

How water can help and hurt biodiversity

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WE ALL know that water is vital to life, after all without it we would not exist. We need water for drinking, bathing, washing, cleaning ourselves and our property, for recreation and for metabolic reactions.

But sometimes too much water can have its disadvantages. Floods are one such event where too much water is the problem, and cause the loss of food in the form of crops, property and lives. In terms of biodiversity, water has also been praised as a medium for introducing new species to an area, in particular islands. This is because some seed of plants like coconuts which are quite buoyant and as a result travel quite far. Also, sometimes, the currents present are so strong that they bring mats of vegetation from other areas to islands. These mats of vegetation can contain a variety of fauna from small lizards to large animals like capybaras. Most times, this natural delivery of species is beneficial to an island in building up its biodiversity, but then there are others when the species that arrive are detrimental as we will see.

The transport of species by water to the shores of many islands in some cases is assisted by the actions of humans. One of these methods is through what is known as ballast water. This is the term used to refer to the water carried in unladen vessels for the purpose of providing stability. When the vessel docks at port this water is taken on board as the cargo is unloaded and when cargo is loaded the water is released and along with it marine organisms. Many of these tiny stowaways die due to temperature changes and lack of food or light. However, those that survive are dumped along with the ballast water when the vessel reaches its destination.

Some species that are left

behind are benign and add to the biodiversity of the island. This may not seem to be a great problem but this method of introduction of new species has been identified as one of the four greatest threats to the world's oceans. Over 80 per cent of the world's commodities are transported via water and in turn about 3 to 5 billion tonnes of ballast water are transferred annually. This does not only apply on an international scale, but a similar volume may be discharged regionally each year as well. A documented 100 species of marine organisms have been introduced by ballast water.

However, there are those which become pest species and threaten the fisheries and aquaculture industry, not to mention the biodiversity of the island. They do this by competing with the native species for food and usually win this competition or they may prey on the native populations. The influence of these organisms is not restricted to their aquatic environment but can extend to terrestrial animals in the food chain such as birds, and humans. This is done by introducing toxic dinoflagellates. These microscopic, single-celled and photosynthetic organisms are important primary producers and a key member of the food chain. However, too many they produce algal blooms and red tides which in turn can be fatal to other organisms like those mentioned.

This problem has not gone unnoticed and was addressed by the United Nations at its 1992 conference on environment and development. Certain measures were developed with respect to transporting organisms via ballast water by the International Maritime Organisation (IMO), which is a specialised body of the UN and is responsible for ship safety as well as the prevention of marine pollution.

Some of the guidelines developed include avoiding taking up water in ports where harmful organisms are known to live, or to minimise taking in of harmful organisms in ballast water.



Another precaution would be to regularly clean ballast tanks thereby removing mud and sediments that accumulate and harbour harmful organisms. Unnecessary discharging of ballast water should also be avoided. Also by not releasing or releasing the minimal amount of ballast water, or exchanging of ballast water at sea.

The principal behind this move is that the organisms contained in port or coastal waters would not survive in the open oceans as the environmental conditions differ. However, the last two procedures are very risky as they involve releasing ballast water in mid ocean which can jeopardise the stability of the ves-

sel. The management of ballast water was also taken into account by implementing procedures such as discharging the ballast into treatment facilities onshore.

Of course the burning question on many readers' minds is, why not use something else as ballast? Solid ballast like rocks, sand and metal were used in the past for thousands of years, however, water proved to be easier and more efficient and economical to load and off load.

Since almost all vessels use ballast, another burning question might be, am I a contributor to this destruction? But from what you have read so far you have probably guessed by now that the main contributor to this problem

is cargo ships as in smaller sailing vessels, the ballast is loaded at launching and dumped when the boat is re-trailerred, usually at the same location.

Water is a necessity as many metabolic reactions of all organisms would not be possible without it. Also without water the climate would be much different and devoid of life. However, most of it is contained in our oceans, which is also used as a form of transport used for both cargo and people and along with them organisms detrimental to the native biota of the country of arrival. Therefore, stricter regulations and inspections should be carried out to curb the effects of this threat to a country's native biota.