



# Port River Mangroves

*from Forum presentation by Pat Harbison, 12/11/2011*

The Port River is a tidal waterway, which means that the level of the water changes up and down with the tides.

Mangroves have specially adapted over thousands of years to live in this sort of environment. Most plants can't survive the almost constant waterlogging with salty water that Mangroves are subjected to. When the tide comes in they can still 'breathe' because of the pneumatophores, which act like snorkels that stick up through the mud, which you can see at low tide. These are their breathing roots that allow the trees to get oxygen from the air, and to some extent from the surrounding water, when they are up to their necks in black mud and tidal water.

Most of the Mangrove sediments are very, very fine-grained sediments, having washed up in a very sheltered environment - the very finest fractions of the sediment are the last ones that drop out of a murky water body. If you go into the mangroves you will know that it is not too hard to get stuck up to your knees in that black sticky mud - that's because it is such a very fine clay sediment. All the coarse sands and coarser silts tend to drop out when the water is moving fast, but the clays drop out at the end, when the water has slowed down.

Mangroves have adapted very well to their environment. Their pneumatophores are important for their survival, and few other plants have adaptations to that environment. So look out for the mangroves, and don't trample too hard on their breathing roots!

The Port River is not quite the pristine river that Colonel Light first saw when he came in through what was called Light's Passage that comes from Outer Harbor. Colonel Light would have seen beautiful coastal vegetation on both sides and a lovely view of the Mt Lofty Ranges.

The Port River is now a very industrial area, and the water, and probably some of the animals in the river, after more than 100 years of factories discharging directly into it, have suffered very much because the sediments which support the shellfish and the weeds that they feed on are growing in contaminated silt. And the finer the silts and muds, the greater the amount of contaminants it holds, because heavy metals and other pollutants tend to stick to sediment particles and sink to the bottom and so we finish up with a large load of pollutants in the muds.

Another interesting feature of the Port River is dodge tides, which are characteristic of the whole Gulf. For seven days of each month there is no tidal movement at all. When the tide is stationary there is no circulation of water for the fish and other animals in the mud, so the risk of

contamination is far greater, because there is no strong tide carrying away polluted water.

This is particularly significant when you think of the history of the Port River, which has been industrial for many years. Until not that long ago people thought that if you wanted to get rid of wastes, you could simply dump them into the river or the sea, to be washed away, but in most cases pollutants stick to the fine sediments and remain in the river.

Another hazard for fish and other animals in the river is summer water temperatures. Once the temperature is high, dissolved oxygen concentration in the water is reduced, making it much harder for fish and other vertebrate animals to obtain enough oxygen to move around, so they tend to be more sluggish in the summer - maybe that's lucky for the fishermen.

The other risky time for organisms living in the Port River is at night, because that is when green plants in the water, like sea grasses and algae, stop producing oxygen. During the night with no oxygen being produced in the water, there is a far greater danger of fish kills. It has been noted that fish kills occur mostly at night, in summer, when there are high water temperatures and a dodge tide. That combination of conditions reduces oxygen supply available for fish to critical levels.

Pat confirmed this some years ago when she stayed out night after night in the Barker inlet measuring dissolved oxygen concentrations in the water and found that the levels were often close to zero during a dodge tide. There would be shoals of dead fish floating out to sea on the surface of the channel, and the fishermen attributed it to pollution or spills, and sometimes it was, but more often it was because it was a still, warm summer night with a dodge tide, with very little oxygen available in the water. This is something to look out for in an industrial area and increases the risks for animals in the water.

When there are proposals for industrial development near an environment like this, consider all those factors; anything that is going to add to pollution of the water, raise the temperature or restrict the tidal flow is going to be bad for aquatic life. Fortunately nowadays we have the EPA, which to a huge extent has worked hard to reduce those inputs to the river, but the history of the Port is still there in the sediments of the river, hopefully being increasingly buried by cleaner sediments as the years go by.

