

# Dung Beetle

Kingdom: Animalia  
Phylum: Arthropoda  
Subphylum: Mandibulata  
Class: Insecta  
Order: Coleoptera  
Family: Scarabaeidae  
Genus: *Phanaeus*  
Species: *difformis*



Photo courtesy of Janet Wisneski

## Habitat

- **In the Wild:** The *Phanaeus difformis* is found in the southwestern United States. They are terrestrial (living on land) and live in soil, in dung, in nests of insects or vertebrates, and under bark.
- **Exhibit Location:** Social Animals

## Characteristics

- This species of dung beetle is about 20mm (0.8 inches) in size.
- The thoracic (between the head and abdomen) shield is a striking metallic green color, with numerous fine indentations. The female has a shield-like plate (the clypeus) on the front of the head. The male has a single, upward projecting horn on its head that is used in fights with other beetles. The front legs of both the male and female have serrated edges, used for powerful digging. They have antennae, which are segmented and end with a plate-like oval club of three to seven expansible leaves. These lobes create a large surface area for detecting odors. The antennae are very small and can be seen with a magnifying glass. They also have wings that allow them to fly in search of dung piles.
- There are about 90 species of dung beetles in the U.S. and about 7,000 worldwide.
- **Lifespan: In the Wild** unknown; **In Captivity** 250 – 400 days

## Behaviors

- Dung beetles live in, eat and reproduce in dung. Adult beetles are drawn to manure by odor. They will fly up to 10 miles in search of just the right dung, and can attack dung pats within seconds after they drop. Activity decreases during the coldest months.
- Males use the projecting horn on their heads in fights for territory and a mate.
- **Enrichments at the Zoo:** changing dung supply

## Reproduction

- The life cycle of the dung beetle is among the most complex found among beetles, and insects in general. The pair forms a brood ball out of dung, which contains a large amount of roughage. The female, which typically has shorter, thicker legs, digs while the male helps haul the soil to create a tunnel. This tunnel is used to house the dung balls.
- The female lays one egg in each dung ball that was prepared and buried. She then seals the brood ball and the tunnel. In about a week, the egg hatches within the brood ball. The larva feasts on the interior contents of the ball and therefore does not have to compete with others for a food source. It is also protected from predators outside the ball. If the integrity of the brood ball is destroyed, the larva will die.
- Under ideal conditions, the larva will pupate (change from a larva to a pupa, the stage before becoming an adult) in an average of 3 weeks. The young beetle emerges, eats its way out of the brood ball, forms a new tunnel to crawl out through, and goes in search of fresh manure. The newly emerged beetles will breed about 2 weeks later.

## Diet

- **In the Wild:** herbivore dung
- **At the Zoo:** herbivore dung

### **Conservation Status**

- *Phanaeus difformis* are common and not endangered.
- Dung beetles benefit livestock and pasture environment. For example, manure is the breeding ground and incubator for horn flies and face flies, two economically important pests of cattle. A single manure pat can generate 60-80 horn fly adults if protected from insect predators and competitors such as dung beetles. As dung beetles feed, they compete with the fly larvae for food and physically damage the flies' eggs. Fly populations have been shown to decrease significantly in areas with dung beetle activity.
- The tunneling behavior of dung beetles increases the soil's capacity to absorb and hold water, and their dung-handling activities enhance soil nutrient cycling.
- Predators: cane toads, ibis, crows, pigs, foxes, owls. Cold weather is also a threat to the beetle.

### **Did You Know?/Fun Facts**

- Species of dung beetles are found on every continent except Antarctica.
- Dung beetles may have played the roll of pooper-scooper to the dinosaurs.
- Dung beetles have been introduced in Australia since they are not originally from that island. Since Australia brought in cattle, they had to have a way to take care of the waste. In N.A., the beetles do that for the farmers.

### **Sources:**

- ATTRA, (2001). Dung beetle benefits in pasture ecosystems. Retrieved Nov. 11, 2005, from National Sustainable Agricultural Information Service Web site: <http://www.attra.ncat.org/attra-pub/dungbeetle.html>.
- Campbell, C. (1998). *Phanaeus difformis*. Retrieved Nov. 09, 2005, from Natural Worlds Web site: [http://www.naturalworlds.org/scarabaeidae/species/Phanaeus\\_sp.htm](http://www.naturalworlds.org/scarabaeidae/species/Phanaeus_sp.htm).
- New Mexico Game and Fish, (2004). Scarab beetle *Phanaeus difformis*. Retrieved Nov. 10, 2005, from Biota Information System of New Mexico BISON Web site: [http://fwie.fw.vt.edu/states/nmex\\_main/species/193390.htm](http://fwie.fw.vt.edu/states/nmex_main/species/193390.htm).