

Marine Biology Blog:

Blog post #1: Why I'm Interested

Hi!

My name is Anaya Jain and I am 16 years old. I go to the American School of Bombay, in Mumbai, India. I wanted to create this blog to write and discuss marine biology. Marine biology is a subject that I have been wanting to know more about/and discuss with the people around me. There is so much depth and information to be discovered about the ocean and marine biology, in general.

This blog will be called Life Under the Sea, targeting to inform the youth more about marine biology, how to help preserve it, and general information about how different marine animals are. I truly believe that marine biology is a topic that one cannot learn everything about, there is always knowledge one can consume.

I wanted my first post to be about why I am writing this blog and what it could entail. I have, for the better half of my life, had a fear of the ocean. I was scared of how deep, the “creatures” could possibly exist and how much of the ocean was left undiscovered. This was because of how it was portrayed in movies and tv shows, not having much first-hand experience with the ocean, I was afraid of it.

This was until I got certified in scuba diving this summer. To get certified, you are required to do 4 dives, each dive going deeper inside than the next. Safe to say, it was truly one of the best experiences of my life. Nothing has given me as much of an adrenaline rush as these 4 dives did. I truly felt like a changed person after. My favourite marine animals are whales, sharks and dolphins. There is a sort of stigma around whales and sharks and how they are portrayed in the media, a lot of people, like myself, would be instantly frightened by them. But, although they do prey, there are so many layers and so much depth to these animals, it's not known to many. The ocean is an unreal place, and I am in complete awe of the place. I wanted to know and discover everything about the ocean, life, scientific knowledge, everything!

Hence, I created this blog, to talk about and share my thoughts about marine biology, and the life that lives under the sea, and to inform teenagers more about marine biology and animals.

Blog post #2: Introduction to Marine Biology

Hi!

Welcome back! Today I wanted to be discussing and giving a brief introduction to Marine Biology. Marine Biology is such a vast topic, I wanted to give you a brief summary and hopefully help you understand the topic better and further insight into what I would be discussing in my blog in regards to Marine Biology.

The definition of Marine Biology is “the study of marine organisms, their behaviours and interactions with the environment. Marine biologists study biological oceanography and the associated fields of chemical, physical, and geological oceanography to understand marine organisms”. To sum it up, it's the

study of life under the sea, including marine plants, animals and other organisms, in deep oceans, shallow seas and the laboratory.

The major goals of Marine Biology are to increase knowledge about the marine environment and to recognise and foresee changes in ecosystems brought on by human and natural disturbances. Humans have never charted, explored, or even seen more than 5% of the ocean. Compared to our own ocean floor, a much larger portion of the moon's and Mars' surfaces have been mapped and analyzed.

For this blog, I wanted to discuss different mammals and provide more insight into how these animals are, hopefully, disbanding the stigma around these animals. The marine mammals I would prefer to discuss are whales, sharks, dolphins, and so on. I would also want to elaborate on how we can help with the ocean, how global warming is impacting it, and what we, as teenagers, could do to help with the conservation of the ocean.

The ocean makes up more than 70% of the earth, and less than 5% of it has been discovered, this absolutely astonished me. To top this off, 80% of all life on earth is found under the sea. This ocean is one of nature's best gifts, and I believe it's our job to help discover and preserve this. Plants and animals act as indicators of the effect of human activities on the planet, including pollution and climate change. Marine biologists play a vital role in studying these effects.

Therefore, I hope this provides more insight for you, as to why marine biology is an important field of study, and how much it impacts us as well.

Blog post #3: About Blue Whales!

Welcome back!

Today I wanted to discuss one of my favourite topics, whales. I truly believe that whales are one of the best and most intriguing animals there are. There is so much to whales that people don't know. This could be because of the stigma around them, I was a subject of them as well. Whales and sharks, both, are portrayed in a negative light in the media and movies. They are constantly referred to as animals humans should be scared of, or should never care to interact with.

But, through this blog, I wanted to discuss and talk about whales, while also discussing the psychology of their behaviour, and especially, providing information into how they truly are. Whales are a widely dispersed and varied class of totally aquatic placental marine mammals. There are about 90 species, known to man, of whales. The most common ones are humpback whales, blue whales and fin whales.

Through this blog, I wanted to mainly discuss blue whales. Blue whales are the largest animal ever known to man, It is the largest mammal known to have ever existed, growing as long as 29.9 metres and weighing up to 199 tonnes. The heart of the blue whale alone is the size of a car, the whale is huge! The dorsal surface of the blue whale's long, slender body can range in colour from pale to dark greyish-blue.

