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# LIFE E-NEWSLETTER

## Editor's Note

**“If we pollute the air, water and soil that keep us alive and well, and destroy the biodiversity that allows natural system to function, no amount of money will save us” - David Suzuk**

WELCOME TO THE THIRD AND THE LAST EDITION OF LIFE: E-NEWSLETTER FOR THE YEAR 2022-23. THIS ISSUE COMPRISES FEW ARTICLES RELATED TO THEME 'AQUATIC BIODIVERSITY AND MARINE POLLUTION' SUCH AS HOW MARINE POLLUTION EFFECTS ON THE LIFE OF SEA TURTLE. ALONG WITH THIS ISSUE INCLUDES AN INTRIGUING ARTICLE WRITTEN BY TYBSC STUDENT REGARDING AMBOLI AND GOA EXCURSION, A TRULY MESMERIZING ARTICLE FILLED WITH NUMEROUS ORGANISM SIGHTINGS.

“IN PHOTOGRAPHY, THERE IS A REALITY SO SUBTLE THAT IT BECOMES MORE REAL THAN REALITY.” ALFRED STIEGLITZ. WE WOULD CLOSE THIS EDITION WITH THE 'PHOTO GALLERIA' CONTAINING EYE-CATCHING PHOTOGRAPHS CLICKED BY OUR PASSIONATE STUDENTS.

LAST BUT NOT LEAST, I WOULD EXTEND MY GRATITUDE TO ENTIRE TEAM ALONGSIDE THE READERS. WE HOPE YOU ENJOY THIS CONTENT-PACKED ISSUE. HAPPY READING!



**Mentor  
Madhavan Gopalan**



**Editor  
Mokshada Mali-SYBSc**

# Aquatic biodiversity and Marine pollution

When it is said that Life first originated from Water, imagine how many new life forms must be being born which we are unaware about. The biodiversity even in the aquatic form differs from region to region. High Diversity is specially found near the equator while the least lies near Quebec province of Canada. Since the Western Pacific and the Indian ocean have warm water, they also tend to have the most marine diversity. Indonesia is home to more than 1,200 species of fish and 600 species of coral which in turn are home to tiny seaweeds to sharks. There are 6,200 plant species that are unique to the Cape Floristic Region in South Africa. Biodiversity hotspots are places with a high concentration of indigenous species. In some areas, residents and scientists are working extra hard to conserve biodiversity. Genetic diversity is a different metric for biodiversity. Genes are the fundamental units of biological information passed on during reproduction in living beings.

As many as 400,000 genes are present in certain species. Plants and animals may be more resistant to illness if their species have a greater genetic variety. Additionally, genetic variety enables organisms to adjust to their environment more effectively. Global biodiversity has drastically diminished during the last century. There are many extinct species. Extinction is a natural process in which some species pass away and others develop. However, the natural processes of extinction and evolution have been altered by human activities. According to scientists, species are vanishing at a rate that is hundreds of times faster than normal. Marine pollution being a major contributor to the loss of diversity right from its origin. All manmade items that wind up in the water, the majority of which are made of plastic, are considered marine garbage. This debris, which comes from sources on land in 80 percent of cases, accumulates as a result of littering, storm gusts, and poor waste management. Numerous plastic goods, such as shopping bags and beverage bottles, together with cigarette butts, bottle caps, food wrappers, and fishing equipment are examples of common maritime garbage.



Such contamination due to **plastic waste** is particularly harmful. The decomposition of plastic products might take **hundreds of years** harming both people and animals. In the debris, fish become entangled and hurt, and some animals mistakenly consume things like plastic bags thinking they are food. **Microplastic**, or very small fragments of degraded plastic, is consumed by small creatures, which then take the **chemicals** in the plastic and absorb them into their tissues. The poisonous compounds become a part of bigger animals' tissues when they devour microscopic creatures that absorb microplastics. In this way, the contamination from microplastics moves up the **food chain** and finally ends up in the food that people eat. So, from all this, we can conclude that marine pollution is not just the end for the organisms living in it but for us as well. Well, we who have done the damage

are the only ones who can correct it by taking effective steps toward reducing and protecting it.



