(Meta)barcoding of seagrass communities: comparative approaches for biodiversity planning

Seagrass meadows are vital components of healthy estuarine and coastal environments, and support a complex array of associated biodiversity. Much of this biodiversity is small-bodied, cryptic and undescribed, but supports ecosystem services such as sediment turn-over, maintaining water quality and exploitation of resources through fishing. Often such communities of small-bodied species are poorly characterised and as such it is difficult to disentangle the drivers shaping natural communities, their distribution and also their conservation relevance and inclusion into spatial planning. This project aims to contribute towards ongoing efforts of characterising the spatial ecology of seagrass beds in Knysna, an important estuary experiencing high anthropogenic impacts. Our project will utilise barcoding of epi-and infaunal species of sediments associated with seagrass meadows across an environmental gradient. We aim to sample, identify, photograph and provide barcodes for between 50 to 80 species from three different size categories (ranging from 100µm to 10mm), thus providing insights into the under-sampled diversity of impacted estuarine sediments. In parallel, we will trial a metabarcoding approach to test whether this technique is a suitable alternative for more resource intensive and time-consuming traditional approaches, that also heavily rely on taxonomic expertise.
With our two-pronged approach of building a barcoding database and metabarcoding, we will contribute towards extending the tools available to not only South African, but researchers globally interested in the monitoring of biodiversity at smaller spatio-temporal scales focussed on the hidden and unseen biodiversity of strategically important environments.