

The dreaded latitudes

Gyres or trash vortex, it's always been a dead zone

Ocean currents work magic when they help ships navigate from one place to the other or bring rain. However, together with the Horse latitudes, they also have created a new continent as big as Africa and still expanding, which may never support life because it is plain garbage, dubbed the Great Pacific Garbage Patch, writes **Mukta Rohra**



*When the still sea conspires an armour
And her sullen and aborted
Currents breed tiny monsters,
True sailing is dead.*

These lines from the famous song, *Horse latitudes* popularised by *The Doors*, and inspired by the horse latitudes stories narrated by sailors best explain the helplessness of sailors who were caught between these latitudes at sea.

For ages, sailors have avoided the areas located at approximately 30 degrees north and south latitude in all oceans, like the plague. The calm wind patterns, the regions are characterised by would not let them sail. Stuck for weeks at a stretch, they would run out of supplies and often die a slow starvation induced death. Fishermen wouldn't go there either because the area lacked the nutrients to sustain life that would make fishing a viable option.

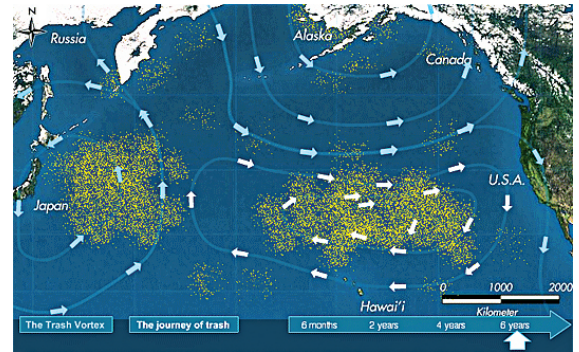
Now there is yet another reason to avoid the seas stretching between these latitudes, the fear of being stuck between lifelessness and trash that has gathered since the advent of plastics, covering over 10 million square miles, almost the size of Africa.



The stillness in the region is caused by the Gyres, or the spiral ocean currents formed due to the Coriolis Effect (an apparent deflection of moving objects when they are viewed from a rotating reference frame), planetary motion along with the circulation patterns of the wind. Gyres give the area relatively calm wind patterns, making the place hot and dry even in the midst of the ocean. These areas can be called the oceanic deserts. Gyres move clockwise in the northern hemisphere and anti-clockwise in the southern hemisphere and can be found in almost all the oceans.

Large masses of debris have piled up in the Pacific Ocean. The regions where this waste has accumulated, is now termed as the Pacific Garbage Patch.

Lately these regions especially those lying in the Pacific Ocean have started troubling scientists. The large masses of debris, mainly consisting of plastic, are piled up in this zone. Scientists call it the Trash Vortex or the Great Pacific Garbage Patch.



The garbage patch

The Pacific garbage patch is the largest landfill in the world floating in the middle of the ocean. It consists of two large masses of trash, known as the Western and Eastern Pacific Garbage Patches.

The Eastern Garbage Patch exists between Hawaii and California and the Western Garbage Patch exists east of Japan and west of Hawaii. The two patches are linked by a narrow 6,000-mile long current called the Subtropical Convergence Zone that also accumulates the refuse that finds way into the oceans.

The existence of the Eastern Garbage Patch was predicted in a paper published in 1988 by the National Oceanic and Atmospheric Administration (NOAA) of the United States based on the tendency of things to collect in the ocean gyre system.

This report predicted high concentrations of marine debris in regions in the Sea of Japan and other regions in the Pacific governed by the Pacific gyres that created relatively stable bodies of water in the ocean.

It sprang into prominence when Charles Moore, a California-based sea captain and ocean researcher mentioned floating debris while

passing through the North Pacific Gyre during the Transpac sailing race. The oceanographer Curtis subsequently dubbed the region the "Eastern Garbage Patch" after he was informed of its existence by Moore. It is believed that any piece of trash, be it a can, plastic bag or cardboard box, thrown into the sea in any part of the world will end up here.

The consequences

This accumulation of the debris is a recent phenomenon, as previously, whatever was disposed was broken down into the elements of nature by

More shockingly, 80 per cent of all debris is from land and only 20 per cent from ships. So, whatever remains intact reaches the north pacific gyre in some time that may span from 1 to 12 years. Some of it eventually drowns to the depths and rest of it will remain spiralling there.

One of the most serious dangers posed by this marine pollution is that fish, birds and the other marine life often mistake it for food. They eat the plastic, which chokes and eventually kills them. They often get trapped in the nylon nettings and other loose garbage that often strangles marine

90

Per cent of the garbage patch consists of plastics. Though a clean-up is not really possible, the only solution to the problem is to reduce the disposal of plastic waste, either by recycling or by minimising its use.

micro-organisms. With plastics, it is different. They do not disintegrate through a natural process. Moreover, the cooling effect of water and algae coating preventing the sunlight from reaching the plastic increases the lifespan of the plastic floating in water. This is made even worse by the extra-durable varieties of plastic that man has been inventing.

As per Charles Moore's findings, the marine debris collected at the Pacific garbage patch is 90 per cent plastic.

animals. The area is the nesting ground for the popular Hawaiian green sea turtles.

Marine species in this region have been found to have higher concentrations of toxins apart from the plastic ingestion. This is because plastics capture several toxins like DDT and PCBs and nonylphenols. Hormone receptors in the animals cannot distinguish these from the natural estrogenic hormone, estradiol, and this disrupts their

Plastic chokes turtles

Marine plastic rubbish, a group of University of Queensland researchers has found, is the leading cause of sea turtle deaths in the region. During one of their explorations, they found a green turtle hatchling washed ashore, and in obvious pain. But before it could be attended to by the vet it died. Gut perforation due to plastic ingestion was found to be the cause. On examining the contents of the gut, it was revealed that it had also swallowed plastic bags and a fishing line too.

Sea turtles, it is believed, are particularly susceptible to the effects of marine rubbish because of the structure of their throats. This leads to a slow and painful death. They have downward facing spines in their throats which prevent them from regurgitating, informs Dr Kathy Townsend of the University of Queensland.

Trapped in the gut, the plastic prevents food from going down and the spines prevent it from coming up. As a result, the food decomposes and releases gases in the body cavity, causing it to bloat. The turtle slowly starves to death or succumbs to other secondary life threatening conditions.

hormone cycle. Its implications include lower sperm count in the animals and higher ratio of females which finally may result in the extinction of the species.

Now, the researchers are of the opinion that the presence of such life threatening objects may finally force the local species to look for other habitats.

The solution

The researchers believe that this problem is only going to increase with the passage of time. There seems to be no end to it.

The patch is too huge to undergo waste management. Cleanup at the moment is just not possible. The only solution to the whole problem is the elimination of the source, plastics. The only option we now have is to take measures to prevent further increase in the size of the trash vortex. This is possible only when we reduce disposal of plastic waste to the minimum by reusing and proper recycling. But the way we are dependent on plastics, can we? 🌍

