

**Upcoming  
Events**

**INTERNATIONAL SAVE  
THE VAQUITA DAY**

July 7



**SAVE THE OCEAN**  
LOVE IT,  
PROTECT IT



**THE SAD STORY OF  
THE TASMANIAN  
TIGER, AN EXTINCT  
MARSUPIAL**



**FACTS ABOUT PETS**  
FURRY, SCALY,  
FEATHERY, YOU NAME  
IT!

# NEWS FOR THE DEDICATED ZOOLOGIST

## Save the Ocean

Have you ever been to a beach that was full of trash and mucky water? I'm sure you have. Historic marine landmarks such as The Great Barrier Reef off the coast of Australia, are looking a lot different than they used to hundreds of years ago. The once beautiful oceans are becoming the next landfill. In a manner of a year, the coral reefs could look a lot different because of coral bleaching. The once vibrantly colored reef now deserted and abandoned, turned into a dead zone. The water of the ocean once a clear blue, now a sickening brown color. Oceans are essential to every organism living on Earth and it is important to protect them.



96.5% of Earth's water is ocean and it is home to 700,000 to one million species. Oceans are rich with biodiversity, housing fish, mammals, reptiles, invertebrates, plants, and microorganisms. It is also full of symbiotic relationships, unexplored areas, underwater mountains, volcanoes, and underwater trenches. If the ocean is so vital to life, why are humans destroying it?

Everything in the ocean all starts with the microscopic plankton. These tiny but vital microorganism get the food chain going by harnessing the power of the sun through photosynthesis. Coral polyps use their "harpoons" to skewer the plankton to eat. Animals such as parrot fish and sea turtles eat the coral and hundreds of animals call coral reefs home. Without coral, its inhabitants die and then animals such as sharks and dolphins have nothing to eat.

So what happens when you mix pollutants like trash, oil, and toxic chemicals into the ocean? You get an unbalanced ecosystem. Coral bleaching is one of the many issues humans pose on the ocean. Coral bleaching occurs when the algae living inside the coral is excreted during hot temperatures such as global warming. As the temperature rises, the algae that gives coral its vibrant color leaves and the coral is left bleached, or turned white. This process can take as little as a year to happen. The dead coral is abandoned by the animals living there and you are left with a dead zone.

The ocean never gets a break from human destruction. Humans are also the cause of the endangerment of many marine animals such as the vaquita porpoise, all species of sea turtle, great white sharks, and blue whales. Intensive fishing, habitat loss, tourism, and drilling for oil are all problems that humans pose on the ocean wildlife.

The ocean is one of the most unexplored places on Earth, even more people have traveled to the moon than to the the bottom of the ocean. There are so many species we do not know about, underwater mountains and volcanoes that we do not understand yet. Will the ocean be destroyed before we have the technology to explore it? Marine biologists and zoologists are trying to determine that. To help protect the ocean, eat responsibly sourced fish and stay away from eating endangered species like sharks and rays, pick up trash floating in the ocean as animals can mistake it for food, do not break off pieces of coral for souvenirs, donate to conservation efforts, and of course, spread awareness.

## *What defines birds of prey*



Birds of prey are a group of birds that include vultures, eagles, hawks, falcons, and owls. All birds of prey have a sharp hooked beak, super sharp talons, and eyes in front of its head to help detect prey easier. Birds of prey can be as large a California condor to as small as the black- legged falconet. It is important to remember whenever handling birds of prey to wear thick protective gloves.

# Upcoming Events

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

July- Wild About Wildlife Month

3rd week of July- Coral Reef Awareness Week

July 1- American Zoo Day

July 7- International Save The Vaquita Day

July 12- Cow Appreciation Day

July 15- Shark Awareness Day

July 16- World Snake Day

July 21- Monkey Day

July 29- International Tiger Day



# Your Questions, Answered!

Dana asks: How heavy are giraffes when they are born?

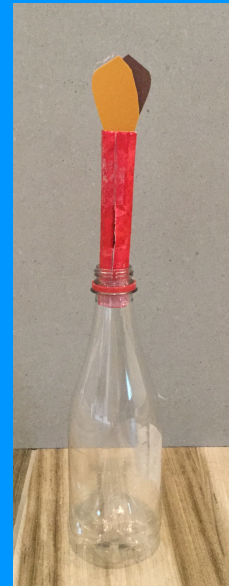
Answer: When giraffes are born they are called calves. The calves weigh 100 to 150 pounds, imagine carrying that weight around for 13- 15 months! Adult males weigh 2,400 to 3,000 pounds. Females weigh between 1,600 to 2,600 pounds. When the calves are born, they are already taller than an average man, being 6 feet tall! But that's nothing compared to the height they will reach when they are older. Female giraffes grow to be 12 feet and males reach 15 feet.

