

Dung Beetles; The unsung hero of the rancher

Did you know that dung beetles can smell as far as one to two miles away? If you didn't, that's ok because I didn't either. Dung beetles have been the ranchers friend for as long as agriculture has been around but not many people know much about them. To help us understand more about the dung beetle, first we will roll our way into all of the basics of a dung beetle's life, then some of the many benefits that dung beetles have in agriculture, and finally we will figure out the best ways to build a dung beetle population.

First we will roll our way into the basics of a dung beetle's life. There are around seven thousand different species of dung beetles around the world, and more are discovered every single year. According to Nebraskaland magazine, in Nebraska specifically, there are over fifty kinds of dung beetles, and twenty kinds in the Panhandle. All of these beetles are coprophagous, which means that the beetles feed on manure. There are three different basic varieties of a dung beetle's job throughout the different species. The first of those is the most commonly known dung beetle, the roller. The simple job of a roller is to form a brood ball out of the manure pat and roll it until the beetle finds a place he sees fit to bury the ball. Second we have our tunnelers. Tunnelers will pick a manure pat to inhabit and then build a series of tunnels both in the pat, and below it. Underneath the soil the tunnelers will have multiple brood balls in one tunnel and will rarely ever emerge out of the pat. Lastly we have the dwellers. The dwellers like

to live inside of the dung instead of going out of it or underground. Similar to the tunnelers the dwellers will place multiple brood balls in tunnels that have been made in the manure. Even within one singular pasture there can be many different varieties of dung beetles. This is because of all the different areas that can be in a pasture, like places with shade, water, or trees that can attract a variety of dung beetles to them. According to National Geographic another cool fact about dung beetles that was revealed from Experiments in South Africa by Eric Warrant shows that dung beetles navigate using not only the moon and sun, but also the milky way itself because they have a photographic memory. This helps the dung beetles to know where they have buried their brood balls and also what dung pats they have been to, the dung beetles keep track of this because dung beetles are some of the best parents out of all of the insects. Now that we understand more about a dung beetle's life, what good do these dung beetles do anyways? They are just little bugs after all.

Well, there are many different benefits of the dung beetles in agriculture. One of these ways that ranchers especially like is fertilization. When rollers and tunnelers dig into the soil they will bury their brood balls up to a meter into the ground. This will help fertilize the ground it's buried in along with improving water infiltration in the soil. Because there are so many tunnels in the soil the water goes to more places and the soil absorbs more water. Both of these factors play into helping improve the lifecycle of the

rangeland plant, and making them more healthy. Since this makes the plants healthy they produce more forage that is available for the grazing livestock. In cattle production this can even increase the available acreage anywhere from five to ten percent. According to Sally-Ann Spence, a dung beetle researcher in the UK, dung beetles also help to reduce the amount of pasture fouling. Pasture fouling is when a cow will drop a manure pat and then the available plants for grazing are split up into three one third sections. One part is the plants covered by the manure, the second part is the area surrounding the manure that the cattle won't eat because it's close to the manure, and the third part is the plants outside of it that the animals grazing still eat. Dung beetles help to reduce pasture fouling by burying a large portion of the dung pat that they inhabit. Since the pat is broken down quicker it allows for more, healthier plants to grow than what were there before. Dung beetles also carry phoretic mites with them, which would usually sound like a bad and even gross thing, but when a dung beetle has them it benefits ranchers, and livestock. The mites will basically glue themselves to the dung beetles and then once the beetles arrive at the manure pat the mites will detach themselves and dig through the manure pat to look for fly eggs and larvae, which decreases fly populations and saves livestock producers and the livestock a lot of irritation. Dung beetles also help to remove other parasites by using the manure that the parasites would use, forcing them out will decrease parasite populations because living in the manure pat is a vital part of the parasite's life cycle. The dung beetle's decreasing parasite populations help to save ranchers money, because they

don't have to spend as much or any money on dewormers or drenches and who doesn't love a friend that saves them money? On average the American rancher will spend almost or over thirty dollars per head of cattle every year on insecticides, pesticides, parasiticides or dewormers. According to a Progressive Rancher article, American producers will lose about one and a half billion dollars to the cost of flies every single year. However, since dung beetles break the lifecycle of flies, they could have the potential to collectively save U.S. ranchers up to one billion dollars. Now that we've covered the benefits of dung beetles, what can ranchers do to make sure they have a healthy dung beetle population?

Many ranchers have dung beetles in their pasture and don't realize it, but there's also a lot of ranchers that would like to have more beetles than what they have currently. So what are some good ways to increase your dung beetle populations? I've had a few ranchers and family members ask me if they could just buy some dung beetles and put them in their pasture. In America I have only been able to find one source to buy dung beetles from, which is dungbeetles.biz who will send you four hundred dung beetles for one hundred dollars. But if you look at it, the dung beetles are coming from more sandy parts in Florida. This being said the dung beetles might not do as well in other ecological sites like say where I live in Northwestern Nebraska, a more clayey area, or down in Southeastern Nebraska where there's a lot more black soil, so there's a chance that these dung beetles may not be as productive as a rancher would like them to be, but it is still a

great option for increasing a dung beetle populations. Some other things you can do to help build your dung beetle population has to do with a reduction in the use of chemicals like ivermectins and anthelmintics. These chemicals harm dung beetle populations because they are designed to reduce parasite populations and they have the same effects on the dung beetles as they do with the parasites. If you are using dung beetles to manage parasite populations, chemicals like these shouldn't be necessary unless there is an extreme case of infection.

In conclusion dung beetles have been the ranchers friend for as long as agriculture has been around. Today we saw this through the basics of a dung beetle's life through how they live, how beneficial dung beetles are to agricultural ecosystems by decreasing parasite populations and pasture fouling and how to build your dung beetle population by proper pasture management practices. So next time you see our little friends the dung beetles you can remember how they help improve your rangelands.

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