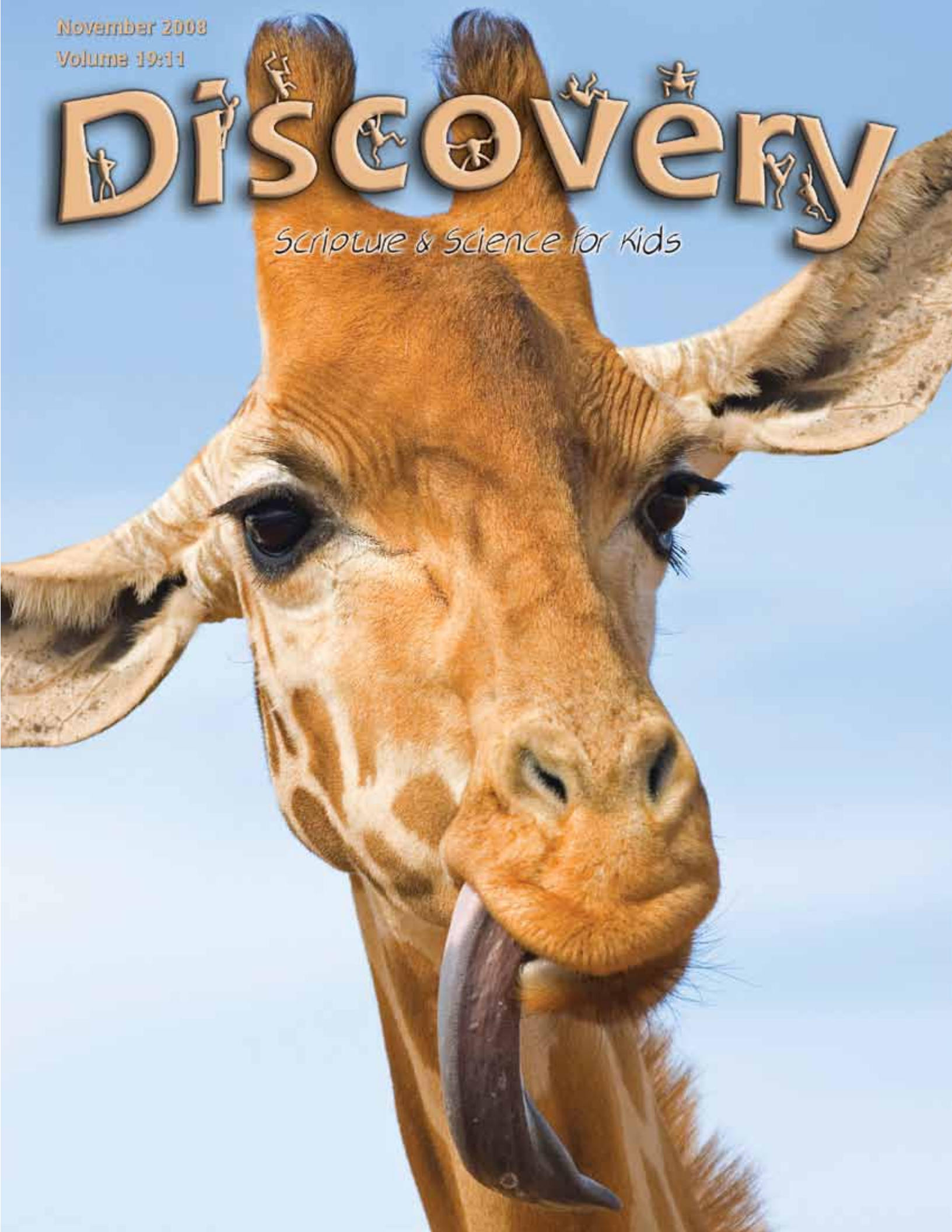


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Discovery

Scripture & Science for Kids



This Longneck is No Dinosaur



ERIC LYONS

When we hear the term "longneck," an image of a massive, plant-eating dinosaur often comes to mind. *Diplodocus*, *Brachiosaurus*, and *Apatosaurus* all fall into this category of dinosaurs. Although these longnecks are now extinct, one impressive longneck is still around—the giraffe. Giraffes are not reptiles. They are mammals with necks longer and much heavier than the average man.