# Photosynthesis- Not Just The Plants

Photosynthesis is a process where plants convert the sun's energy into glucose, or sugar to use as food. Have you ever wondered if plants were not alone? In the ocean, microscopic phytoplankton are doing the same thing! Both plants and phytoplankton have chlorophyll in their cells, allowing them to perform the vital process of photosynthesis. Phytoplankton mainly rely on the sun's energy for food, but some will consume other microscopic organisms to attain more energy. Phytoplankton are vital to an ecosystem because they are food for other animals. Phytoplankton are microscopic superheroes.

## Cool Crafts that are Eco- friendly Marine Animals made of Recycled Materials

- 1.) Collect recycled material from around the house such as bottles, toilet paper rolls, cardboard boxes, egg cartons, etc. Make sure the materials are clean. You will also need scissors, markers, and tape.
- 2.) Use your recycled materials to make all sorts of marine animals such as octopuses, fish, jelly fish, sharks, tube worms, dolphins, coral, etc.



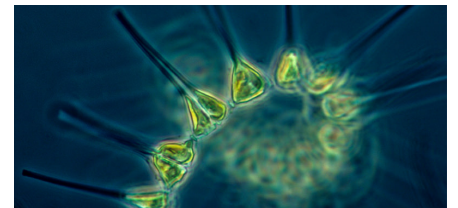
Tube worm in a rock



Jelly fish



Octopus



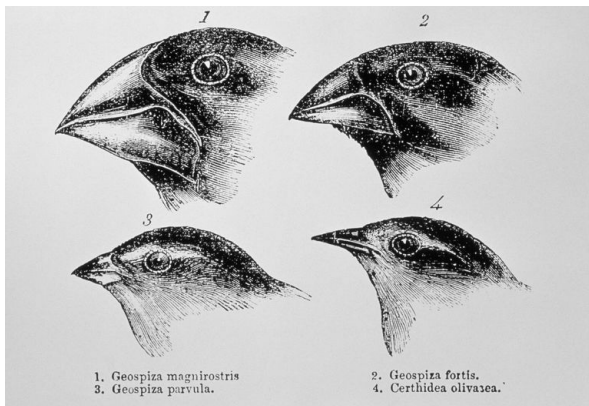
# Scientist Spotlight

## Charles Darwin, naturalist

Charles Darwin (1809- 1882) was a dedicated naturalist and evolutionist. He boarded the HMS Beagle in 1831 and took a 5 year voyage around he world. Charles Darwin also traveled to the Galapagos Islands in 1835, which at the time, was considered a mostly unknown area. He wrote two books, including two of his most famous, “On The Origin Of Species By The Means Of Natural Selection” in 1849 and “The Decent Of Man” in 1871. Most of all, he made a life changing theory, the ongoing phenomena: the theory of evolution.

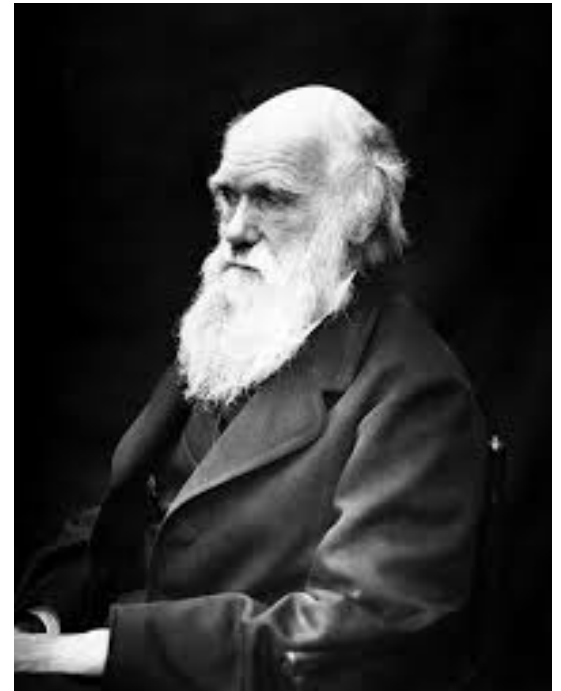
Charles Darwin was born on February 12, 1809 in Shrewsbury, England. As a child, Darwin enjoyed collecting objects such as rocks, bird eggs, insects such as beetles, and exploring the outdoors. Even as a child, Darwin was very observant to nature. He spent hours outside observing and studying plants and animals. After graduating from Cambridge University in 1831 where he studied nature, botany, and zoology, Darwin was asked by a fellow friend if he wanted to travel around the world. What an offer, of course 22 year old Darwin said yes! In 1831, he boarded the HMS Beagle for a five year voyage. During the journey, Darwin visited many places to study the animals, volcanoes, and lava fields, however, of all the places he visited, he studied the Galapagos Islands the most.

