



GREAT WHITE SHARKS
The king of the ocean
is misunderstood

**UNDERSTANDING
TAXONOMY**
NOW YOU WILL KNOW
WHAT THOSE LONG,
NEARLY IMPOSSIBLE
TO PRONOUNCE
WORDS MEAN



TIDE ANIMALS
SMALL CREATURES
WITH BIG POWERS

NEW FEATURES!
FOUR NEW FEATURES
INCLUDING THE
SCATOLOGY CORNER,
NATIONAL PARK
SPOTLIGHT, BIO
INVENTIONS AND
NATURE POLLS!

NEWS FOR THE DEDICATED ZOOLOGIST

Save The Great White Sharks

Everybody loves great white sharks, they have deep dark black eyes, a mouth full of razor sharp teeth and can sniff blood from 3 miles away. Though all of these facts are true and give the great white shark a pretty scary picture to some, these vulnerable sharks are just highly misunderstood fish of global oceans.

Great white sharks are cartilaginous fish, meaning they have no bones in their body and instead have a skeleton made of cartilage. Cartilage is bendy material that allows sharks to be more flexible in the water. Like all sharks, great whites have an infinite amount of teeth. You know how your baby teeth fall out and then the adult teeth grow in to replace them? Sharks have a similar process, only the cycle keeps repeating. Great whites are the third largest shark in the world, reaching



up to 26 feet! When they are born, they are already 3.9 feet long. Even though most fish, including sharks lay eggs, some sharks actually give live birth, this includes the great white. A female shark with go to a place called a shark nursery, and give birth to two to ten baby sharks called pups. Great white sharks have low birth rates, only giving birth every two to three years.



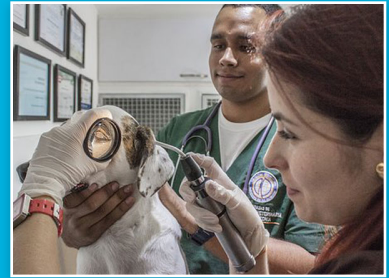
Sharks are misunderstood creatures. Despite their look, great white sharks very rarely attack humans and usually mistaken them for prey. After the release of movies such as “Jaws” in 1974, people feared great whites even more. People started hunting them out of fear and the population decreased. Approximately 100 million sharks are killed annually around the world and this includes the great white shark! The fact that the great whites have low birth rates does not improve the cause. More sharks were being hunted than they were born and the population went downhill. Scientists say that the population of this feared shark has diminished in many areas by up to 90 percent within the past century.

When fishermen go out to fish using nets, they can accidentally catch sharks, as well as many other animals including dolphins, porpoises, sea turtles, fish, and rays. Great whites are hunted by humans for their meat, skin, oil, and fins. A delicacy in Asia and the UK known as shark fin soup requires the fins of sharks including those of great whites. Many fishermen supporting the act will catch great whites, harvest the fins, and dump the shark back in the ocean where it can not survive.

Great white shark sightings are rare, scientists think there are fewer great whites than we think. Hopefully, with conservation programs for sharks, these sightings will become less elusive and the great white shark’s current status of vulnerable will go down to least concern. In places such as South Africa, Namibia, Australia, USA, and Malta, the great white shark is protected and studied. As for you, spreading awareness and explaining to people that great white sharks are misunderstood is always helpful. You can also donate to conservation acts and virtually adopt a great white shark at the World Wildlife Fund at worldwildlife.org. Save the sharks!



Fields of Zoology



There are many fields in zoology such as, marine biology, mammalogy, herpetology, ichthyology, ornithology, and entomology. Marine biology is the study of aquatic life. Mammalogists study mammals. Herpetologists study reptiles and amphibians. Ichthyologists study fish. Ornithologists study birds and entomologists study insects.

Upcoming Events

Mark these events on your calendar and spread awareness to celebrate them!

August 12- World Elephant Day

August 14- World Lizard Day

August 19- World Orangutan Day

August 18- National Honey Bee Day

August 30- International Whale Shark Day

September- Save the Koala Month

September 1- National Hummingbird Day

September 4- World Wildlife Day

September 15- International Red Panda Day

September 22- Elephant Appreciation Day

September 22- World Rhinoceros Day

Your Questions, Answered!