**Swati Yadav-SYBMS**

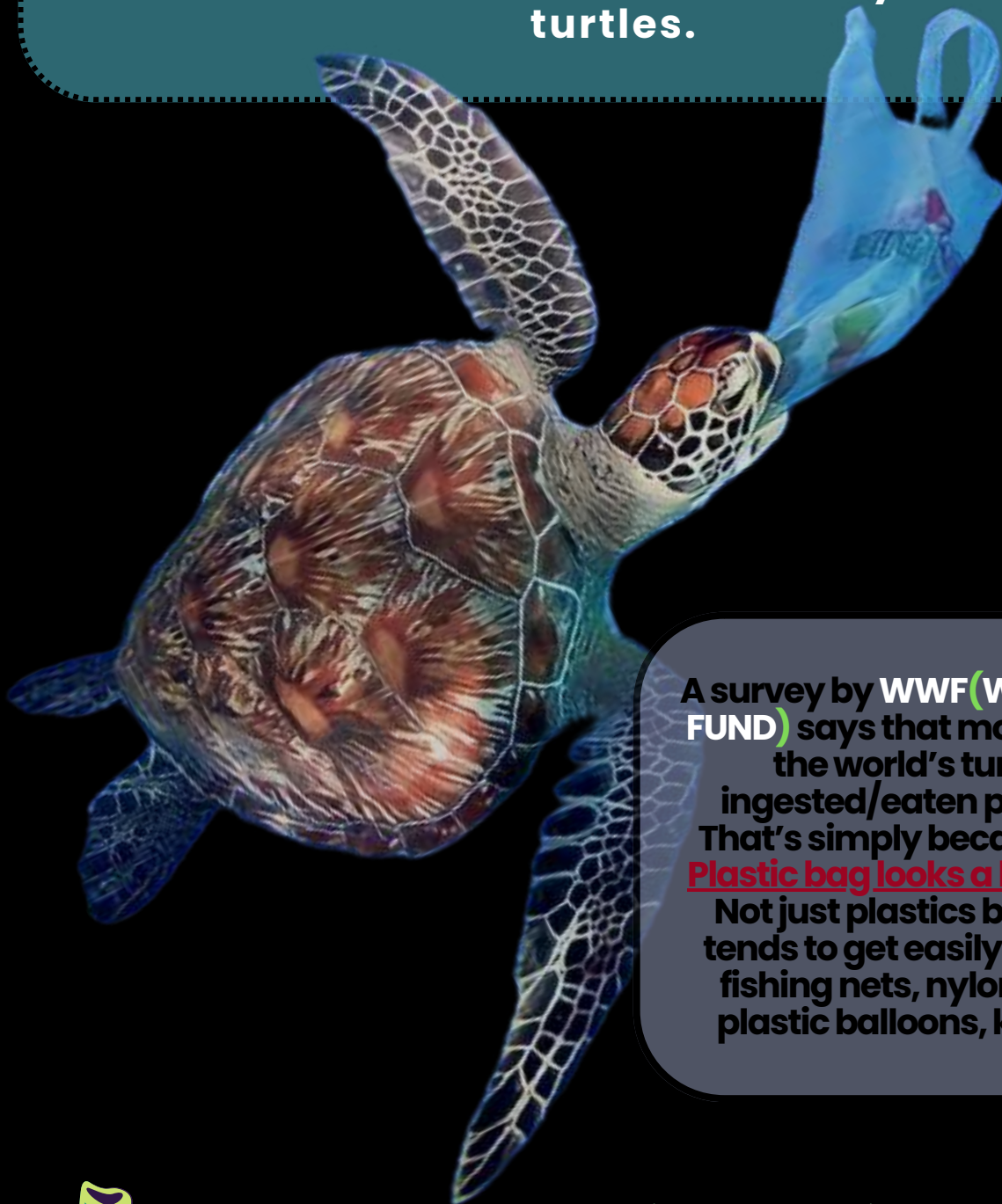
**MICROPLASTICS HAVE BEEN FOUND IN A VARIETY OF MARINE ORGANISMS, INCLUDING PLANKTON AND WHALES, AND HAVE A DIAMETER OF LESS THAN FIVE MILLIMETRES (0.2 INCHES).**





# Effects of pollution on sea turtle

Pollution has impacted sea turtles in many ways, various factors lead to habitat loss, low reproduction health which leads to decrease in population of sea turtles. Marine debris is increasing by each passing year and indeed these debris have been eaten by the sea turtles.



A survey by **WWF (WORLD WILDLIFE FUND)** says that more than **60%** of the world's turtles have ingested/eaten plastic waste. That's simply because a floating **Plastic bag looks a lot like jellyfish.** Not just plastics but sea turtles tends to get easily entangled by fishing nets, nylon fishing line, plastic balloons, kite string etc



Ingesting the plastic leads **to death, sharp plastic rupture the internal organs, and this bag causes intestinal blockage leaving the turtle unable to eat which results in starvation.** And

sometimes these plastic bags in the intestine store the air leading to uncontrollable buoyancy and they get easily preyed upon.