In 1835, the HMS Beagle arrived at the Galapagos Islands and immediately became fascinated by what the islands had to offer. He studied the Galapagos tortoises, the largest of the species, marine iguanas, the only aquatic iguana, blue footed boobies and more. Of all the species however, Darwin was most fascinated by the finches. Today these finches are known as Darwin’s finches. On every island Darwin visited, he noticed each finch had a different shaped beak. He also noticed that islands heavily populated with insects, finches had evolved a thin beak to catch them. On islands with seeds, there were finches with thicker and wider beaks. This led Charles Darwin to his theory, natural selection!



In Darwin’s book, “On The Origin Of Species By The Means Of Natural Selection”, better known as “On The Origin Of Species”, he explains how all the finches must have all evolved from a common ancestor. As the population spread, the finches had to evolve. The finches who evolved faster lived longer and passed down the successful traits to their offspring. As for the finches that did not adapt, they

could not get food, which led them to die off. With time only the successful finches lived on the islands. Darwin called this process “Survival of the Fittest” through the term is not really used any more. Darwin had written about his discoveries on the Galapagos Islands and put it into a book.



Published in 1849, “On The Origin Of Species By The Means Of Natural Selection” gave evolutionists a better understanding of our slowly evolving world. In his book though, Darwin mostly talked about animals, critics wanted to know more about the evolution of specifically humans. In 1871, the critics got what they wanted and “The Decent Of Man” was published. Darwin’s books are still considered two of the most important in the field of science. His books are still being purchased and read by curious people all over the world. Just recently, it was translated into Mandarin Chinese.

Darwin’s impact on the world was definitely a long lasting one. He proved to the world that even the smallest organisms can be studied and understood. Darwin also started a science revolution, a revolution that led scientists and ordinary people to learn about Earth’s history, themselves, and their surrounding world, one adaption at a time.

[Check out the book “Who Was Charles Darwin” by Deborah Hopkins and Nancy Harrison to learn more about Charles Darwin and the Galapagos Islands!](#)

## Facts About Pets



### Cat (*Felis catus*)

-Cats are social pets, they groom each other to show affection. A cat grooms another cat by using its tongue that is covered in tiny backwards facing hooks. This is what gives a cat’s tongue the sandpaper like feel.

-Cats are nocturnal animals and rely on whiskers to help them navigate through their surroundings. A cat knows if its whiskers can not fit through a tight space, than it can not fit through either, this is because a cat’s whiskers are the same length as the cat’s body.



### Dog (*Canis lupus familiaris*)

-Dogs use their tongues for many purposes, to eat, drink, and cool themselves down. A recent study shows that a dog’s tongue may even effect the sound of their bark. Unlike humans, dogs can not sweat through their skin, due to less sweat glands. In fact, dogs only have sweat glands on their noses and paw pads. As a result, dogs pant to regulate their body temperature through a process known as thermoregulation. During this process, dogs pant so air can move over their tongue. This lets moisture from the outside air evaporate and lets the dog cool down.

#### Pet Tips

- 1.) Spay or neuter your pet, this will prevent strays.
- 2.) Give your pet food and water regularly.
- 3.) Take your pet to the veterinarian

#### No Exotic Pets

Exotic pets are wild animals that are kept as pets, such as monkeys, hedgehogs, chinchillas, snakes, birds, and more. These animals should be roaming in the wild, not kept in cages.

#### Prevent Animal Abuse

Animal abuse is cruel to animals. Some forms of animal abuse include: not feeding pets or not giving them water, mistreating them, etc. Report animal abuse if you ever see it.