Peter asks: "Have we discovered every species on Earth?"

Answer: While most of the world has been discovered, not all the species to roam Earth, past or present, have been.

Scientists estimate that there are

around 8.3 million species in the world. One place that is sure to have undiscovered species is the bottom of the ocean. Life started in the ocean and is full of diverse organisms. Most of the ocean is unexplored because we do not have the technology developed to reach the bottom of the ocean. Just last year, many new species including the Yoda Bat, a newly discovered species of fruit bat, a third species of flying squirrel in North America known as Humboldt's flying squirrel, and two new species of clown tree frogs were discovered in the Amazon Rainforest.

Got a burning wildlife question? Go to page 10 for information on how to ask a question.

More Science Corner A Miniature Tide Pool

1.) Cover your area with newspaper or scratch paper, something that can get dirty (this is reusing).

2.) Mold tide animals such as sea stars and crabs, anemone etc. (check out page 5 and 6 for more tide animals) out of non- air drying clay.

3.) Mold aquatic plants such as sea weed, rock weed, etc.

4.) Add rocks to enhance the tide pool effect.

Activity adapted from "Marine Science For Kids" By Josh and Bethany Hestermann



As Requested, The Scatology Corner!

Scatology is a field of science that involves the study of the contents of an animal's poop.



Sperm whale and its feces.

<—

Scatologists will study an animal's scat to learn what it ate, where it lives, and the animal's health. While it may seem like the topic itself is contaminated, scatology is an important field in zoology.

Stay tuned for the bimonthly scat!

National Park Spotlight

Yellowstone National Park

Yellowstone National Park is located mainly in Northern Wyoming. It was established on March 1, 1872, being the first national park in the whole world! The wildlife reserve is larger than the size of Rhode Island and Delaware combined, covering 2,221,766 acres of land. It is mostly adorned by forests, but also grassland and water masses. The national park houses many species of mammals, birds, fish, amphibians, and reptiles. Aside from animals, Yellowstone National Park also supports many species of plants including conifer trees and many native flowering species.



Yellowstone National Park was founded in 1872 after a document was signed by President Ulysses S. Grant. It was named the first national park in the whole world. Since then, it has been visited by as many as 4, 257, 177 tourists in 2017, the current yearly record. People who visit the park can enjoy camping in one of the 301 backcountry campsites. Visitors can also hike on the 92 hiking trails and encounter flora and fauna along the way.

Yellowstone National Park covers 3,472 miles, most concentrated in Wyoming (96%), but also crossing the state boarder and entering parts of Montana (3%) and Idaho (1%). The national park is 80% forest, 15% grassland, and 5% water bodies. Within this vast area, geysers such as Old Faithful spew water up to 100 feet into the air! Other geography features include Yellowstone Lake which reaches 7,733 feet in elevation, making it the highest altitude lake in all of North America.



Among the geography, Yellowstone National Park is called home by about 67 species of mammals, 285 species of birds, 16 species of fish, 5 species of amphibians, and 6 species of reptiles. These animals include wolves, beavers, elk, and the American bison. As well as Yellowstone cutthroat trout, the most widespread fish species in the park, the arctic grayling, mountain whitefish, and more. Bird species include ravens, birds of prey, common loons, woodpeckers, songbirds, and trumpeter swans.

Amphibians such as the western tiger salamander, plains spade foot toad, and the Columbia spotted frog also inhabited the park. Terrestrial garter snakes being the most common, prairie rattlesnakes, and the sagebrush lizard make up the reptile community of the park. Yellowstone National Park protects two threaded species, the Canada lynx and grizzly bears. Among theses listed species, invasive species such as lake trout that prey on the cutthroat trout and New Zealand mud snails that cause harm to other species also inhabit the area.

Yellowstone National Park forests are primarily covered by nine species of coniferous trees including lodgepole pine and white bark pine. Over 1,000 native flowering plants such as horned buttercup, Lewis monkey flower, and shooting star cover the land as well. The park is also inhabited by 186 species of lichen. Visit the park today!

