

Dung Beetles and Their Effects on the Rangeland

Magally K. Aburto

South Dakota

2015-2016

It's hard to imagine that today, with the wind blowing, and the dull and darkness of the cold seasons all around us, but take a minute and remember Spring. Acres of rangeland with flowing grasses growing in rich, green colors, on which cattle graze. Well, what if I were to tell you, that this is all possible due to one, tiny, little, itty, bitty, defenseless... bug... the dung beetle. That's right. This... bug... has the potential to create not only a healthy rangeland, but a beautiful one too.

When we think of a healthy rangeland, we think of it as being green. So, to have a healthy, green rangeland, nitrogen needs to be recycled. Nitrogen may be found in animal feces. As it breaks down, it gets recycled, which is then being used up by grass which makes it grow green. After that, the grass is then eaten by the local livestock, the waste is created and then the cycle starts all over again. This is called the nitrogen cycle. This process may take a few months. Now, you might be asking yourself, "So what? What does any of this have to do with a tiny bug that no one would have EVER thought of?" Until Now.....

The dung beetle, scientifically known as *Phanaeus vindex*, helps the rangeland out in many ways. Not only does the dung beetle eat the dung, but it creates little homes within it! It aerates the soil with its little tunnels and increases the rates of decomposition. It lives for this!

In today's presentation, I will be targeting three main points. How are they good for the rangeland's health, how do they improve the process of grazing on the rangeland, and what can be done to help them as they help the rangeland.

There are many reasons of why the dung beetle is good for the rangeland's health. For starters, they don't like chemicals. So, not only is that good for the rancher, because that means that less money is being spent on them, but it's also healthier for the rangeland. Now, I know what you're thinking, "what about the pests?" Well, they're good for that too! They also help with your common pest control by eating the larvae of other insects! This way, we won't have as many pesky flies. They also help speed up the nutrient cycling!

Now, for the next question. How do dung beetles improve the process of grazing on the rangeland? Considering that cattle produce about 20 dung patties per day, the beetle can break them down better than ants, termites, or earthworms! Now that's something to "crawl" about! As they are breaking down the manure, there is more forage availability for cattle, and more acres of useable pasture, or rangeland, will be available for the cattlemen. According to the North Platte Bulletin (2012), the work done by dung beetles increases available acreage for cattle production by an estimated 5-10%. In order to maximize the benefits of dung beetles, cattlemen should regulate the variety of species and regulate what the livestock eats. The manure incorporation in the soil creates more forage productivity to the livestock, enriches the soil, and can also mean the potential savings of nearly \$85 per acre in nitrogen, that is, if the rangeland were to need some in any case. I mean just think about it, according to the United

States Department of Agriculture (2013), there are about 25 million acres of rangeland in just South Dakota alone! That totals up to around 2 billion dollars in savings. In the United States there are about 770 million acres of rangeland. That comes up to around 65 billion dollars in just nitrogen savings. All in all, that's a lot of money in the long run, don't you think? Besides helping the cattlemen out with the fast nitrogen cycling, they also tunnel through the soil, which means that more forage productivity for the cattle, and the enhancement of soil properties and water retention. They can also reduce methane gasses by reducing greenhouse gas emissions for cattle, as well as improving the air quality value to the cattle producers.

Now that we know a bit more information about the dung beetle and now know of how beneficial they can be, what can be done to help them as they help the rangeland? We can regulate what our cattle eat! According to Boehringer Ingelheim (2014), the dung beetle is a bit picky, you see, and they can only eat high-quality dung because they can't biodegrade the low-quality dung. There are approximately 32-64 (parts per million) parasites that will be in the manure. So if we can't necessarily resist the temptation of chemicals, because of the amount of parasites, we can use a chemical that contains moxidectin. According to the AGForce Queensland (2003), this chemical has little or no effect on the beetle and can keep the rangeland safe from dangerous parasites, worms, and cattle ticks. And finally, be generous with the beetles, give them friends! Dung beetles may be purchased at , for example, 400 beetles at \$100. (<http://dungbeetles.biz>) More beetles means that there will be a decrease in the amount of dung present, and also a healthier rangeland.

Now we know so much about the little dung beetle. We know that they can improve the rangeland's health, which is important in our ecosystem. They like better quality dung. If we help the beetles, then they will help us in today's growing population. And finally, dung beetles may be the key to rangeland success!

Sean Whipple, researcher from the University of Nebraska-Lincoln said "They can potentially do in 48 hours what would otherwise take a couple years!"

This quote is so important because it really does show the great amount of potential that this little bug has within it!

Now, let's go back to that memory of Spring! Acres of rangeland with flowing grasses growing in rich, green colors, on which cattle graze. The bright sun kissing our faces with it's warm and loving rays! As we walk through the rangeland, we now know what can make it that beautiful! The dung beetle. A friend, or just another bug on our beloved rangeland? What will you choose?

Works Cited

Websites

US Forest Service. (2014). About Rangelands. Retrieved November 19, 2015, from

<http://www.fs.fed.us/rangelands/whoweare/>

Gothenburg Times. (2014). Dung beetles may be key to improving rangeland

management. Retrieved November 19, 2015, from

http://www.gothenburgtimes.com/index.php?option=com_content&view=article&id=4209:dung-beetles-may-be-key-to-improving-rangeland-management&catid=5:agribusiness&itemid=7

North Platte Bulletin. (2014). Dung beetles may improve rangeland. Retrieved

November 19, 2015, from

<http://www.northplattebulletin.com/index.asp?show=news&action=readstory&storyid=22855&pageid=29&showtb=true>

U.S. Forest Service. (2013). Welcome to South Dakota Rangelands. Retrieved

November 19, 2015, from

<https://globalrangelands.org/southdakota>

Simmons, L.(2015). Dung Beetles. Retrieved June 15, 2015, from

Personal Interview

Boehringer Ingelheim, & Dr. Justin G. Fiene. (2014). Cydectin - Parasite Control And

Pasture Health Go Hand-In-Hand. Retrieved November 19, 2015, from

http://www.bi-vetmedica.com/content/dam/internet/ah/vetmedica/com_EN/product_files/cydectin-pour/BICYD-0209%20Dung%20Beetle%20Detailer.pdf

AgForce Queensland. (2003). Consider Your Dung Beetles When Using Parasiticides.

Retrieved November 19, 2015, from

<http://northeast.landcarevic.net.au/dungbeetle/parasiticides/Consider-your-Dung-Beetles-when-using.pdf>