## Billfish

Billfish are a group of fish that consists of sailfish, marlins, and swordfish. Billfish have long skewer like bills that they use to slice prey and defend against predators such as the mako shark. Bill fish are the fastest swimmer in the ocean because they have long slender streamline bodies that make them aerodynamic in the water. When swimming at their highest speed, bill fish can reach 30 miles per hour! Each billfish has evolved a little differently. Take the dorsal fin as an example. The sailfish has a sail like dorsal fin, while the swordfish and marlin have dorsal fins more similar to sharks.

Each species has also evolved a different size and shape of bill. A billfish's bill is a long bone extension from the skull. It is much stronger and harder to break than the other bones. The sword is also covered with tiny teeth, making it super sharp. The swordfish has evolved to have a bill similar to a broad sword, while the sailfish and marlin have a bill that resembles a rapier sword.

Sailfish are the fastest of the billfish, reaching speeds of over 30 miles per hour. The marlin is the largest bill fish, growing to be up to 16 feet long! Unlike many other animals in the animal kingdom, female swordfish are larger than the males.

Billfish have similar hunting strategies. They gather a school of fish into a ball. Sail fish hunt in groups, but the marlin and swordfish don't. Swordfish have a great technique for hunting. They move their heads back and forth to stun and slice fish such as mackerel with their bills. Billfish are nature's skewers.



Sailfish



Marlin



Swordfish

To learn more about billfish, watch the Wild Kratts episode "Choose Your Swordfish" on PBS Kids or <http://pbskids.org/wildkratts/videos/>

## The Sad Story Of The Tasmanian Tiger

When you hear the word "Tasmanian tiger", you probably think of a tiger from Tasmania. Though the Tasmanian tiger did look like a tiger, they were innocent, misunderstood marsupials living off the coast of Australia around 1936. Tasmanian tigers or thylacine went officially extinct in 1936 after the last one, named Benjamin died in a zoo. Tasmanian tigers were marsupials famous for their legendary yawn gate, they could open their mouths wider than any other animal. Scientists think Tasmanian tigers used their yawn gate to fend against predators, though we will never know for sure.



When European settlers came to Australia nearly 2,000 years ago and began raising sheep, Tasmanian tigers would “get in the way” of farmers. Though the Tasmanian tigers did eat the sheep, they did not know any better and would get killed. People began misunderstanding the Tasmanian tigers, thinking they were dangerous to humans, even though Tasmanian tigers never attacked people. The farmers did not realize they were taking land from the Tasmanian tigers and continued killing them to prevent the loss of sheep. In the early 1900s, Tasmanian tiger populations were extremely low. In 1910, people started taking action. Tasmanian tigers were brought into zoos to live in captivity. The last Tasmanian tiger named Benjamin died in 1936 at Hobart Zoo. Since 1986, the Tasmanian tiger has been declared an extinct species.

Since its extinction, people have gone on searches to try and find evidence that the Tasmanian tiger still exists. Though nobody has collected valuable evidence that the Tasmanian tiger has not gone extinct yet, an expedition in 1945 found possible Tasmanian tiger footprints, repeating in 1959 with another expedition. Will we ever know for sure why Tasmanian tigers could open their mouths super wide? Or why they were long distance runners? Are there Tasmanian tigers out there, waiting to be discovered?

## Dinosaur of the Issue: Plesiosaurus

### Jump into the prehistoric life of dinosaurs!

190 million years ago the bright sun shined on the water as a mother plesiosaurus surfaced for air with her baby. They both took a deep breath and dove back into the warm water surrounding Dorset, United Kingdom. The “near lizard” looked this way and that, making sure they did not encounter any hungry liopleurodons. The mother plesiosaurus moves closer to her calf as she dove down deeper to catch a tasty fish.



Plesiosaurus was a member of the group plesiosaur that lived in the early Jurassic time period. It mainly ate fish and reached a length of 11 feet. This early reptile’s mouth contained about 50 super sharp pointy teeth that allowed it to catch prey easily. Similar to present day walruses, plesiosaurus would scrape the ocean floor for food such as shellfish, and consume rocks to help with digestion. Though plesiosaurus was a fierce predator and defender, there was always the fear of being attacked by 65 foot long liopleurodon. Similar to present day penguins, plesiosaurus would use its big strong muscular flippers to get around. Plesiosaurus was a very impressive dinosaur.