Visit <https://www.nps.gov/yell/planyourvisit/parkfacts.htm> for more information on Yellowstone National Park and other national parks too!

Bio inventions

Yogurt cup toothbrush



Most toothbrushes are made of plastic, which emits lots of CO₂ during

the manufacturing process. Toothbrush companies such as "Preserve" have gone with a different approach to making their products. This company produces toothbrushes that are made of 100% recycled plastic from yogurt cups. Using the cleaned cups, "Preserve" makes and sells toothbrushes that are good for the environment and your teeth. Many stores sell "Preserve"'s yogurt cup toothbrushes so they are not hard to find. Next time you need a toothbrush, lessen your carbon footprint by purchasing a recycled yogurt cup toothbrush.

Understanding Taxonomy

Taxonomy is the science of classifying organisms based on structural and evolutionary relationships. Taxonomy was developed in the 18th century by a Swedish scientist named Carolus Linnaeus. He based the system on Latin, a language used in Ancient Rome.

HIERARCHY OF BIOLOGICAL CLASSIFICATION



Scientific names that are constructed from a species' genus and species are used globally. For example, someone who speaks Mandarin Chinese will understand what organism someone who speaks English is talking about by using the universal scientific name.

When analyzing taxonomy, you look at the 8 taxon. These are domain, kingdom, phylum, class, order, family, genus, species. The domain will tell you if the organism is eukaryotic, multicellular, or prokaryotic, unicellular. The kingdom will tell you if the organism is an animal, plant, fungus, protist, or bacteria. The rest of an organism's taxonomy depends on the kingdom.

For example, what is the taxonomy of a lined fire tail skink? We can analyze the taxonomy and learn that it is in the domain Eukaryote, the kingdom Animalia, the phylum Chordata, meaning it has a spinal chord, the class Reptilia, the order Sauria, the family Scincidae, the genus *Morethia*, and the species *Ruficauda*. When writing the scientific name for the lined fire tail skink, we write *Morethia ruficauda*.

Tide Animals

Small creatures with big powers



Tide animals have adapted to their tough environment very well. Everyday at low and high tide, they undergo huge crashing waves splashing onto them and being exposed to the hot sun and nearly drying up at low tide. How do they do it?



Tide animals are animals that live closest to the beach shore such as mussels, clams, oysters, barnacles, starfish, limpets, anemones, and crabs. Some of these animals have evolved to have a hard protective shell that

More Facts!

A sea star's stomach is on its underside! When hunting, the sea star will use its arms to pry open a mussel or clam. Then they lower the stomach into the helpless prey.

protects it from violent tides and sun. Others such as anemones are able to tuck their soft bodies into themselves. And starfish can move to deeper water. Bivalves such as clams and muscles use a stinky substance to glue themselves to rocks or other tide animals.

More Facts!

The shape of an oyster depends on its location.

More Facts!

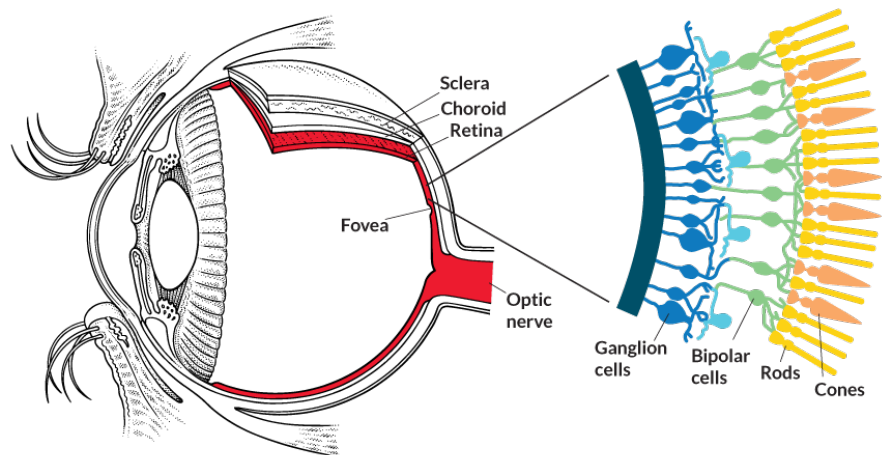
Limpets are sequential hermaphrodites, meaning they can switch between sexes. The limpet can be male its whole life, or become female after 2 or 3 years.