As marine pollution tends to increase every day these plastic have already accumulated near the nesting beaches which means that even newborn baby turtles are also at risk as they can get easily entangled in the plastic which prevents them to reach the sea.

When oil spills in the sea during shipping, heavy metal **pollutants like mercury, gets concentrated in the liver, kidney, and sometimes also in the eggs of the turtles. That lead to developmental abnormalities which finally impacts the population of turtles.**



***Avinash Nishad-SYBSc***

### **WHAT CAN WE DO?**

**REDUCE, REUSE, AND RECYCLE PLASTIC.**

**Use reusable bags for shopping instead of plastic bags.**

**Support NGOs for a ban on plastic grocery bags.**

**Do not litter the beach.**

**Volunteer at clean-up events at beaches.**

**Do not release balloons in the air.**



# Abstract

In a recent paper the discovery of rare primitive fossil animal called **Dickinsonia tenuis** from Maihar Sandstone near Bhopal was published. This discovery was a breakthrough. However, several researchers argued the report to be a misidentification. Based on several grounds they determine the fossil to be a beehive. The arguments were back up by credible evidence, which includes:



*Tiyasa Dasgupta-SYBSc*

Hence considering all reasoning and photographic evidence it can be inferred that the fossil was a Beehive not a primitive fossil of **Dickinsonia tenuis**.

- The fossil that was discovered was found to be decaying due to Neolithic fires and cause of an organic matter produced by honeybees causing the decay.
- The fossil's crack contain few beehives and wasp, also the fossil itself slightly wraps on the curved surface in the cracked area rather than resting on the planar surface.
- Finding other beehives nearby, along with presence of propolis, beeswax and honey/pollen store.
- Discovering traces of white waxy material which identify as honey and pollen store.
- The fossil wasn't embedded in the rock but a structure rising above the rock surface.
- And the fact that if Dickinsonia had been present then, it would have been discovered near the areas too but there wasn't any.



# Amboli trail

Amboli and Malwan, falling under Sahyadri Mountains are places which are rich in biodiversity and the best place for someone who wants to experience nature up close. In a five days and 4 nights long stay, it was made sure that as much can be explored is explored and observed. On the first day, that is 11th January, 2023, we reached Kudal, where the first spot was Dhamapur lake. The sky, clear and blue with the lake creating a mirror image of the greenery around, and calls of the birds around made it only all so beautiful.



As we started walking deep inside the vegetation, various birds were spotted to name some, purple sunbird, whiteboard wagtail which is known for the typical action by which it moves its tail, golden oriole, and at last but not the least, what looked like a snake coming out of water but only after observing it for a while it became clear that it was nothing but the oriental darter. Later that evening was fish landing centre on the list. Upon reaching the centre, there was an auction going on. The fishes were fresh and being sold out within minutes. We saw barracudas, tuna, mackerel, Crabs, shrimps, squids, bonnethead shark, sailfish, king fish, sole fish and common pike conger.



On 12th January, 2023, we visited Sindhudurg fort and shortly after left for scuba diving around the fort. This was the most exciting day of all. Everyone was a little nervous to get in the water yet looking forward to it. While getting the kit on you and learning the signs to communicate underwater was overwhelming and scary, as soon as you'd go underwater and start looking around, at all those magnificent corals and the algae below you, fishes surrounding you and being able to hear nothing but the calmness of the sea, it makes you forget all about being worried or scared. In the evening we went to rocky shores and spotted sea cucumbers, Zoanthus, and snails. Third day of the trip, on our way to Amboli we stopped midway where there were wetlands nearby, spotting green bee eater, grey heron, purple heron, kingfishers, lesser whistling ducks, Malabar pied hornbill. Later that day, during the afternoon trail, at Kavalseth point, we spotted dusty crag martin, alpine swift, little swift, and heard the calls of Scimitar babbler. Other than birds there were water beetles, water striders, and amongst plants, one named Anjani tree which the indicator of iodine content in soil.



*Komalpreet kaur - TYBSc*



After it went dark, we spotted the most sought after, the Malabar pit viper which was a juvenile, Asian giant forest scorpion, and an asleep bird on the branch of a tree right above our bus, orange headed ground thrush. On the second last day, as we woke up, right in front of the place we were staying at, we spotted Indian robin male, jungle mayna, crimson brown sunbird within a few minutes. Later on the trail we spotted a blue tiger moth caterpillar, Amboli leaping frog, green marsh hawk dragonfly, Malabar whistling thrush. During the night trail it was an intuition to many that maybe a mammal may come across. In the cold night air, we sat in our seats and started inspecting outside the window to spot an animal. We did spot the Malabar pit viper again and along with it, civet, gaur and a deer. On the last day, 15th January, 2023, we went for a morning trail before heading back home. We saw river terns, kingfishers, pond heron, little egret, spot billed duck, striated heron, pied bush chant male, paddy field pipit and black headed ibis.