Blue whales rarely, if ever, form pods like other species of whales do. They are mostly solitary animals. As they look for food, blue whales seldom couple up with more than one other whale. In locations with lots of food, they might band together with other blues, but they don't form any. Blue whales, in general, are loyal and sensitive, they are often regarded as the nurturer. They could appear to be shy or reserved at first, but once they feel supported and appreciated, they may open up and become more extroverted.

There is a huge misconception about these animals, I think while hearing different anecdotes about how a whale would kill a human, one needs to understand how we are entering their territory. These animals live underwater, and we are entering their home and territory, and with that comes protection and the need to be defensive, hence, while scuba diving or doing any activity underwater, I think one should always remember that.

Whales in general are insanely protective and caring. An example of this is shown when a humpback whale hides seals under their fin to protect them from sharks. This occurred with a whale specialist when the whale kept pushing her for 10 and a half minutes, towards her boat with his fin. Putting his eye to her eye, holding her by his fin. He didn't leave her alone, but instead, was around her constantly to protect her. Then, she later realised, there was a big tiger shark right behind the whale, and he was trying to get her out of the water.

This goes to show how these animals are truly gifts of nature and are a blessing in disguise for the earth itself. There is so much about these whales that truly not a lot of people know, and they are wonderful creatures.

Blog post #4: Ocean Conservation

Hello!

My aim for this blog is for it to contain information about the marine life and also about how to preserve it. There is not going to be any ocean left, if we don't start acting now. The ocean is in really bad shape, from overfishing, to chemical pollution, plastic pollution and deep sea mining. For this, I want to provide insight into all 4 of these aspects, as well as solutions, teenagers and everyone could implement.

Overfishing is a bigger problem than most people think it is. According to the Food and Agriculture Organization of the United Nations, the number of overfished stocks worldwide has tripled in the past fifty years, and today, more than one-third of the world's evaluated fisheries are being exploited beyond their biological capacity. Bycatch, or the capturing of unwanted marine life while fishing for a different species, is directly related to overfishing. This is also a severe marine threat that results in the unnecessary extinction of thousands of sea turtles and cetaceans, as well as billions of fish.

Chemical pollution is the introduction of dangerous substances. Pesticides, herbicides, fertilisers, detergents, oil, industrial chemicals, and sewage are typical man-made contaminants that end up in the ocean. Far inland from coastlines, a lot of ocean toxins are dumped into the environment. Algal blooms are encouraged by the elevated levels of chemicals in the coastal water, such as nitrogen and phosphorus, which can be hazardous to wildlife and dangerous to humans.

Each year, more than 400 million tonnes of plastic are manufactured. Many millions of whales, dolphins, seals, sea turtles and other marine species perish as a result of the approximately 9 million tonnes that are released into the ocean. Massive volumes of waste are produced, particularly when plastics are used only once. The popularity of plastic is due to its strength, durability, and low cost. The drawback is that it degrades incredibly slowly and finally turns into microplastic. Our bodies also contain these tiny particles, as do the soils, lakes, rivers, and oceans. The plastics sector intends to boost output by about 40% in the upcoming years despite these catastrophic effects, which is a risky trend.

Deep-sea mining is in the transition from exploration to commercial exploitation. Deep sea mining is thought to have enormous potential effects on the marine environment, yet it is still mostly unexplored. Mining may ruin deep marine habitats, exterminate rare and unique species, and pollute pristine areas with silt clouds, noise, harmful chemicals, vibration, and other pollutants. The regeneration of ecosystems and species could take decades to centuries.

Here are a few NGOs to donate to, or if not, one solution that would help extremely is to reduce the consumption of plastic. Hence, you would be helping solve the problem, instead of part of it.

Blog post #5: About Sharks

Hello!

The next animal I wanted to talk about is Sharks. Much like Whales, there is a specific stigma around them as well. Hence, I wanted to discuss sharks, and dedicate a different blog post into the stigma around the sharks and blue whales. Both whales and sharks are given a bad rap in the media and on the big screen. They are frequently described as beings that people should either be afraid of or never care to interact with.

