

# Goliath Beetles: Giant Insects

*A Reading A-Z Level S Leveled Book*  
*Word Count: 1,074*

## Connections

### Writing

Imagine being the first person to see a Goliath beetle back in 1766. Write a historical fiction story describing your experience. Use facts and information from the book in your story.

### Science

Research another insect. Write about the ways it is similar to and different from the Goliath beetle.

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Written by Ryan James

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## Focus Question

What features allow the Goliath beetle to live in the tropical rainforests and dry grasslands of Africa?

## Words to Know

adapted  
agile  
burrow  
captive  
features

larvae  
scarab  
social  
species

Front cover: A Goliath beetle climbing a tree branch in the Ituri Rainforest in Africa

Title page: A Goliath using its sharp claws to descend a fig tree

Page 3: A Goliath about to eat part of a banana in the wild

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Giants of the Animal World  
Level S Leveled Book  
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## Correlation

### LEVEL S

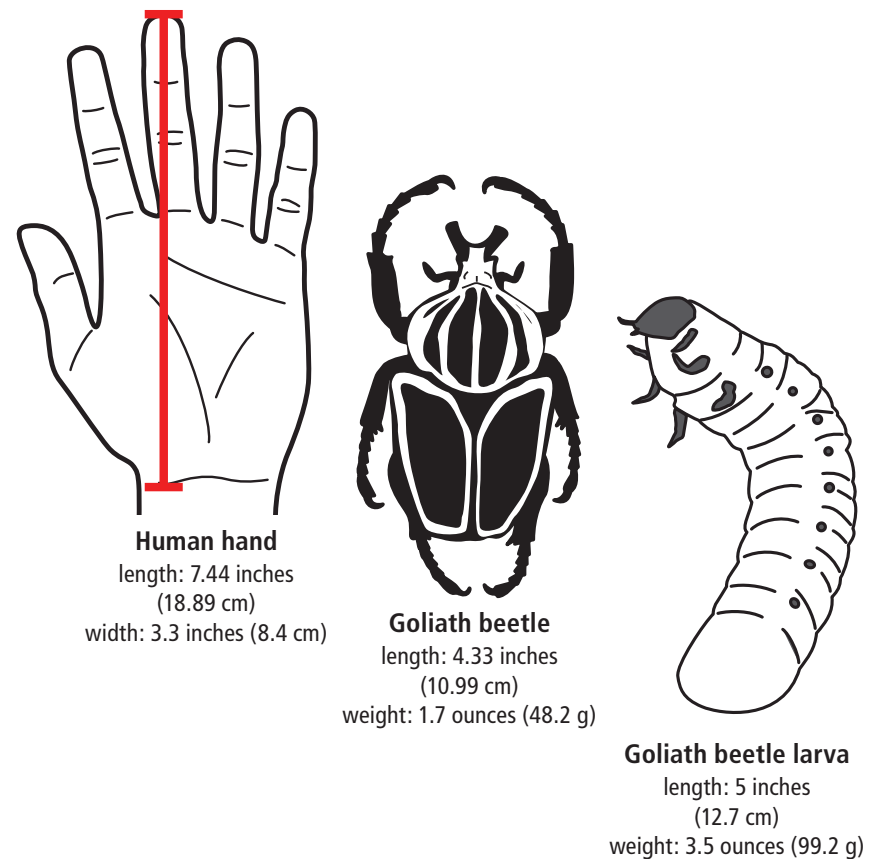
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## Biggest Beetle

Striped like a zebra and as **agile** as an acrobat, the Goliath beetle is one amazing insect! Goliath beetles grow as big as sparrows and weigh nearly twice as much. Their **larvae** are even bigger. It's no wonder Goliath beetles are considered giants of the insect world.

### How Big Is It?



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Rhinoceros beetle



Hercules beetle



Goliath beetle

Beetles come in all shapes and sizes, but Goliath beetles outweigh them all!

## Giant Insects

Fossils from three hundred million years ago prove there were once dragonflies with hawk-sized wingspans, but scientists think Goliath beetles have reached the size limit for modern insects. Earth's atmosphere contains less oxygen now than it did millions of years ago. With less oxygen in the air, "monster insects"—at least, monsters bigger than Goliath beetles—are a thing of the past.

A few modern-day beetles beat the Goliath in the length department. Rhinoceros beetles have massive horns that nearly double their overall body length. However, they can't compare to Goliath beetles' body size or weight, so Goliaths win as the heavyweight champs!

