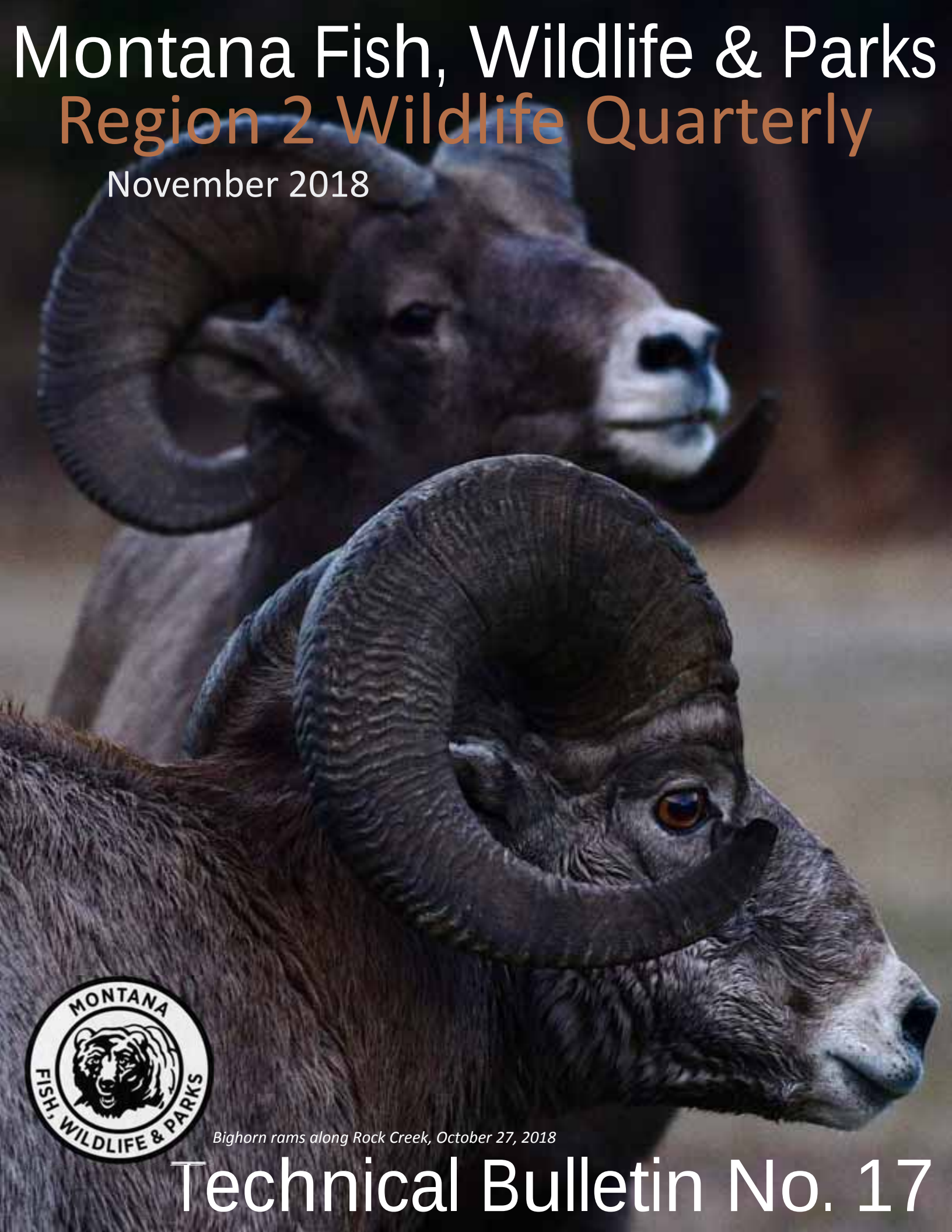
Montana Fish, Wildlife & Parks

Region 2 Wildlife Quarterly

November 2018



Bighorn rams along Rock Creek, October 27, 2018

Technical Bulletin No. 17

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Rut Pictorial

October 27th . . . was, by some measures and prognostications, the last best day of fall, spliced between storms. It felt a tad early for the bighorn rut to be in full swing, but a trip up Rock Creek seemed worth the trouble anyway.