However, I wanted to chat about sharks through this site, as well as talk about the psychology behind their behaviour and notably, give knowledge about how they really are. A diverse and widely distributed class of entirely aquatic placental marine mammals are sharks. Sharks are an elasmobranch fish species distinguished by its cartilaginous skeleton, five to seven gill slits on the sides of the skull, and unfused pectoral fins. The clade Selachimorpha (or Selachii) contains modern sharks, which are the rays' sister group.

Sharks have existed for an extremely long time. Sharks are thought to have first entered the ocean some 455 million years ago, according to fossil scales discovered in Australia and the United States. Sharks' vertebral rings are counted by scientists to determine their age. Concentric pairs of opaque and translucent bands are present in vertebrae. Scientists determine a shark's age by counting band pairs in the manner of rings on a tree. Therefore, it is presumed that a vertebrae is 10 years old if it has 10 band pairs. Like, that's really cool!

Diverse shark species have various methods of reproduction. Sharks have a wide range of reproductive strategies. There are viviparous (bears life) and oviparous (lays eggs) species. Oviparous species produce

eggs that, after being laid, grow and hatch outside of the mother's body without any parental care. Some shark species have spiracles, which enable them to draw water into their respiratory system when at rest. The majority of sharks must continue swimming in order to pump water over their gills. Just behind the shark's eyes is where its spiracle is located, which directly nourishes its brain and eyes with oxygen. When resting on the seafloor, bottom-dwelling sharks employ this additional respiratory system to breathe. It is also used when the shark is actively feeding.

Information on shark ecology, as well as the behaviours of both individuals and groups, has expanded our understanding of their behaviour. Because bigger sharks eat smaller ones, it appears that this behaviour of size separation is essential to their survival. In a consistent group, dominance between different species is visible in feeding rivalry, which suggests a clear pecking order. All sharks avoid hammerheads because they are more manoeuvrable than other sharks and have an advantage in swimming thanks to the rudder effect of their heads.

Public beaches frequently have observation towers, bells and sirens, or nets along the coasts of Australia, New Zealand, South Africa, and other places where sharks are thought to be a nuisance or a menace to humans. Gill nets stretched between buoys and anchors, parallel to the beach, and beyond the breaker line have been used to trap sharks off Australian beaches since 1937. Sharks can enter the nets from any direction, and even though they are well separated and neither touch the surface nor the bottom, the nets provide straightforward, reliable control.

Not every shark encounter may be classified as a "attack." According to studies, rather than classifying every encounter with a shark as an attack, there are four categories in which incidences involving sharks and people should be reported. These categories could consist of:

1. seeing sharks
2. interactions with sharks that do not result in a bite but may involve collision with a kayak, surfboard, or other device
3. injuries from non-fatal shark bites
4. dangerous shark bites

Although many contacts with humans seem more likely to be the result of mistaken identity, attacks on humans can happen because sharks are hungry, harassed, or defending territory. The presence of speared fish or bait in the water, blood from wounds or menstruation, or the vibrations people generate while kicking or writhing in the water—all of which resemble to sharks the erratic movements of a wounded fish—increase provocation. The buttocks and lower limbs sustain the majority of injuries. Around 100 shark attacks are reported annually, according to estimates. Less than 25% of them result in death, mostly from haemorrhage and shock. However, it should be mentioned that compared to other aquatic accidents, shark attacks happen significantly less frequently.

This goes to show how when you mess with an animal, they would do the same back. For an animal as protective and dominating as a Shark, it's their natural instinct to get possessive and retaliate when you enter their water or home, which results in these alterations. When talking about an interaction with a shark, the word "attack" should be used lightly, by the constant use of the word attack, it results in the further misconception of these animals.

Blog post #6: Stigma about Sharks

Welcome back!!

Today I wanted to discuss a topic I am deeply passionate about, and in fact, want to remove the stigma around them. Through this blog, you can tell how passionate I am about these animals, and how much the stigma of them should be removed. I wanted to dedicate a whole blog post towards it. Moreover, when it comes to whales, there is not that much of a stigma around them as there is around sharks. Whale sharks are one type of whale that only eat plankton.

But what would you image in your head if I asked you to visualise a shark? With a maximum weight of 60 tonnes, the whale shark is the largest fish in the ocean. Easily observable at the aquarium, the nurse shark can be seen skulking around the tank floor. Or can you picture a huge Great White Shark charging at some unsuspecting humans while a crowd of terrified onlookers flee the water screaming?

But if I asked you to picture a shark in your mind, what would you picture? The whale shark, the largest fish in the ocean, can weigh up to 60 tonnes. The nurse shark is plainly seen at the aquarium, creeping across the tank floor. Or can you image a massive Great White Shark roaring at a group of unwary people while a frightened bystander throng flees the sea screaming?