## All Kinds of Beetles

The name "Goliath beetle" actually refers to six separate, related types of beetles. Most have black stripes on all or part of their bodies, which led early British scientists to call them "zebra beetles." No two beetles' markings are identical, even within a single Goliath **species**. That makes it hard to identify various types of Goliath beetles. Over the years, insect scientists thought they had identified over two dozen different types of Goliath beetles. Today, though, experts agree that there are only six types.

### Six Types of Goliath Beetles

*Goliathus regius*  
(go-LY-uh-thus REJ-ee-us)



*Goliathus goliatus*  
(go-LY-uh-thus go-LY-uh-tuhs)



*Goliathus cacicus*  
(go-LY-uh-thus KA-sih-kus)



*Goliathus orientalis*  
(go-LY-uh-thus or-ee-en-TAH-lis)



*Goliathus "atlas"*  
(go-LY-uh-thus AT-luhs)



*Goliathus albosignatus*  
(go-LY-uh-thus al-bo-SIG-nuh-tuhs)



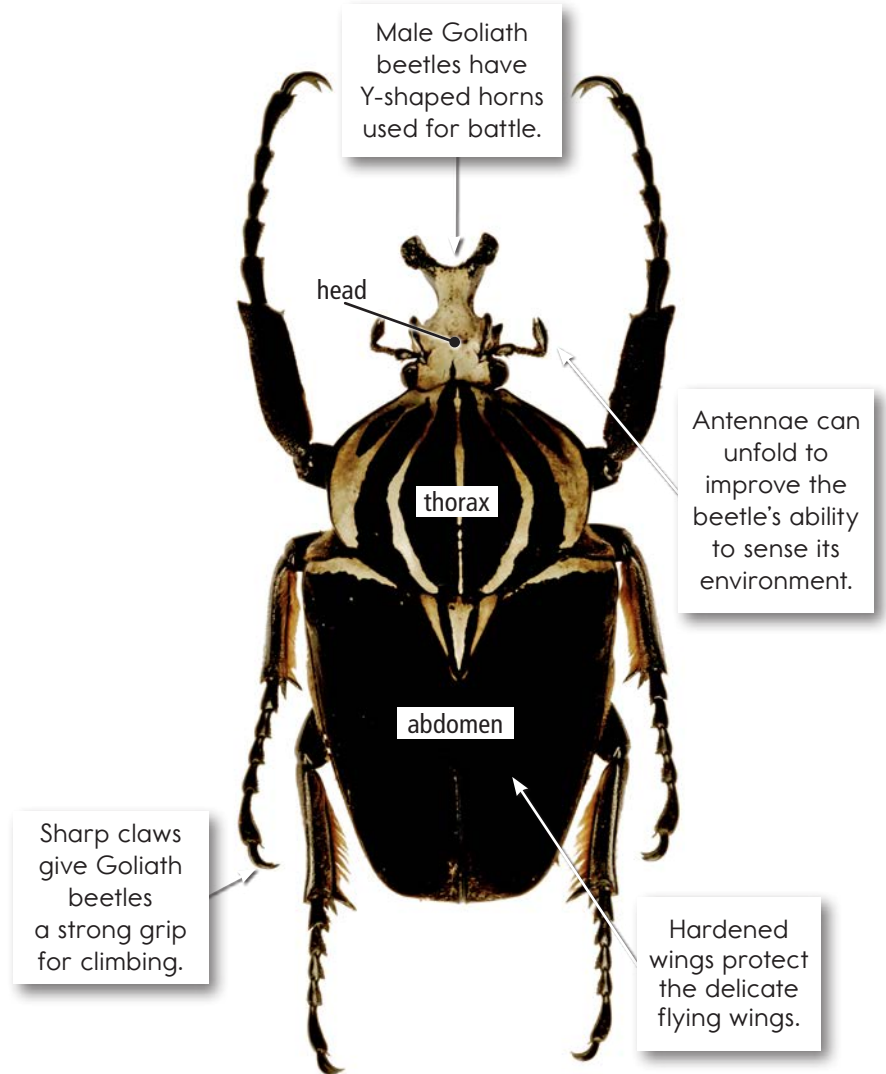
## Beetles, Beetles, Everywhere!

You've probably noticed ladybugs and other kinds of beetles in your neighborhood. They might not appear to be much like Goliath beetles, but they have several **features** in common with the larger insects.