# Marine pollution



Today the ocean remains one of the most expansive, mysterious and diverse places on Earth. Unfortunately, it is being threatened by pollution from people on land and from natural causes. Marine life is dying and, as a result, the whole oceanic ecosystem is threatened simply by various sources of pollution. The marine ecosystems have been polluted vastly which is altering the marine population. Who is at fault for the pollution? The inhabitants of Earth. Fortunately for earth there are ways of preventing this form of pollution. You never would've thought that marine pollution would affect you right? Wrong. The pollution underwater impacts everyone and everything on Earth. When different substances, such as plastic, foam, cardboard, aluminum, styrofoam, and newspaper, get thrown into the oceans, it can take up to 400 years for all of those items to degrade.

Marine pollution is caused by us humans, which affects everyone and everything on Earth. When the marine ecosystem absorbs the pesticides, they are incorporated into the food webs of the marine ecosystem. After getting dissolved in the marine food webs, these harmful pesticides causes mutations, and also results in diseases, which can damage the entire food web and cause harm to the humans. When toxic metals are dumped or flown into the oceans through drains, it engulfs within the marine food webs.



Marine pollution is the human 's fault. Most of the pollution are man-made. Excess substances from companies usually end up in the ocean, contributing to the pollution. One of the largest reason why marine life is beginning to decrease and become endangered is because of radioactive wastes being dumped in the ocean. Marine pollution is the adding of toxins and harmful chemicals into the ocean, not only is it chemicals but it also plastics. Pollution of recyclable materials in the oceans is one of the leading causes of why some marine species are nearing extinction. Many authors of articles and books analyzing this topic tend to agree that pollution of our oceans is a problem. The future of this problem is where their ideas tend to differ.



The ocean and more marine life ecosystems are being affected, but there are things that we as humans can do to change this. Imagine a world where we didn't have to constantly worry about the vicious cycle of humans affecting animals and then animals in turn affecting us through consumption. By the oceans being polluted not only are animals affected humans are too. What some people don't know is that they are killing of and disturbing offspring by polluting waters. "Ocean pollution results in smaller catches of fish all over the world, either by killing fish directly, preventing them from breeding, or causing birth abnormalities.



## Do you know?

Over one million seabirds are killed by ocean pollution each year. Three hundred thousand dolphins and porpoises die each year as a result of becoming entangled in discarded fishing nets and one hundred thousand sea mammals are killed in the ocean by pollution each year. Every marine animal is affected by man-made chemicals released in the water. Even though much of the rubbish and waste dumped into the ocean is released hundreds of miles away from land, it still washes up on beaches and coastal areas, and affects everything in between. Even today, in many parts of the world, sewage water is discharged in the ocean – untreated or under-treated. This has a serious effect on marine and human life and can also lead to eutrophication. People get contaminated easily by eating contaminated seafood that can cause serious health problems, from cancer to damage to the immune system.

Here are a few suggestions that every family can do to reduce our dependence on plastic and other pollutants.

- Stop using plastic carrier bags. Try using shopping bags made of cloth. You can find them in all imaginable shapes and designs!
- When buying fruit and vegetables in supermarkets, instead of using the plastic bags provided, buy string bags online and use those. They never wear out.
- Avoid using single-use items such as plastic cups, straws, and cutlery. Get yourself a thermos or other glass container to use when getting a coffee or smoothie to go.
- Avoid purchasing over-packaged goods wrapped in layers of plastic. Don't buy plastic bottles, drink tap water or carry your reusable bottle.
- Here are a few suggestions that every family can do to reduce our dependence on plastic and other pollutants.
- Try to buy goods that are not packaged or made from plastics. For instance, minimise plastic packaging in your groceries by substituting condiments in plastic containers to those in glass jars, or in the case of larger items, opt for those that are primarily made from other materials, for instance garden furniture made of wood rather than plastic.



We can create a clean ocean where sources of pollution are identified and reduced or removed. A healthy and resilient ocean, where marine ecosystems are understood, protected, restored and managed. A productive ocean, supporting sustainable food supply and a sustainable ocean economy. An ocean that we treat with the respect it deserves.



**Subiksha Yadav-SYBSc**



# Photo Galleria



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Jewel Beetle  
Akita Chauhan TYBSc



Deccan Banded Gecko  
Rudra Patra TYBSc



Lemon Pansy  
Gaurav Patil TYBSc



Malabar pit viper  
Vinod Kulal TYBSc



Golden Jackal  
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