And that's how once-in-a-lifetime memories—and photographs—are made. They're made from, "what the heck."

It was the last place we checked, near the Sawmill Fishing Access. There they were: 36 sheep, mostly ewes, with 3 mature rams, 1 half-curl, 1 yearling ram and 2 lambs. The lambs were significant; it had been a rough year for lambs.

But, the rams were what held our attention—rams that we'd not seen in the summer, as is often the case. They weren't the heaviest-horned rams in the world: a three-year-old, a four-year-old, and one that was at least five years old by its growth rings in the pictures that follow, but might have been a year or two older—hard to tell for sure. And we had seen the rams in Lower Rock Creek crack heads before.

Though never had we watched two rams go at it for 50 minutes, knocking heads 17 times! That's a startling pace of 2.94 minutes per hit—hits hard enough to drop the older ram to its knees on one occasion.

Pictured on this page is the older of the two rams that were involved in battle. He began the afternoon with his focus on ewes. Which seemed to make him the target of the seemingly larger-bodied, smaller horned, four-year-old challenger.

What followed is pictured within.

October 27, 2018

5:22 P.M.: **Initial Contact**

Older Ram:

The ram pictured on this page is the older of two that knocked horns for nearly an hour in the late afternoon of October 27th. By looking closely at the variety of photographs that we obtained by witnessing this experience, we can verify an age of at least 5-1/2 years old. In one photograph, the incisors are visible and they appear to be worn to a degree that would suggest an older animal, and it had a habit of sticking its tongue out the side of its mouth while feeding, which seemed unusual and made us wonder about dental damage or excessive wear as well. And there was room on its horns for more rings, but we couldn't verify them. This ram had more gray coloration in its coat and appeared to be soaking wet—from the creek?

October 27, 2018

5:22 P.M.: **Initial Contact**

Younger Ram:

The ram pictured on this page is the younger of two that knocked horns for nearly an hour in the late afternoon of October 27th. By looking closely at the variety of photographs that we obtained by witnessing this experience, we can estimate an age of 4-1/2 years old, with confidence. This ram had shorter horns than its adversary, but appeared to be bigger bodied and was more brown in coloration, with a sleek coat.

While the older ram seemed to be testing ewes, the younger ram seemed focused entirely on dominating the older ram. As seen on the next pages, the younger ram displayed a number of behaviors, including licking the older ram on the back and placing its head on the back of the older ram, all with the intent of determining the balance of power.

Above (1), the older ram checks ewes for receptivity. This invariably attracted the younger ram (2), which would haze and harass the older ram (3) until finally the younger ram incited a second clash of horns (facing page). Unfortunately, our camera lens was trained on only one of the two rams (4) when it made contact with the other (facing page bottom).

5:41 P.M.: **Second Contact**

This sequence was repeated over and over. Immediately after the clash of horns, the younger ram would lift its stature and head as tall as possible in apparent victory, while the older ram would drop its head and begin feeding (1). We can guess that this was displacement behavior on the part of the older ram; it wasn't feeding for nutrition, but perhaps trying to adopt a posture that might delay or end further confrontation. The younger ram was having none of it (2), however, and would always resume its efforts to pick a fight and exert its dominance.

5:43 P.M.: **Third Contact**

We were interested to see in the pictures that the rams often failed to make horn-to-horn contact alone. As seen above (3), an impact was often delivered toward the skull plate between the horns. Ewes generally continued feeding, unconcerned and unimpressed it seemed, while the rams were engaged in combat. From this it appeared that the battle was a score between the rams alone and while its outcome might ultimately affect the mating choices of ewes, the blow-by-blow performance of rams during battle was not part of their mate-selection equation. In the picture above, the younger ram is on the left. Below (4), the older ram looks beaten to the human eye, after only the third of what would become 17 jarring impacts.

1.

2.

5:47 P.M.: **Fourth Contact**

The rams would (1) rise and walk on their hind legs to generate momentum, but (2) struck each other near ground level, at the peak of their generated force. A tremendous push (3) was delivered from the hind legs, which sometimes caused them to lift off the ground upon impact. After impact (4), the combatants would spend a few seconds gathering their bearings, or so it seemed.

