

Fish and Lagoons

A Delicate Balance



What's in a Lagoon?

A lagoon is a complex ecosystem in a delicate state of balance. There is a balance between the microorganisms, plants and animals living in the lagoon. The weather and the characteristics of the water in the lagoon also affect this delicate balance and help make it a functional environment.

Important characteristics of water in a lagoon ecosystem include water temperature, salinity, pH, ammonia, nitrite, carbon dioxide, turbidity and most importantly to fish - dissolved oxygen levels.

Why is Dissolved Oxygen Important?

Fish rely heavily on the dissolved oxygen just for their day to day activities. Some species are more vulnerable to environmental stress and low dissolved oxygen than others. Large fish usually need more oxygen than small fish. Active fish generally require more oxygen than fish that are less active.

When there's Not Enough Dissolved Oxygen

A lack of dissolved oxygen can see some fish species die in large quantities. It might seem as though all the fish in a particular lagoon have died but this is rarely the case. Small fish are usually able to obtain enough oxygen from the top few centimetres of water, which is usually saturated with oxygen.

Once the water conditions return to normal, and when the lagoon is open to the sea, fish will return.

How Does the Oxygen Get into the Water?

Dissolved oxygen gets into the water by mixing through the surface during windy conditions. It is also produced by plants that live in the lagoon, as a by-product of photosynthesis. These plants can include seagrasses, seaweed and phytoplankton (microscopic algae).

The sunnier it is, the more photosynthesis can occur, which generally means there is more oxygen going into the water.



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Where Does the Oxygen Go?

Microscopic algae are naturally present at low or moderate concentrations in lagoons and are an important part of the nutrient cycle. However, when conditions are dry and sunny or when nutrients flush into the lagoon after rain, microscopic algae can flourish.

When there is a lot of algae, it uses up most of the oxygen in the water. This can mean that there isn't enough oxygen left in the water for the fish. The nutrients and chemicals from surrounding suburban areas that are washed into the lagoon following rain can 'tie up' the oxygen that fish need. As well, when the water is warmer, it cannot hold as much oxygen.

Is there anything that can be done?

Our lagoons are surrounded by sportsfields, residential development and industrial areas. In the past, areas surrounding Curl Curl and Manly Lagoon were used as tip sites. Unfortunately these current and past land uses ultimately affect water quality.

Northern Beaches Council undertakes many programs to manage and improve the water quality including the installation of pollutant traps and better landscaping to catch litter, sediments and pollutants before they enter the lagoons. Habitat restoration is also undertaken at the lagoons and in the catchments through The Bushcare Program (www.northernbeaches.nsw.gov.au/environment/bushcare).

While a lack of dissolved oxygen may lead to fish death there are many things that need to be considered including the possible presence of pesticides, toxins and diseases. You can help by contacting Council on 1300 434 434 if you see any suspicious behaviour or pollution in our bushland, creeks, drains or lagoons.

You can also make a difference by washing your car on the grass, limiting the amount of fertiliser and pesticide you use in the garden and making sure that grass clippings do not enter stormwater drains.

