

Dung beetles have long been recognized for playing an important role in pasture ecosystems. Now, ranchers are beginning to look at ways to encourage populations of this insect with the disgusting choice of habitat.

"Dung beetles are the most beneficial insects we have in our industry," says Walt Davis, a Bennington, OK, rancher who's identified 11 species of dung beetles on his ranch. "They're a tremendous boost to soil productivity and they darn-well deserve our attention."

Davis says ranching practices that encourage dung beetle populations can come with remarkable results. When conditions are right, he's seen dung beetles completely recycle manure in heavily stocked pastures in as few as 36 hours after the cattle were moved.

And, it's no secret that most ruminants won't graze closely to their own specie's manure pat. The forage is palatable, but it's avoided because of the dung pile.

"Consequently, cattle manure deposits can make 5-10% of each acre unavailable," says Michelle Thomas, a former intern for the National Center for Appropriate Technology based in Fayetteville, AR.

"By completely and quickly removing the manure, dung beetles can significantly enhance grazing efficiency," Thomas explains. "If dung pats remain intact for more than a few days, chances are your dung beetle population is low to non-existent."

Less than a dozen of the more than 90 species that range throughout North America are significant in manure nutrient recycling. Probably the best-known group among bovines is the "tumble bugs" or "rollers" (*Canthon pilularius*).

Another group are the "tunnelers" (most commonly *Onthophagus gazella*), which typically bury the dung in balls under the manure pat or close to the edge. Piles of soil next to the dung pat are indicators of tunneler-type dung beetle activity. The third group of dung beetles is the "dwellers" which belong to the subfamily *Aphodiidae*.

"Adult dung beetles are drawn to manure by odor," says Patricia Richardson, research fellow at the University of Texas, Austin. "Many are species-specific — preferring a certain type of animal manure. They will fly up to 10 miles in search of just the right dung, and can attack dung pats within seconds after they drop."

Once drawn by the odor, the adults use the liquid contents of the manure for their nourishment.

Dung beetles' benefits to livestock go beyond pasture health. Manure is the breeding ground and incubator for horn and face flies, two economically important pests of cattle. As dung beetles feed, they compete with the fly larvae for food and physically damage the flies' eggs.

Truman Fincher, retired USDA entomologist now living in Arlington, GA, directed the dung beetle research program at the USDA-ARS Food Animal Protection Research Laboratory at College Station, TX. His research was directed at importing and introducing dung beetle species from other continents — mainly Africa and Australia — that would complement and not compete with native populations. He says the beetles in the U.S. have not been able to keep up with our increased livestock production and manure waste.

Fincher also says dung beetle larvae are susceptible to some insecticides used for fly and internal parasite control for cattle. The overall effect on dung beetles due to chemical use in cattle has not been established, however. Most entomologists agree that some livestock insecticides can impact local populations.

Davis says controlled grazing systems can also increase dung beetle populations and varieties by concentrating the manure in smaller areas.