The pace quickened. The older ram seemed to eventually resign itself to battle and shortened its bouts of displacement behavior and avoidance between contacts, engaging equally in conflict initiation after a brief walk-around. Below (2), a sharp eye can spot fine horn chips flying upon impact, and on the facing page (3), the older ram displays a pattern of small, fresh nicks and scrapes on his horns for his efforts. In the bottom photo on the facing page (4), the differential body condition of the two rams is quite apparent. The older ram at left on the facing page (4)—and on the right in the photo below (2)—is more gaunt and bony throughout its hind-quarters, ribs and back, while the younger ram looks solid through the length of its body, including the neck. In the photo at the bottom of the facing page (4), the force of the older ram is stopped cold by the power of the younger ram.

The Seventh Contact, shown on the following page spread, documents a missed and presumably fatigued headbutt by the older ram (5), which sent him to his knees (6). At this point, the ram on its knees was vulnerable to further punishment (7), but such damage was not inflicted (8). This underscores that the adaptive strategy of these fights is for breeding dominance and not to inflict injury or death. To watch this encounter proceed, however, was to wonder whether the older ram would survive if he continued to fight.

We were left wondering how rams engaged in a fight like this would ever bring it to a close. By the end, neither combatant seemed satisfied that the score had been settled. And so they continued their pattern of clash, walk it off, and clash again. It appeared clear to us that the older ram was defeated. Yet the battle raged on, reflecting the intense reproductive urge that would prevent either ram from relenting.

We couldn't help wondering as well whether the relatively low numbers of ewes and rams in this sheep population, due to the initial and lingering effects of a pneumonia die-off in 2009-2010, were partly to blame for this intensified combat between two individual rams. Before the die-off, it seemed that the larger numbers of rams led to more posturing and more distractions that prevented such protracted one-on-one showdowns—not to suggest that horns didn't clash They did. But, now it seems like it's all on the line—too few rams vying for too few ewes, and only a fierce fight can settle it. It's just a thought, poorly fleshed-out at that.

5:50 P.M.: **Fifth Contact**

5:52 P.M.: **Sixth Contact**

5:56 P.M.: **Seventh Contact**

7.

8.

5:57 P.M.: **Eighth Contact**

Scenes like these invite anthropomorphisms—the attribution of human values to the behaviors of animals. We're often poor at judging the meaning of behaviors by other humans, much less wild animals that can't speak to us directly. That said, a sense of urgency seemed to set in as the headbutts came with greater frequency. The older ram appeared to hurl itself into battle with increasing recklessness, while the fitter, younger ram held its ground. On this page, the younger ram is pictured on the left and the older ram is on the right.

5:57 P.M.: **Ninth Contact**

Again, the older ram (on the right) appears to have rooted itself poorly, resorting to more of a hurling of its body as a strategy. It demonstrates little or no ability to move or shake its opponent. While the older ram has the longer, if not heavier horns of the two animals, the results seen so far in this combat suggest that victory hinges on body condition and a well adapted attitude, more than horn size.

5:59 P.M.: **Tenth Contact**

In this tenth headbutting event (1), the older ram is on the left and is fully extended before striking its foe, while the younger ram still has leverage to spare in its hind legs. Below (2), the older ram again walks off with its head down after the contact while the younger ram follows and prepares to reengage. We're sorry for the misdirected focus (3) of the eleventh contact (facing page), though the victorious younger ram is sharp and clear in the aftermath (4).

6:02 P.M.: **Eleventh Contact**

Here we follow the attack of the older ram (1) and its collapse upon impact with the stronger ram (2).

6:03 P.M.: **Twelfth Contact**

Throughout this experience we were drawn to the eyes of the rams (3)—their intensity and in the heat of battle, rage. You can see that the eyes are bloodshot in some of the photos of the clashes. The close-up at right is of the younger ram—a four-year-old—giving a perspective on how relatively small its horns are for such a successful and determined fighter.

