

Horned Beetles

Cloudbridge Nature Reserve - Nature Notes No. 17

Beetles Rule!

There are more than 800,000 species of insects on earth, more than all the other plants and animals combined. Of this great number of insects, nearly half are beetles, and there are probably 100,000 species of horned beetles. Look for them! Unlike other insects, beetles (Order Coleoptera) have a pair of leathery protective wings called elytra that cover their membranous flight wings. During flight, the elytra are spread apart and the two flight wings are unfolded and extended. Beetles come in a variety of shapes and colors, from huge horned beetles resembling a miniature rhinoceros, to small red "ladybugs" and metallic green fig beetles and lightning beetles that glow in the dark.



The Biggest Beetle

Beetles range in size from less than a millimeter (1/100 of an inch) to tropical giants up to six inches long. The largest giants may weigh 40 million times more than their lilliputian relatives. One of the most amazing is the Hercules beetle (*Dynastes hercules*), native to the rain forests of Costa Rica (see photo). This spectacular beetle, 65-170mm long, has two enormous curved horns and looks like a creature from the age of dinosaurs.

The Strongest Creature

The strongest creature on earth is said to be a harmless bug that fits in the palm of your hand. It's the rhinoceros beetle, which can carry 850 times its own weight. That would be the equivalent of a man carrying 80 family-sized cars on his back. Rhino beetle of Costa Rica The rhinoceros beetle is named because it has horns on its head, very much like the rhinoceros does. Scientists believe that the beetle has become so strong to be able to forage through heavy litter on the jungle floor and dig its way to safety. Using its horns it can dig its way out of a sticky situation by burying itself underground, escaping danger. Adult rhino beetles eat rotting fruit and sap; in spite of their size, they don't eat very much. The larvae, on the other hand, eat a great deal of rotting wood or the compost in which they live. In other words, they are champion recyclers. Despite their fierce appearance, they are all totally harmless: they cannot bite or sting or hurt you with their horns. Unlike most other beetles, both males and females have horns. Rhinoceros beetles belong to the



family Scarabaeidae which is the fifth largest family of beetles, with nearly 30,000 species known! And there are even more species that aren't yet known.

Why do Horned Beetles have Horns?

The most common explanation appears to be that they are used for fighting -- males battle for mates, or defend their chosen female's tunnel with their horns, thus passing on their genes. Even without fighting, females may pick the males with the longest horns. However, within a species, the size of the horns can vary widely. One study found that the primary influence on the size of the horns of fungus beetles is the environment in which a beetle is nurtured -- notable the kind of fungus the larvae eat. Horned dung beetle A similar result holds for dung beetles (*Onthophagus*), who use their horns to manipulate dung balls. Some dung beetles have large horns, some small, and some none at all. Dung beetle horns have been shown to operate as a tool in intrasexual combat, and the existence of a "hornless" class suggests that these smaller males may engage in an alternate, less aggressive behavior. Studies of the horned beetles have shown that these two morphs have different types of reproductive behavior. Large, horned beetles are found guarding entrances of tunnels that contain females. Small, hornless males adopt a sneaking behavior by digging new tunnels that intercept the guarded tunnels, remaining undetected. Perhaps one in 10 of these clandestine quests actually succeed, but to the victors go the genetic spoils, especially in the beetle world.