Rods and Cones in the Eyes of Nocturnal Animals

Nocturnal animals are animals that are active during the night. Being nocturnal allows organisms to hunt unsuspected prey, be in cooler temperatures, not be noticed by prey or predators, and provides mating opportunities. But how can they do it if their dominant sense is not sight?

Using other features such as sensitive hearing, smelling, and feeling, nocturnal animals are suited for survival. Some species such as the Southern cave crayfish live in dark caves that are nearly or completely pitch black. As a result, having eyes or not makes no difference. The crayfish, and many other animals that live in dark habitats, have evolved to be eyeless.

Most nocturnal animals have eyes, but what use do they serve for animals that spend the day sleeping and hiding? Lots of light must come into the eye so nocturnal animals can see. This is the result of cells in the fovea (see diagram) called rods and cones. Rods are used to let light into the eye and cones are used to detect color. Rods are especially important for nocturnal animals who need lots of light to enter their eyes at night. So many rods may be needed that they overpower the cones. As a result, most nocturnal animals can not see in color. Some nocturnal animals include lions, hyenas, bats, raccoons, tapirs, foxes, tarsiers, owls, nighthawks, crickets, lightning beetles, tree frogs, snakes, and a lot more!



Visit <https://www.enchantedlearning.com/coloring/nocturnal.shtml> for more nocturnal animals and facts!

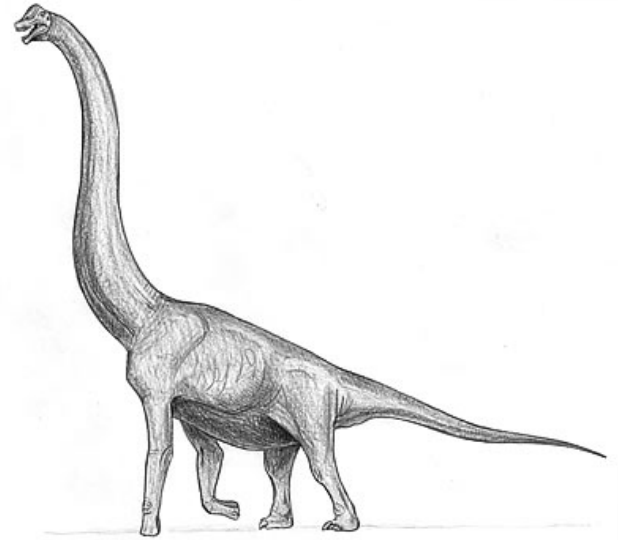
Dinosaur of the Issue: Giraffatitan

Jump into the prehistoric life of dinosaurs!

105 million years ago, the forty foot tall “Giant Giraffe” towered over the swampy marsh. The sauropod raised its head to take a bite out of the tall trees. Dung beetles scurried along the damp dirt, rolling the poop of the six ton dinosaurs into a ball.

Giraffatitan was a sauropod that lived during the late Jurassic time period. It lived in what is now known as Tanzania, Africa. It was a herbivore, meaning it ate plants such as tree leaves. This massive dinosaur was forty feet tall and seventy feet long from head to tail. Interestingly, the front legs of Giraffatitan were longer than the hind legs, perhaps to allow the dinosaur to lean against trees to reach the higher untouched leaves.

Giraffatitan was a migratory dinosaur, meaning it moved from one place to another in order to maintain food supply. When summer came, the temperatures of the plains were too hot to support as many plants. Water in watering holes would dry up as well. In order to cope with this new condition, herds of Giraffatitan would walk hundreds of miles to find suitable living conditions in the cooler mountains. While many predators would lie in wait for the herd, the reward of fresh leaves and water was irresistible for the Giraffatitan.



For more about prehistoric dinosaurs, check out the book “Atlas Of Dinosaur Adventures” by Emily Hawkins and Lucy Letherland

More Facts!

As you learned in issue #3, plesiosaurus consumed rocks to help with digestion. Giraffatitan did this too! It would consume rocks called gastroliths to break down food in the stomach.