Bighorn rams perform a lip curl (3) to detect ewes in estrous. Called the flehmen response, the ram curls its lip and inhales with its nostrils closed.

Below (4), in the thirteenth contact, the older ram finishes the headbutt on the back of the younger ram, spent, like a prize fighter in a clinch.

6:07 P.M.: Thirteenth Contact

6:08 P.M.: **Fourteenth Contact**

In this sequence of four pictures on this and the facing pages, depicting the fourteenth contact, the older ram is driven to the ground and is unquestionably vulnerable. However, the chivalry of the ritual requires that the defeated ram be allowed to regain its feet. We wondered how much longer this would continue, could continue.

6:09 P.M.: **Fifteenth Contact**

Within one minute after a crushing blow, the two rams were charging yet again. This time the older ram kept its feet and showed no signs of surrender. Within another two minutes they charged again (facing page), with the hindquarters of the older ram facing the camera. At the bottom of the facing page the young ram glares at its opponent within seconds of disengaging from another impact.

John T. Hogg of Missoula has studied the behavior of bighorn sheep on the National Bison Range for decades. In 1987 he published a paper on aspects of the rutting behavior in bighorn sheep ("Intrasexual Competition and Mate Choice in Rocky Mountain Bighorn Sheep," published in *Ethology* 75:2). Before seeking his paper, we had assumed that the older ram, with its attention toward ewes, was the dominant breeding ram and that the younger ram, with its focus on the ram, was the interloper with revolution on its mind.

Dr. Hogg's paper makes us reconsider our assumptions. It seems instead that the younger, stronger ram was "tending" the ewes and maintaining a safe location for them to range during the rut. In this model, the older ram could be

6:11 P.M.: **Sixteenth Contact**

seen as the interloper, "coursing" after ewes and attempting to breed opportunistically and block scattered ewes from returning to the fold. Viewed with the benefit of these clues, it's easier to appreciate the insistence and persistence of the younger ram in driving the older ram from this band of ewes. As long as the older ram—the interloper—was hanging around, the younger ram—the dominant ram for the time being—was compelled to remove him as a threat to the ewes that he tended for his own. Perhaps with a low population of other ewes to pursue, the interloper was required to engage in battle, over and over, if it wanted breeding access to ewes at all.

As November unfolds, it will be interesting to continue our watch of these bighorn sheep. Typically, the largest rams in the population arrive on the rutting grounds in Lower Rock Creek as November wears on. What will happen when, one day, a seven or eight-year-old ram appears on the scene is a guess we're not prepared to make. If temperatures remain relatively warm, the rut may continue in the bottoms, but when snow comes the sheep tend to rut more on Babcock Mountain.

Figure 1. Numbers of headbutts by the same two rams per 2-minute interval.

