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Influence of sedimentological and hydrological processes on the distribution of salt marsh in the Keurbooms Estuary, Western Cape

Salt marshes are the most productive ecosystems, second after tropical rain forests in biodiversity and biological productivity, yet their survival is threatened by global sea-level rise and anthropogenic activities. They play a significant role not only on the ecosystem but in coastal defence, enhancing coastal sedimentation. However, their development and distribution has been closely linked to several environmental drivers such as tidal exchange, freshwater inflow, water column salinity and temperature, groundwater, elevation, sedimentation, sediment moisture, sediment organic and soil salinity. The present study is to be undertaken in the permanently open Keurbooms Estuary, located on the warm-temperate south coast of South Africa. The Keurbooms Estuary lacks well developed intertidal areas and as a result salt marshes are not extensive and *Spartina maritima* is limited. The sediment dynamics of the estuary and their influence on the ecosystem of the estuary, particularly salt marshes, are poorly understood. Therefore, the study will examine the sediment distribution of the estuary and quantify the current sediment load from the three sources. We hypothesise that the limited *Spartina maritima* area in the estuary is attributed to the sediment dynamics of the estuary. Therefore, sediment characteristics of *Spartina maritima* will be examined and compared to those of other estuaries (Knysna, Kromme and Swartkops) to get better understanding of their environmental drivers. Spatial distribution of salt marshes in the estuary will be examined using a series of GIS maps digitised from historical and recent aerial images to determine how the salt marshes have changed over time. In addition the sediment characteristics such particle size, moisture, organic content and soil salinity will be examined within the salt marshes to determine the main environmental drivers responsible for salt marsh distribution in the Keurbooms Estuary. This study will address conservation of biodiversity of salt marshes and identification of potential threats posed by past, present and potential future management practices and climate change.

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