

Dynamics of The Surry River Estuary.

by Friends of the Surry Inc.



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The Surry Estuary, being a very complex environment, is a natural seasonally closed system that closes when inflows from the system's catchment, the Cobboboonee, cease. The length of time the estuary mouth is closed and water levels reached is naturally dependent on seasonally variable conditions. Integral to this is the natural formation of a sand bar across the river mouth once the river ceases to flow. The bar is built by waves over-topping and depositing sand, or in dry times by dry sand blowing over wet sand and thus accumulating. More sand added from harbour sand-bypassing or dune erosion has virtually zero impact on the river's sand bar height, contrary to what some would like us to believe.

The debate surrounding the opening of the river has principally been associated with the height of the river and its effect on surrounding farmland and physical infrastructure. However, it is important to understand the scientific and environmental implications of river height. In the first place the higher water level has the effect of creating turbulence within the water column when the berm is breached. This is a naturally healthy event as it helps flush out the sediment thereby preventing silting up of the estuary. If the river is 'managed' to the extent that it isn't enabled to reach substantial heights, this flushing will not occur or will, at least, be diminished.

With regard to infrastructure damage, while we acknowledge that at times some areas may not be accessible, any actual and lasting physical damage is caused by inappropriate or excessive human use. A good example of this is the area around the footbridge that has been affected by people digging out the bank for parking their canoes/boats and by children returning to shore after jumping off the bridge. Similar physical effects can be seen all along the northern banks of the caravan park simply caused by human traffic; all can be managed by appropriate and timely works. When canoeing the length of the estuary one will witness that the entire riparian zone that has enjoyed protection from stock is healthy and with no signs of environmental damage caused by high river water levels. The inconvenience of reduced access to some areas of the estuary during inundation needs to be balanced against what is happening further upstream where the water needs to reach a level to flood natural wetlands and inundate reeds so as to aid the hatching and laying of small estuary fish breeds that lay eggs on flooded reed stems.

It is also important to understand that the water in the Surry River is not one homogenous mass. There are layers of water, each with its own properties and function. For example, salty seawater,

being heavier than fresh water, will naturally settle towards the bottom of the water column when the sand bar berm is closed. This creates what is known as a salt wedge that is vital for the hatching of Bream eggs that require a stable and specific level of salt on which to hatch. Though some may class this as stagnant water it is, in fact, a natural and vital role of an estuary.

If a river estuary is not allowed to function naturally there is an elevated risk of damage from decaying algae. This can be explained thus: the bed of the estuary is a black mud base that absorbs heat from the sun; the lower the water level the greater the heat absorption and vice versa. Allowing the water to maintain a higher level decreases the potentially damaging effect of decaying algae that can flourish due to the combination of heat and excess nutrients flushed into the river via farmland. These algae, though a natural part of the system, can have a serious depletive effect if allowed to get out of balance. When the water column temperature drops only slightly, usually at the end of summer, there is one variety of epiphyte algae that, having thrived under the shallower/hotter environment of summer, dies off smothering its host. This dying matter uses oxygen in the process of decaying, leaving the water column anaerobic. This occurs in the upper reaches of the estuary, and when the sandbar berm is opened, fresh water, being lighter than the salt wedge below, will flow out first; the anaerobic (no oxygen) water in the upper reaches is the last to be released; if insufficient oxygenated fresh water inflows are coming into the system to replenish the oxygen then this anaerobic water will be spread over the entire length of the estuary.

Some fish deaths from stranding after an opening are natural; deaths from poor quality water are avoidable to different degrees depending on timing of openings. This is why it needs to be left to nature, and if there are any concerns regarding infrastructure these, being man made, can be altered or re-designed to be more sympathetic to the surrounding environment in which they are constructed.



Sea grass July 2020



Bed of Sea grass June 2015

For many seasons we have watched the seagrass cover more of the riverbed, growing larger and greener especially from the highway bridge to the mouth. This is very pleasing because it is an obvious indicator of a healthy river. Seagrass provides a vital habitat for marine life, especially juvenile fish, and works in unison with the flooded reed beds. The Surry is practically the only river in the state in which seagrass is thriving; all other estuaries are either depleted or have died off completely. Though the reasons for this are not fully understood one could hazard a guess that by allowing the river to go as long as possible without opening greatly assists in maintaining a healthy river and certainly mitigates against the number of fish deaths when it does open. It is abundantly clear that if the river mouth is artificially opened, fish stocks will suffer which then impacts on

recreational fishing, not to mention the life cycle in and around the river. Furthermore, it needs to be emphasised that the river is a holistic system with a myriad complex parts, each one interdependent on the other: to interfere with one, such as tampering with the sandbar berm, is to risk a chain reaction that could affect the entire ecology of the river. The river is perfectly capable of managing itself; it just needs to be allowed to do so without interference from humans.

There is nothing better than seeing the Surry's beauty during seasonal changes. This we believe is what attracts tourists and new residents to the Narrawong community. It is our hope that a little understanding of the Surry's complexity will lead them to take more interest in the preservation of this ecological wonder. In a world where the rate of extinction of species continues at an alarming and accelerating rate we here in Narrawong have the opportunity to create an environment that is natural, sustainable and beautiful. Over the drought years the large flocks of birds that moved down from northern Victoria's drought region to take refuge in wetlands around the Surry River showed how important these stable wetlands of coastal rivers are to the survival of our wildlife. This year the number of juvenile fish of many varieties is overwhelming, especially the number of Tupong, both adult and juvenile, in every part of the river from the Highway to the mouth; due to the benign nature of the recent opening we are confident that most of these would have survived.



The Friends of the Surry River hope and wish for people to realise what a wonderfully beautiful thing our river is and how delicate a system estuaries are; and sometimes patience is needed to let nature do its own thing. Often just a few extra hours or days will make a lot of difference in the outcome for our friend the Surry River.