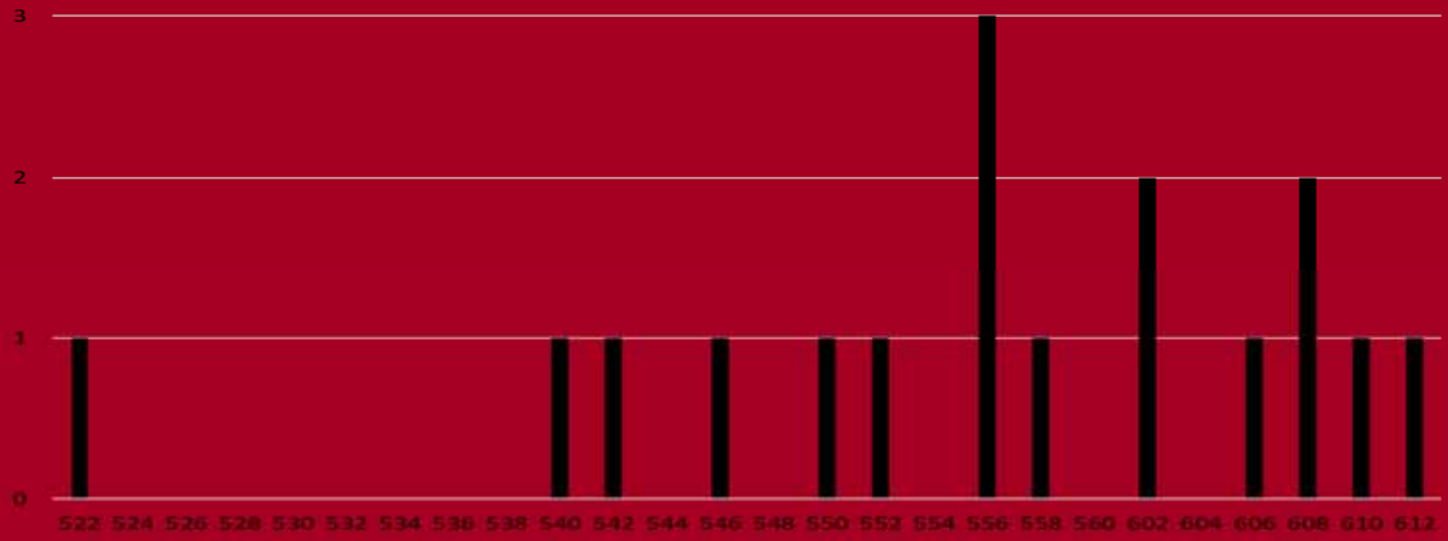

Figure 1 on the facing page depicts the rate of headbutts involving these two rams over a 50-minute period. Overall, the rams banged horns once every 2.94 minutes. In the last 32 minutes they banged horns once every 2.0 minutes and in the last 16 minutes they banged horns once every 1.45 minutes.

We provided a distraction and an interruption when we drove away as darkness approached; we don't know if or for how long the headbutting might have continued after we left. However, the rest of the herd had left the immediate vicinity of the conflict, feeding casually in the direction of the rocky cliffs where they typically spend the night.. So, we might surmise that the clashing of heads soon subsided as one or both rams rejoined the band.

The picture on the back cover documents the rams as we left them, the apparently victorious younger ram on the left and the markedly thinner appearing older ram on the right. It looks like a difficult winter in store for the latter, especially if October 28th unfolded the same way as October 27th.

6:12 P.M.: **Seventeenth Contact**

ADDENDUM

Revisit: November 6, 2018

The rut is nothing if not dynamic. In a space of 10 days we gained 15 sheep, totaling 51 on November 6 compared with 36 on October 27. In the shuffle came a third lamb and at least three new, mature rams.

And the mood was decidedly different, with nary a horn butted in the hour-and-a-half between 3:13 and 4:50 P.M.

The new rams on November 6 were older than the ones we watched fight before Halloween. Each of three new rams looked to be at least 6 years old, compared with the 4 and 5-year-olds we were watching in October. Their horns were heavier, in addition to being longer, and the tips were broomed—rubbed or broken off—on two of them, while none were broomed in the October observations. One ram in November had a scar on its rostrum that we didn't see in October.

The November observations came after the first snowfall of the season in the bottoms and all of the sheep were engaged in focused feeding on green grass shoots that had been regrowing among cropped yellow stalks.

The evening ended with a brief bighorn migration down the paved County road.

How Many Different Rams?

We don't know.

For one thing, we haven't taken the time yet to try sorting them out. And it's one of the reasons why many biologists don't collect very many pictures of their work, and why many photographers don't contribute everything they possibly could to science. Wildlife management and photography are two professional disciplines unto themselves. Wildlife is in motion and while pausing to look through a camera lens, the action and written documentation can get away from the biologist who is trying to keep methodical and unbroken track of the individuals. The camera, on the other hand, has a tendency to follow light, shadows and postures of interest. While looking through a camera lens, a lot of action goes unseen beyond that narrow view.

In an attempt to combat this duality, we decided to prepare a line-up of images, all facing the same way, all doctored to show rings and nicks on the horns. A veritable rogues gallery of "mature" rams that were seen and photographed on October 27 and again—or for the first time—on November 6 in the same general location in Lower Rock Creek.

The question? How many different rams aged 3-years-old or older are in the population? It will be a minimum count because we might not have caught every ram in a right-facing pose, and there may be others in the population yet to appear with the ewes this fall.

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