the rear of/posterior to) the anterior of the dental pad, which I used as a point of measurement. I used the anterior of the dental pad as a point of measurement because it was not subjective. The lower incisors of a fawn with a 1 mm underbite as I measured the underbite, would actually have an underbite of at least 2 mm. A fawn's mouth is quite small, so an underbite of 2 mm is significant to the ability of the fawn to graze after it is weaned. Therefore since the underbite on a fairly large number of fawns (413) averaged 1 mm by measurement (which is a 2 mm underbite in actuality), it would seem this would be at least somewhat concerning to those whose job is managing the deer population. We used the white-tailed deer as our main study animal, but mule deer fawns had and still have a higher prevalence of underbite, based on the higher prevalence in adult males examined. See Table 1 on page 5 of our 2011 study, which shows a prevalence of underbite in examined hunter-killed male mule deer at 67% and in examined hunter-killed white-tailed deer at 38%. The mule deer fawns had to have a very high prevalence of underbite between 2005 and 2010 or the prevalence on the adult males would not have been so high. Overbite is very low to almost non-existent on deer in Ravalli County, but from 8% to 10% on deer in Eastern Montana and even higher at 17% on pronghorn antelope. However, antelope were slightly lower in underbite prevalence at 56%, than mule deer state wide at 67%. Biology books say that any birth defect at a prevalence of over 5% should raise a red flag. Those figures on the deer and antelope, as well as the prevalence on other grazing animals are in the 2011 study, which Justin

was referencing, so quibbling about how much of an underbite a small fawn has seems to be far less important than the fact that so many grazing animal had an underbite of any severity.

Regarding the ability of a live animal to move its lower jaw, this is completely irrelevant on the dead animals we examined and measured and all game animals measured for our study were dead. The only live animals examined were newborn domestic goats and live animals can't move their lower jaw at all when their mouth is closed and the molars are meshed. That would seem to be extremely obvious to anyone, but I have had to explain this every time personnel of the MDFWP brought it up over and over.

Sincerely,
Judy Hoy