For instance, all beetles have two pairs of wings: large, softer hind wings used for flying and smaller, harder front wings. The front wings act like sturdy, protective armor and completely cover the more delicate hind wings when they aren't in use.

Insects have mouths that have **adapted** for different purposes. A butterfly's mouth is suited for sipping nectar, and a mosquito's mouth is suited for piercing skin. While beetles do sip tree sap, their mouths are particularly well suited for chewing. Many kinds of beetles can be found on flowers, where they feed on pollen or flower petals. Goliath beetles, however, probably don't feed on flowers. Scientists think the supersized insects are too heavy for flowers to support their weight.

## What Makes a Goliath Beetle an Insect?



### All insects have

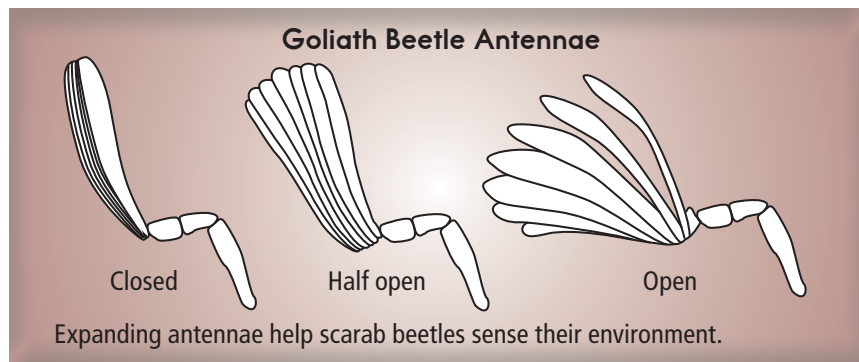
- wings
- legs with joints (most have six)
- three main body parts: head, thorax, and abdomen
- an outside skeleton

## All in the Family

There are more than one hundred different families of beetles. In scientific terms, an animal family is a group that shares similar features. Goliath beetles belong to the **scarab** beetle family, a group that also includes rhinoceros and dung beetles.

All beetles use their antennae to detect odors and chemicals in their environment. Scarab beetles' antennae have a special shape, with separate, overlapping plates that can open like a fan. Opening the antennae increases their size, which scientists believe makes the antennae more sensitive.

Goliath beetles use their antennae to detect food, such as rotting fruit. Male beetles also use their antennae to find mates.



## Wowser!

### Beetle Cold Case

Workers at London's Natural History Museum found several holes punched through the body of a Goliath beetle in the museum's collection. A scientist recently showed that the holes were actually gunshot wounds. X-rays revealed a shotgun pellet still inside the beetle's body. On the basis of the location of the wounds on the body, the scientist reported that the beetle was shot while flying—upside down!



## Speedy Beetles

You might think giant beetles would be slow and clumsy, but not Goliaths. They're so skillful at flying that early insect collectors had to shoot Goliath beetles out of the sky to catch them! Even today, scientists have trouble getting near them. Scientist Dr. Brett Ratcliffe explains, "They are very difficult to observe in nature."

Much of what scientists know about Goliath beetles comes from studying **captive** insects. How do scientists find captive insects? Luckily, quite a few insect fans like to raise Goliath beetles as pets.

### Where Goliath Beetles Live



### An African Home

Goliath beetles live in tropical rainforests and dry grasslands in Africa. These areas are warm year-round, with a dry season that lasts several months of the year. Wild Goliath beetles feed on fruit that grows during the wet season. While they have mouths for chewing, they also feed on tree sap, which is most common during the wet season's warm, humid conditions. Sharp claws help them scratch through bark to reach the sweet sap underneath.

Goliath beetles sometimes gather on trees where food is plentiful. However, Goliaths spend most of their time on their own. "They are not **social** insects," says Dr. Ratcliffe.