According to a narrative summary on IMDb, the infamous shark film Jaws was released in 1975 and follows three men as they pursue a "beast" that has made the small coastal town of Amity his "own feeding grounds." Similar shark films abound, some of which are more suspenseful and scary, like The Shallows, while others, like Ghost Shark, are "deliberately self-parodic" (highly recommended).

These films can nevertheless evoke terror. One of the biggest and most powerful monsters to have ever existed, the Megalodon, an extinct type of shark, is said by many to still be alive. Most people are afraid of them because of their large size and powerful jaws, which can produce bite forces between 110,000 and 180,000 newtons and were designed to cut through bone as well as its prey. They can grow up to 59 feet long.

The Megalodon cannot possibly still exist, according to evidence. For instance, scientists now know that the Megalodon is a big shark that prefers warmer or tropical seas. This implies that the Megalodon would be closer to the surface and less likely to be buried in deep, frigid waters. But many people who weren't even aware that the Megalodon existed in the first place are now afraid of sharks because to the current shark movie The Meg.

However, a lot of people don't seem to be aware of how many shark attacks occur year compared to how many sharks are killed. Because of the common misconceptions about sharks, some attempt to defend this statistic. However, Joe Chernov created an infographic that reveals just how many sharks are killed in just one hour.

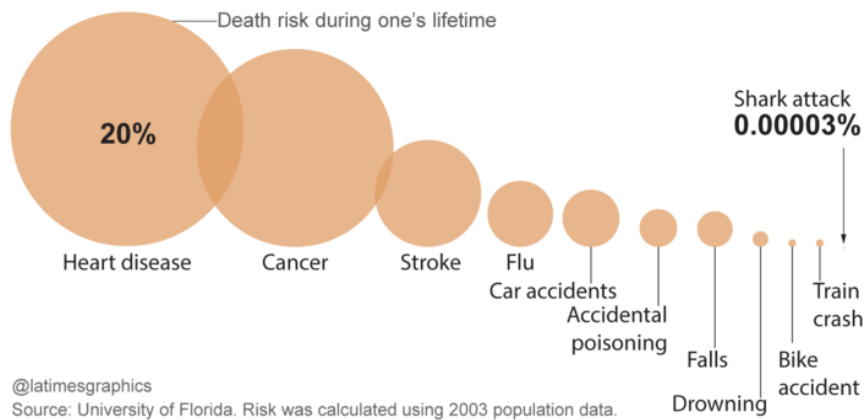
A research published in the journal Marine Policy estimated that almost 100 million sharks are killed year using information on shark catches, discards, and mortality rates around the world. Yes, it is what you

read. One BILLION. And even that is only a conservative guess; according to the study, there might be as many as 273 million.

The primary cause of this is shark finning, which is the practise of removing shark fins because they are very valuable both economically and culturally in some regions. As a result of how pricey it is, it is also used to make shark fin soup, a popular dish in China that is frequently consumed to demonstrate status.

Many people also aren't aware of how crucial sharks are to marine ecosystems. Since they can indirectly influence their preys' habits, such as where they dwell and their number, as apex predators, if they went extinct or became critically endangered, the entire food chain would collapse.

How likely is death by shark attack?



Despite how frequently humans kill sharks for profit, there are certainly far less unprovoked shark attacks each year. 3,748,067 to 1 are the odds against someone being murdered by a shark. To put this into perspective, your chances of dying are higher from heart disease (1 in 5), lightning (1 in 79,746), or fireworks (1 in 79,746). (1 in 340,733).

In addition, only about 30 of the 375 known shark species have been implicated in human attacks. A very long time ago, in April 2015, a 65-year-old woman in Maui, Hawaii, who had been snorkelling with friends and was subsequently discovered floating alone in the ocean, suffering fatal injuries consistent with a shark attack, was the victim of one of the most recent unprovoked shark attacks.

Even if sharks are on the verge of extinction owing to shark finning, the more of these shark horror films that are made and shark attacks that are sensationalised, the more people will dread sharks. Hopefully, through seeing films or television programmes like Shark by BBC Earth or Blackfish, people will become more aware of the value of sharks and help dispel the myth that they are only ruthless, man-eating predators.

Blog post #7: Marine Ecosystem

Hello!