An adult male giraffe's neck can reach lengths of six feet and weigh as much as 600 pounds. You might think that the giraffe's neck must have many more bones (called vertebrae) than humans, since its neck is so much longer than ours. Actually, however, the giraffe has the same number of bones in its neck as humans and other mammals—seven. The difference is, each neck vertebrae of a giraffe can be 10 inches long.

More remarkable than the length and weight of a giraffe's neck is its internal design. In order for a giraffe to get blood from its heart eight feet up to its brain, a giraffe's heart must pump extremely hard. In fact, the blood pressure of a giraffe is about twice that of any other large mammal, and as much as three times that of the average person.

But what about when a giraffe suddenly lowers its head several feet **below** its heart to get a drink of water? What happens to all of the blood that the heart normally pumps upward against gravity to the brain? If the design of the giraffe were merely left up to time and chance (as evolution teaches), one would expect that the first time a giraffe tried to lower its neck to get a drink of water, the heart would pump so much blood to the brain that its blood vessels would explode, or its brain would fill up with blood so quickly that the giraffe would pass out.

So how does the giraffe keep from having brain bleeds, or keep from feeling woozy and passing out every time it bends down and raises back up? Giraffes are specially designed with valves in their large neck artery. These valves help control how much blood gets to the brain during those times when the giraffe has its head lowered.

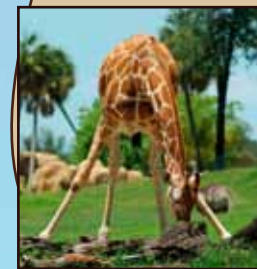
So how did these valves come about? Who **designed** giraffes so masterfully? The intelligent Designer, of course. On day six of Creation, God made the longneck mammal we call a giraffe.

Did You Know...

Giraffes not only have long necks. They also have...

Long Legs.

The legs of a giraffe are about the same length as its neck—about six feet.



Long Tails.

Even though the giraffe is known more for its long neck, it also has a very long tail. In fact, it has the longest tail of any land animal living today. It can grow to be eight feet long. A giraffe uses its tail to keep flies and other insects away.



Long Tongues.

A giraffe uses its 18-inch tongue to grasp twigs and strip them of leaves. A giraffe can also use its long tongue extremely well to pick leaves from in between the thorns of acacia trees.



Long Hearts.

A giraffe's heart must be large enough to pump blood eight feet upward to its brain. Whereas the human heart is about the size of a clenched fist and weighs less than one pound, the heart of a giraffe can be two feet long and weigh more than 20 pounds.

Long (Tall) Babies.

When a baby giraffe is born, it drops about six feet straight to the ground. Normally, in less than one hour, it gets to its feet and stands six feet tall.

More Giraffe Facts.

*Adult male giraffes can grow to heights of 18 feet.

*Giraffes may look clumsy and slow, but when they need to, they can really run. One giraffe was clocked running a short distance at more than 30 miles per hour.

*Giraffes have big hooves (12 inches across) and a super-strong kick. Even lions normally leave adult giraffes alone. One kick from a giraffe to the head of a lion would be fatal.



GRANDDADDY LONG-LEGS

DAVE MILLER

As a boy in northern Arizona, it was not unusual to see an odd-looking little creature that adults called a "Granddaddy long-legs." They were harmless and liked to climb everywhere. More properly called "harvestmen," daddy long-legs are not spiders—though they are arachnids (eight-legged arthropods). Some 7,000 kinds have been found worldwide, but many more remain unnamed. Harvestmen do not produce silk, have no fangs or venom glands, and have one body part (not two as in spiders, or three as in insects). On top of the head is a little black knob with a tiny eye on each side that can detect moving objects several feet away. Daddy long-legs eat almost anything—from small insects, snails, worms, and other dead material, to plants and fruits.

God equipped daddy long-legs with several ways to defend and protect itself—marvels of intelligent design. A pair of scent pores at the front of the body secretes a nasty smell. A small predator (mouse, bird, or spider) that tries to grab the daddy long-legs gets a mouthful of this smelly material for his trouble. Sometimes, many daddy long-legs will aggregate (get together) in large numbers. Scientists

are not sure, but they think one reason the long-legs do this is to combine their smelly secretions to ward off predators more effectively. Also, in these large numbers, each long-leg can wildly vibrate its body (called "bobbing"). Researchers believe that a huge, wiggling mass of daddy long-legs could be intimidating to predators. Some species even glue debris onto their bodies to scare away enemies, while others play dead when disturbed.

