

## ENVIRONMENT

# Water quality influences biodiversity

**JO-ANNE NINA SEWLAL**

BSc., MPhil., FLS., AMSB.  
Dept of Life Sciences,  
University of the West Indies



**L**AST week, in addition to celebrating World Forestry Day, the world also celebrated World Water Day. Before going any further I feel I must clarify that although the name of this commemorative day is "World Water Day" it is really dedicated to freshwater resources.

Held annually on the 22nd of March, this day is designated by the United Nations to attract attention to the importance of the planet's freshwater resources and advocating the sustainable management of these resources.

Like most environmentally orientated day, it carries a different theme every year. This year's theme is "Clean water for a healthy world."

In this article I will give some examples of how water quality affects biodiversity in freshwater ecosystems.

It is a misconception that most people think that once water is present in an aquatic ecosystem, its health and biodiversity is guaranteed. However, this is not true, as the quality of water in an ecosys-

tem seriously impacts the biodiversity it contains.

Pollution is a major factor affecting water quality and can occur at any point along the course of rivers and streams. An example is the water used to irrigate crops runs off into nearby rivers and streams, filled with chemicals like pesticides, herbicides and fertilisers. These chemicals do not simply get washed downstream, enter the ocean and stop being our problem. These chemicals keep doing what they were designed to do on terrestrial plants. Pesticides and herbicides will kill some of the aquatic fauna present in this ecosystem. Fertiliser on the other hand has the opposite effect and introduces extra nutrients into the ecosystem; this is taken up by the plants which multiply rapidly. This has the effect of utilising the majority of the oxygen dissolved in the water; there the amount available to other organisms is limited, this is referred to as eutrophication. This in turn limited the number of organisms present as well as the type of species present.

Besides chemicals, the amount of sediments in the water also affects the biodiversity in freshwater ecosystems. Sedimentation blocks sunlight from penetrating the water thereby reaching the

amount of photosynthesis carried out by aquatic plants. Therefore the amount of plants, the animals that feed on them and the animals that feed on the herbivores and carnivores higher up the food web. Larger sediments like rocks can fill-up deep parts of a river bed thereby destroying this microhabitat and making the organisms that call it home locally extinct.

Other chemicals released into or that leach into our freshwater ecosystems includes heavy metals from industries which are taken up by organisms like fish. The amount of these metals in the bodies of fish accumulates, as one move up the food web, a process known as bioaccumulation, and which is passed on to humans which are the final consumers in most cases in the food web.

Local problems are not the only cause for poor water quality in a country. Global environmental problems like climate change also affects water quality, for instance in areas where there are prolonged periods of drought as in arid and semi arid regions, low levels of freshwater in the rivers and streams cannot dilute any pollutants that may enter.

However, there are measures that we can take to lessen the effects of poor water quality on our environment, such as

planting trees to prevent erosion which causes sedimentation of freshwater sources like rivers and streams. Increased recycling can reduce the amount of garbage in our dumps, as well as using environmentally friendly products, and in turn, limit the amount of chemicals that might leach into our underground sources of freshwater.

Some persons may want to go a step further and chose to only buy or consume food that is organically grown, that is without the use of chemicals like herbicides and pesticides. However, the introduction and enforcement of stricter legislation and heavy penalties on how water is disposed from industries and from agricultural areas would better ensure the water quality of our rivers and streams.

Also, in this country it is a popular pastime to cook, hang out and swim with friends and family at rivers or waterfalls. Therefore continual monitoring of the water quality at these freshwater bodies is vital to human health to prevent the spread of waterborne illnesses.

Therefore, it is easy to see that poor water quality obviously not only affect human health, but that of the environment and its biodiversity, particularly that of freshwater ecosystems.