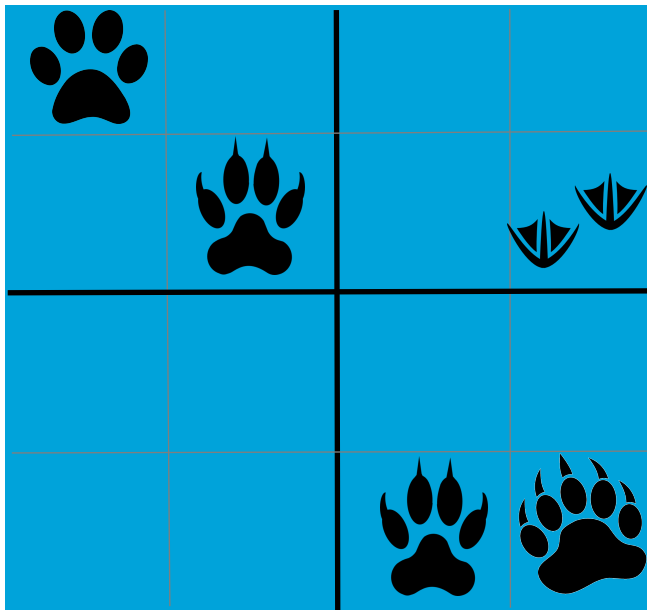


For more about prehistoric dinosaurs, check out the book “Atlas Of Dinosaur Adventures” by Emily Hawkins and Lucy Letherland

# Games

## Animal Paw Print Sudoku

To play animal paw print sudoku, put a paw print in each of the boxes. Make sure you do not put more than one of each of the paw prints in the 2x2 boxes or in each row and column.



You Can Find Tracks Everywhere!



Bear paw prints in the snow



Raccoon paw prints in the sand

### Do You Recognize These Prints?

#### Cat Paw Print

Cats have retractable claws (excluding cheetahs). This is how you differentiate cat and dog prints.



#### Dog Paw Print

A dog's claws are always showing in canine tracks.



#### Duck Print

Ducks have claws on their feet, allowing them to grip onto tree branches to perch.

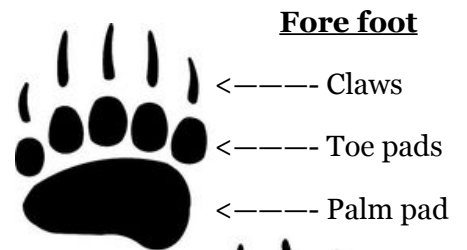


#### Black Bear Paw Print

Black bears have claws that allow them to climb up trees, dig for food, gather plants, defend against predators, and perch on small animals for food.



### Paw Print Anatomy



How To Observe and Identify Paw Prints

The best way to observe paw prints is with a magnifying glass, though your eyes work well too. Measure the print, see where it is located, look for key features, and see the stride length to identify which animal made the tracks.



# Reptile Of The Issue: Hawksbill Sea Turtle

**Anatomy-** Like all sea turtles, the hawksbill sea turtle flippers to swim instead of legs to walk. Unlike land turtles, sea turtles can not tuck into their shell, instead they present their predator with the shell. Due to a sea turtles round shape, a predator such as a shark can not bite the actual turtle. Sea turtles are one of Earth's most ancient animals, the 7 species that are found today have been around for 110 million years, since the dinosaurs. A sea turtle's **carapace** is **streamlined** for swimming through the water. The



streamlined carapace allows sea turtles to swim fast in the water.



**Diet and Hunting-** Hawksbill sea turtles eat sponges, anemones, squids, and shrimp. Their narrow head and jaws shaped like a beak help them to get into the crevices of coral reefs.

**Habitat and Location-** Hawksbill sea turtles are typically found around coastal reefs, rocky areas, **estuaries** and lagoons.

**Status-** The hawksbill sea turtle is an endangered species due to human caused threats that include: oil

spills, **urban runoff** from chemicals, fertilizers, and petroleum that increase toxins in the ocean, marine pollution that kills of their main prey, disease caused by pollution, climate change that affects nesting beaches by melting ice caps that rise sea levels and cause beaches to disappear, storms that increase temperatures and erode costal habitats, an increase in female sea turtles due to higher temperatures which reduces reproductive opportunities and less **genetic diversity**, artificial lighting that confuses the female during nesting, human use of nesting beaches, trash that sea turtles accidentally eat, and invasive species such as domestic cats and dogs that devour eggs and hatchlings and even attack nesting turtles.



## Vocabulary

**Carapace-** The top part of a turtle's shell

**Streamline-** A design that provides minimal resistance in water, allowing organisms to swim faster

**Estuaries-** An area where a tide and stream join

**Urban Runoff-** Where pollutants drain into the ocean

**Genetic Diversity-** Less variety in gender or traits