An even more amazing defensive practice has to do with the legs. If humans had legs in proportion to the daddy long-leg, our legs would be 40 feet long! The first pair of legs is the shortest; the second pair is the longest and has sensitive tips to explore, search for food, and warn of danger. What's amazing is the fact that God designed daddy long-legs to be able to detach their legs in order to confuse would-be predators. The legs continue to twitch after they are detached because pacemakers are located in the ends of the first long segment of the legs. These pacemakers send signals through the nerves to the muscles to flex the leg, with the leg relaxing between signals. Scientists think that the twitching holds the attention of a predator while the daddy long-legs escapes. Some legs will twitch for a minute, while some have been recorded to twitch for up to an hour! Losing a leg is no problem—since God designed the daddy long-legs to grow another.

Notice that humans, with all their intelligence, powers of observation, and years of research, still don't know for sure the meaning of various actions and behaviors of the daddy long-legs. Yet all agree that their actions are intentional and meaningful. This fact points to a higher Mind that created the daddy long-legs and all creatures with pre-planned behaviors

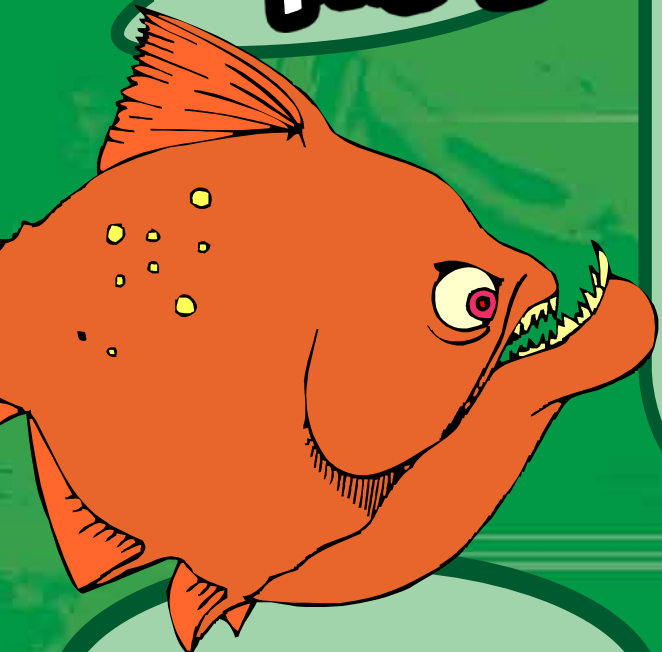


that fit into the rest of the natural order. God's creatures serve important purposes. They are necessary parts of the larger environment so that the Earth continues for as long as God intends. Even the extinction of species does not seriously upset the environment, since God has created so many "creeping things" (Genesis 1:24).

Evolutionists have found fossils of daddy long-legs that they claim are 400 million years old. They admit that these fossils "look surprisingly modern, indicating that the basic structure of the harvestmen has not changed much since then" and "have remained almost unchanged morphologically over a long period." In other words, God created daddy long-legs at the beginning and they look now the way they looked when God created them—they have not evolved **from** lower life forms or **into** anything else.



ACTIVITY PAGES



TRUE OR FALSE

- The teeth of piranhas are so sharp and strong that people use them to make weapons and tools.
- A shark's skeleton has only cartilage and no bones.
- God designed the shark with the perfect physical qualities for survival.
- The giraffe's neck must have evolved by time and chance over millions of years.
- The fossil record proves that granddaddy long-legs evolved.
- Piranhas were perfectly designed by God to help keep rivers clean by eating dead or dying animals.
- A giraffe's neck has many more bones in it than a person's.
- Cartilage is heavier than bone.