I wanted to discuss the marine ecosystem because it's what handles the whole ocean. Aquatic environments with high levels of dissolved salt make up marine ecosystems. These comprise the deep ocean, the open ocean, and the coastal marine ecosystems, each of which has unique biological and physical properties.

Aquatic settings with high concentrations of dissolved salt, such as those in or near the ocean, are known as marine ecosystems. The distinctive biotic (living) and abiotic (nonliving) components that make up marine ecosystems are what distinguish them. The ecosystem's exposure to sunlight, the amount of oxygen and nutrients that are dissolved in the water, the distance from land, the depth, and the temperature are all significant abiotic factors. Biotic factors include plants, animals, and bacteria.

Scientists classify marine ecosystems into a number of major groups, albeit the definition of a marine environment varies depending on the source. There is a heated discussion over the number of marine habitats. Although there is some debate, estuaries, salt marshes, mangrove forests, coral reefs, the open ocean, and the deep-sea ocean are among the types of marine ecosystems that are generally accepted.

Estuaries are coastal areas where rivers and oceans converge. Here, in areas protected from severe weather, nutrients and salts from the river mingle with those from the ocean. Estuaries are therefore among the planet's most productive locations and are home to a variety of life forms. Estuaries have historically supported numerous human populations and activities including fishing, shipping, and transportation since they are found where rivers meet the ocean.

Coral reefs, euphotic-zone habitats constructed from the exoskeleton released by coral polyps, are located a little further out into the tropical sea. These exoskeletons create intricate structures that serve as homes for numerous different creatures. Coral reefs are incredibly diversified ecosystems that are home to a wide variety of animals, including fish, turtles, sharks, dolphins, and sponges. According to some estimates, coral reefs house up to 25% of all ocean species.

The open ocean is located beyond the coral reefs. As the ocean's depth changes, so do its open ocean ecosystems. The habitat receives plenty of light and oxygen, is somewhat warm, and is home to a large number of photosynthetic species in the euphotic zone of the ocean. The open ocean is home to a large number of the animals that we associate with marine habitats, including whales, dolphins, octopi, and sharks.

The water gets darker, colder, and has less oxygen available as it travels deeper. Deep-sea organisms in the dysphotic and aphotic zones have peculiar adaptations that enable them to endure in these harsh conditions. Some species can capture whatever nutrients fall from deeper ocean depths thanks to their incredibly big mouths. Others have adapted to obtaining their energy from hydrothermal vents through chemosynthesising chemicals.

Blog post #8: Ocean Undiscovered/ Evolution of it

Hi

For this post I wanted to discuss the ocean being undiscovered and how, although it seems like so much of it has been discovered, almost nothing has been. It seems insane to me. Hence, I wanted to convey my thoughts about the same, and give more of an idea to you guys, if it would help.

Over 80% of the ocean has not yet been fully explored. And only around 7% of the world's oceans have been classified as marine protected areas since it's challenging to safeguard what we don't know (MPAs).

With this in mind, we explain why one of the universe's most vulnerable - and little understood - locations is a pool of water that covers the majority of Earth's surface.

Physics is one of the main obstacles to ocean exploration. The ocean exhibits zero visibility, bitterly cold temperatures, and crushing pressure at tremendous depths. Exploring the deep ocean is very challenging due to the enormous pressures present there.

The study of the oceans is known as oceanography. All areas of research, including chemistry, geology, meteorology, biology, etc., are used in this field to learn more about the ocean and its properties. Oceanography is the study of all aspects of the ocean, including its past, present, and future.

The information and lessons we may acquire from oceanographers, who study a variety of topics as diverse as the ocean itself, are of highest relevance in today's society.

Technology for ocean exploration is rather recent. Although we have always investigated the ocean's top, it has only been within the last few decades that we have been able to begin learning about the ocean's depths and floors.

Although we can use satellites to scan the ocean's surface temperatures, waters, and colour (which is a sign of the presence of plant life), deep sea submarines and sonars are required to map the ocean's deeper regions. Deep water makes it tough to see.

The fact that harsh exploration circumstances arise at high depths is another factor contributing to the very little amount of ocean we have explored. Imaging becomes very difficult below 200 metres since the so-called "sunlight zone" ends, and the pressure is also extremely high.

Learning more about the ocean can also help us understand the close connection that people have with it. We will be better able to relate to and understand the significance of this huge underwater cosmos for our daily lives, as well as for the planet's health, the economy, and the sectors of transportation and recreation.