The function and importance of estuaries

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Often, we read on the Sedgefield Locals Facebook page comments such as: "Is the mouth open?" or "Is the mouth closed?" Every so often: "There is a bad smell from the lagoon" and "There is raw sewage in the lagoon." These are all fair questions as residents observe changes in our natural environment.

We should really concern ourselves with the question of street litter that washes into the lagoon, invasive plant species on the water's edge, discarded fishing line that traps birds, insufficient litter bins, and development within the estuary functional zone, etc.

The Estuary Functional Zone is defined as the area that not only encapsulates the estuary waterbody, but also the supporting physical and biological processes necessary for estuarine function and health. Estuaries are unique and vital ecosystems where rivers meet the sea, creating a blend of fresh and saltwater that supports various organisms. Estuaries are dominated by organic particles, sediments and nutrients transported with the tides and from the river. Additionally, estuaries support a diverse array of fresh and saltwater plant life. Salt-tolerant and less salt-tolerant plants are found in different zones in the estuary. These plants slow the flow of the water and trap the nutrient-rich sediments providing food and shelter for a wide range of organisms. These plants are crucial for the local ecosystem and play a significant role in carbon sequestration, helping to mitigate climate change. This dynamic environment is fascinating and essential for various ecological, economic, and social reasons. Swartvlei is no exception.

Ecological Importance
Estuaries are incredibly productive ecosystems. The mix of fresh and saltwater, coupled with the nutrient-rich sediments creates an environment teeming with life. They serve as nurseries for many marine species, including fish, shellfish, and crustaceans. The calm, shallow waters provide a haven for young creatures to grow before venturing into the open ocean.

Economic Functions
Swartvlei Estuary is vital for our local economies. The abundance of marine life makes it a key area for recreational fishing and for local traditional providers. It also provides jobs and sustains our community. The scenic beauty and rich biodiversity of Swartvlei also attract tourists, supporting the local hospitality and tourism industries.

Social and Cultural Significance
Estuaries in South Africa hold cultural importance for many communities as historically, they have been sites for settlements due to their abundant resources and strategic locations. This is apparent in the kitchen middens found at the point at the end of Kingfisher Drive. Today, recreational activities such as swimming, boating, birdwatching, and fishing are popular in our estuary. It provides us with opportunities to connect with nature and improve our mental and physical well-being.

Environmental Protection
Our estuary is a natural buffer, protecting inland areas from storms and coastal erosion. The vegetation and wetlands within the estuary can absorb excess floodwaters and reduce the impact of storm surges and heavy rainfall on human settlements. This natural barrier is increasingly important as climate change leads to more frequent and severe weather events.

Water bodies such as Swartvlei can be divided into standing (lentic) and running (lotic) systems. Swartvlei is seasonally "blind": it is periodically lentic and then lotic, which makes it a unique system. The period of being "blind" is determined by the inflow from the rivers. The inflow of water is not only determined by rainfall but also by human interference. In Swartvlei, the construction of levees, bridges, water abstraction and development in the estuary's functional zone impact water levels. The estuary tends to silt up and the mouth could even close permanently because of the reduction of the intensity of floods that scour the mouth and keep it open.

Human manipulation tends to increase the rate at which estuaries age.

- The first indication that human activities are altering the balance is noted in the accelerated silting of the mouth due to the reduced amount of water entering the estuary.
- The second feature of human interference is eutrophication where nutrients taken up by plants sink to the bottom when the plants die and accumulate as organically rich sediments. These rich sediments feed more phytoplankton which leads to more sediments being deposited. The smell that concerns residents is the decomposing organic matter.
- The third feature is pollution from agriculture, recreation and housing developments, garden runoffs and septic tanks which lead to further eutrophication.

The consequence of eutrophication is predictable. Plants such as the submerged pondweed, reeds and bullrushes, and floating filamentous algae proliferate. Sun-bleached filamentous algae are often mistaken by residents as dried sewage.

In summary, estuaries are indispensable for their ecological richness, economic benefits, cultural significance, and environmental protection. This vibrant ecosystem is essential for the health of our town and the well-being of countless species, including us. Protecting and preserving estuaries is a matter of ecological stewardship and is crucial for sustaining the diverse benefits they provide to society. If we destroy them, we do so at our peril.