- _____ Stretchy, flexible tissue
- _____ Live mostly in the rivers of South America
- _____ Have only cartilage
- _____ The day of Creation on which God made piranhas
- _____ Another name for "Granddaddy long-legs"
- _____ Groups of piranhas
- _____ Eight-legged arthropods
- _____ The day of Creation on which God made giraffes

MATCHING

- | | |
|---------------|--------------|
| A. Shoals | E. Sharks |
| B. Five | F. Piranhas |
| C. Cartilage | G. Arachnids |
| D. Harvestmen | H. Six |

ON A SEPARATE SHEET OF PAPER

- List three ways in which God equipped daddy long-legs to protect themselves.
- Explain how piranhas are great team-eaters.

- _____ can have up to 1,000 piranhas in them.
- A giraffe has _____ bones in its neck.
- Researchers believe that a huge, wiggling mass of daddy long-legs could be intimidating to _____.
- A giraffe uses its 18-inch _____ to grasp twigs and strip them of leaves.
- God designed daddy _____ - _____ to be able to detach their legs in order to confuse would-be predators.
- A giraffe has specially designed _____ in its neck that keep too much _____ from going to its head when it bends over to get a drink of water.
- The heart of a giraffe can be two _____ long and weigh more than _____ pounds.

FILL IN THE BLANKS

Dear Digger Doug,
How are sharks so flexible?
—Jackson, Montgomery, AL

Dear Jackson,

Thank you for asking this interesting question. The skeleton of a shark is different from the skeletons of other fish, because a shark skeleton has only cartilage and no bones. Cartilage is stretchy, flexible tissue. Most cartilage in humans is replaced as they grow. Sharks enjoy their cartilage, however, because it is lighter than bone, and keeps them from sinking. Some of their cartilage is also enhanced with calcium salts, giving it the strength of bone.

The shark's swimming muscles are attached to its thick skin instead of being attached to bones. This means that the shark uses less energy as it swims. God designed the shark with the perfect physical qualities for survival. These traits could not have evolved.





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PIRANHA

THE PERFECT PREDATOR AND SCAVENGER

KYLE BUTT

Maybe you have heard of the small, but ferocious piranha. You might have been told that a group of piranhas in a feeding frenzy can eat an entire cow in just minutes. Maybe you have heard that swimmers are regularly eaten by piranhas and that it is very dangerous to swim in waters where piranhas live. As with most other amazing animals, some of the stories you have heard about piranhas are true, and some of them are made-up.

God designed piranhas to be good predators. Most of them grow to be about eight inches long (although the largest on record is about 18 inches). Piranhas have mouths filled with razor-sharp teeth. In fact, these teeth are so sharp and strong that people use them to make weapons and tools. Piranhas live mostly in the rivers of South America, but some have been found in North America. The ones in North America most likely were aquarium pets that their owners released into the wild.



God gave piranhas an excellent sense of smell, as well as excellent hearing. They can swim very fast, which helps them to catch their prey. Many of the stories about piranhas eating cows or humans are not true. Most of the time, piranhas don't attack large, healthy animals. In fact, piranhas help keep rivers clean by eating sick animals or ones that die and fall into the water. Many people in South America swim in waters where piranhas live without ever getting bitten at all.

Even though piranhas do not often attack people or large animals, during the dry season when food is scarce, they sometimes will. Groups of piranhas, called shoals (which can have up to 1,000 fish in them), are great team-eaters. Each fish takes a bite of the prey and moves out of the way so the next piranha can move in. Because of this constant movement, the water looks like it is boiling when a large shoal of piranhas is at work. Since piranhas don't chew their food, but swallow it in large bites, they can be ready to take another bite of food almost immediately. Needless to say, you probably do not want to stick your hand in an aquarium with piranhas in it.

Piranhas have sharp teeth, a good sense of smell, excellent hearing, and they work together as a team. They are perfectly designed by God to accomplish their role as scavengers and predators. Piranhas are wonderful examples of God's creative genius.



ANSWERS

6. valves, blood; 7. feet, 20.
 TRUE OR FALSE: 1-T; 2-T; 3-T; 4-F; 5-F; 6-T; 7-F; 8-F. FILL IN THE BLANKS: 1. Shoals; 2. seven; 3. predators; 4. tongue; 5. long-legs;
 MATCHING: 1. C (Cartilage); 2. F (Piranhas); 3. E (Sharks); 4. B (Five); 5. D (harvestmen); 6. A (Shoals); 7. G (Arachnids); 8. H (Six).

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