More Facts!

Early crocodiles were a predator of Giraffatitan young. As the Giraffatitan herd crossed a river, the young had to keep close to the herd for protection. You never know when a lurking crocodile was going to pounce.

Stay tuned for next month’s early animal!

Want to make a request for the early animal of the month? Go to page 10!

Games

Animal Quiz: Have you been paying attention to the last 4 issues?

- 1.) Which fact about octopuses is false
 - A. Have 3 hearts
 - B. Hemocyanin gives octopus blood its blue color
 - C. Have been known to attack young sperm whales
 - D. Have 9 brains

- 2.) Clams and mussels are bivalves
 - A. True
 - B. False

- 3.) Which book did Charles Darwin write
 - A. "The Origin of Earth"
 - B. "Silent Spring"
 - C. "Reason For Hope"
 - D. "Decent Of Man"


- 4.) Which primate is a great ape
 - A. Orangutan
 - B. Gibbon
 - C. Tarsier
 - D. Ring tail lemur

- 5.) Which program did Jane Goodall not start
 - A. Roots and Shoots
 - B. TACARE
 - C. ChimpanZoo
 - D. Junior Primatologist

Find the answers on page 10


Nature Poll

Which animal adaptation do you think is more beneficial?



The ability to cope with sweltering temperatures of a desert tortoise


OR



The ability to blend in with surroundings of a cheetah


Nature Poll

Which National Park do you want to visit next?



Yosemite National Park

OR



Yellowstone National Park

Reptile of the Issue: Anole, *Polychridae Anolis*

Anatomy- Anoles have a pinkish colored throat fan, called a dewlap. The dewlap is used for territorial rivalries or when approaching a potential mate or courtship. The dewlap can range from a variety of colors such as pink and orange. Anoles generally reach 5- 8 inches in size and weigh as much as 3 pennies or 4- 6 grams. Female anoles are smaller than the males. Anole scale colors vary depending on their habitat. If the habitat is covered in trees, then an anole might be green colored. If the anole lived on a wooded beach where there are more brown colors, the anole will probably be brown. Adult female anoles generally have a distinguishable white stripe along the dorsal area. Similar to the other reptiles, anoles also shed their skin.

Diet and Hunting- Anoles are insectivores, their diet consists of crickets, grasshoppers, moths, and dragonflies.



Along with arachnids such as spiders. Similar to other reptiles, the anole will swallow its prey whole because they have no teeth. They also swallow their prey headfirst to prevent it from escaping.

Habitat and Location- Anoles live in North America in states such as the Atlantic Coastal Plains in North Carolina, South Carolina, Georgia and Florida, and on the Gulf Coast in Alabama, Mississippi, Louisiana, and the inland hills of Texas. They generally live close to the equator, where temperatures are the most warm.

Status- Some anoles are lucky enough to be at a status level of least concern, while others are threatened with extinction and are on the critically endangered list. The main threats to anoles are habitat loss and the predation of non- native anoles. Some people keep wild anoles as pets, which also leads to the population's diminish.



Thank You for reading this month's edition of "News for the Dedicated Zoologist"! I hope you enjoyed it. Please do your part and spread awareness for all those endangered animals out there.



But wait, don't close the newsletter yet!

If you would like to ask a **zoology related** question to be featured in "Your Questions, Answered", what you need to do is simple!

Fill out the information below and send it to my email or give it me in person.

"News For the Dedicated Zoologist" Request Paperwork

Name: _____

Age (optional): _____

Question: _____

Email (also optional): _____

Please send this information to this address: biologyislife@50-50.com, ga1573mo1002@pusd.us or give the paper to me in person.

Answers- Animal Quiz

- 1.) C
- 2.) A
- 3.) D
- 4.) A
- 5.) D

Want your poll responses to be featured in the next issue? Let me know!

"News For The Dedicated Zoologist" is an uncredited non- profit newsletter, 100% of the money goes towards animal conservation.

Update!
"News For The Dedicated Zoologist is now a **bimonthly** newsletter. The next issue will be published in November for the months of October and November. Stay tuned for more details!

Get Ready For The October- November Issue Of "News For The Dedicated Zoologist"