

excerpts taken from:

Rolling, Rolling, Rolling...Captive Breeding of the Dung Beetle, *Canthon imitator*

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## INTRODUCTION

Dung Beetles make a great educational and entertaining display for any insect exhibit. What child can resist the lure of not only beetles, but beetles and poop! These hard working insects can keep visitors entertained with their dung rolling antics while providing a great example of nutrient recycling. At the Woodland Park Zoo we have been maintaining a colony of *Canthon imitator* for the last year. This will be a presentation about the beetle's natural history, husbandry and display

## CAPTIVE MANAGEMENT

In August of 1998 we collected approx. 40 dung beetles, *Canthon imitator*, from the area around Tucson, Arizona. Back at Woodland Park Zoo, the beetles were put on exhibit in the Desert by Night portion of "Bug" World. This exhibit space is a nocturnal exhibit. The animals are in the dark during public viewing hours from 8:00 a.m. to 8:00 p.m. and in the light from 8:00 p.m. to 8:00 a.m. Since the beetles are in the dark during visiting hours, there are two buttons that visitors can press to see the arthropods under a black light or dim light. There is also a stripe tailed scorpion in the exhibit.

The exhibit tank is 40" wide X 22" deep X 24" tall. The beetles were set up on a 50/50 sand/soil mix that was 7" deep. There are also a few cacti and a fake hollow log for the scorpion. The beetles are kept at approximately 78-82 F. The sand/soil mix is kept moist by watering on an as needed basis. The beetles are given a large pile of steer dung, which is changed every third or fourth day.

## DUNG PROTOCOL

The dung is collected fresh every third or fourth day. It is necessary to change the dung this often to keep the tank from being infested with mites or flies. When it is time to change the dung the keeper goes into the steer yard and obtains about two cups of dung in a bowl with a scooper while wearing gloves. Then dung is then brought back to "Bug" World and washed. It is necessary to wash the dung because our steers are kept on a sawdust substrate and the dung is often covered in sawdust. Once the dung is "clean", warm water is added and the dung is mashed to more of a cowpatty-like consistency.

Once the dung is prepared, the exhibit tank is opened and the old dung is removed. The exhibits in "Bug" World are serviced from the top. First the keeper locates the scorpion in the exhibit and puts it into containment. Then while wearing gloves the keeper reached in and scoops out the old dung patty. The old dung is then removed with the gloved hand and placed onto a tray to be sorted through later. Then new dung is then added and arranged to look naturalistic. The scorpion is let out of containment. The exhibit is closed up and the keeper goes back to the prep room.

Back in the prep room while still wearing gloves, the keeper slowly sorts through the old dung smooshing up chunks to see if there are any beetles hiding in the pile. Beetles are often found. Relocated beetles are put back out on display and the old dung is thrown into the incenerator bag.

## OBSERVATIONS

The beetles, although interested in the dung on the first day do not begin rolling balls until the second or third day. ....two types of balls are rolled by dung beetles. I believe that both of these types of balls were being rolled in "Bug" World. Balls were often found on the surface that had been rolled and then eaten in addition to balls that had been made and then buried.

Mating was seen on many occasions on the dung pile. It appeared that two dung beetles worked together on one ball and while one pushed the other would just hang on for the ride. The ball was pushed around the sides of the tank for quite a while as the dung was being compacted. When this process was done one dung beetle would stand on top of the ball while the other went below the ball and started to excavate the dirt. The ball was then buried.

On October 16, 1998 while conducting routine maintenance in the tank, the first grub was found in the exhibit tank. The ball was dug up and occasionally observed. By October 24, 1998 the grub had pupated. The ball was monitored and on November 11, 1998 a white adult beetle was found inside the ball. On November 16 a dark adult beetle emerged.

The following quote is from a keeper's daily report on November 20, 1998. "Watched the dung beetles for a while. One of the dung beetles was rolling a ball. It stopped, left the dung ball and made a small pit next to the ball. It then plopped the ball into the pit and dug beneath the ball to excavate dirt. Meanwhile another dung beetle came along and spotted the dung ball and started to push it away. The then exposed dung beetle realized what was happening, went up to the dung ball and began to push it back into the pit. The two dung beetles then began to fight over the ball. Eventually the original dung beetle while standing on the ball got its head under the intruder beetle and flipped it off the ball. The intruder beetle left and the original beetle buried the ball.

Although mating was occurring in the tank and adult beetles were successfully raised in captivity, after a year our colony started to fail. I believe this was due to a fly problem. We eradicated the fly problem and obtained some new beetles and the colony appears to be thriving...