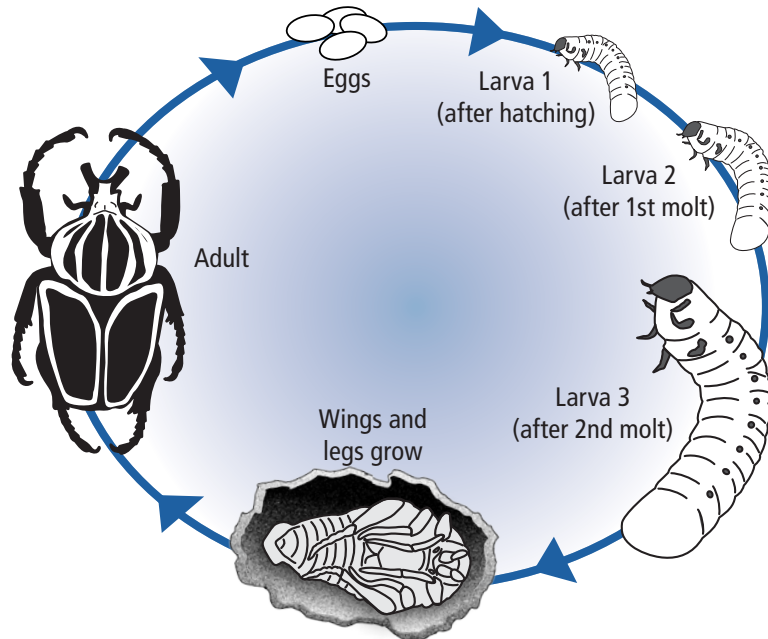
Male Goliath beetles defend the best feeding sites against intruders. The heads of all male Goliaths have Y-shaped horns, which they use to push away other males. Scientists think that claiming the best feeding sites may help males attract females.

Female Goliath beetles dig deep into the soil when they are ready to lay eggs. They may lay up to one hundred eggs at a time! The eggs hatch after about two weeks and the young larvae come out. The eyeless, wingless larvae spend all their time eating and growing. They feed on rotting plant matter in the soil. They may also eat smaller beetle larvae and adult insects.

Goliath larvae reach full size in about four months. The larger species can grow up to 5 inches (12.7 cm) in length—about as long as a dollar bill. They can weigh up to 3.5 ounces (100 g)—about the same as five mice.



## Goliath Beetle Life Cycle



After an egg hatches, a Goliath beetle goes through four more stages on its way to becoming an adult.

### The Circle of Life

When the wet season ends, the larvae **burrow** deeper underground until they reach sandy soil. There, they build thin-walled “cells” similar to butterfly cocoons. Inside each cell, over the next several months, a larva’s body goes through changes and turns into its adult form. Wings and legs grow and fold into place, and the outside of the body hardens into a protective shell.

The adult Goliath beetle remains in hibernation inside the earthen cell until the end of the dry season. When the wet season begins again, moisture seeps through the ground. When it reaches the cell, the hibernating beetle wakes and the cycle begins again.

In captivity, adults can survive about eight months. In the wild, though, Goliath beetles must find food and escape enemies. For these reasons, their life in the wild is probably much shorter.

Scientists think that monkeys and large birds might eat Goliath beetles—if they can catch them. Goliath beetles do such a good job of hiding in treetops that no one knows for sure.



Inside the cell, a developing Goliath grows legs and an outer skeleton.





A male Goliath climbs on a human hand in Cameroon, Africa.

### An Immensely Interesting Insect

Most of us have probably never seen insects larger than a grasshopper. Imagine his reaction when a navy doctor fished the first-known Goliath beetle from an African river in 1766. Since then, these giant beetles have interested insect fans everywhere. No wonder! With their enormous size and flashy stripes, Goliath beetles are a sight to behold.

Goliaths are speedy flying machines, heavyweight champs, and all-around awesome insects!



A rare shot of a Goliath beetle in flight in the Ituri Rainforest Reserve

### Glossary

<b>adapted</b> ( <i>v.</i> )	changed to fit a new or specific situation or environment (p. 7)
<b>agile</b> ( <i>adj.</i> )	able to move quickly and accurately (p. 4)
<b>burrow</b> ( <i>v.</i> )	to dig a tunnel or hole (p. 13)
<b>captive</b> ( <i>adj.</i> )	confined or without freedom (p. 10)
<b>features</b> ( <i>n.</i> )	traits, characteristics, or parts of something (p. 7)
<b>larvae</b> ( <i>n.</i> )	baby animals that go through major body changes before they look like adult members of their kind (p. 4)
<b>scarab</b> ( <i>n.</i> )	a type of large beetle with a hard shell that is often black (p. 9)
<b>social</b> ( <i>adj.</i> )	naturally tending to live in a group (p. 12)
<b>species</b> ( <i>n.</i> )	a group of living things that are physically similar and can reproduce (p. 6)