Vulnerability, resilience and adaptation: the future for the seagrass, Zosteracapensis

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Seagrasses play an integral role in estuarine health, biodiversity and ecosystem services. The seagrass, \textit{Zosteracapensis}, is rated as ‘vulnerable’ by the IUCN, largely due to its fragmented distribution in southern and eastern Africa. Yet estuaries are a naturally fragmented habitat type and \textit{Z. capensis} is found along a wide range of physiochemical and climatic conditions, suggesting a high level of plasticity. Therefore, is \textit{Z. capensis} actually vulnerable to extinction? Our study aims to assess the vulnerability, resilience and potential for adaptation in \textit{Z. capensis}. Our first goal was to assess the factors driving its distribution and thereby assess their physiological vulnerability to change, using a generalised additive model (GAM). Preliminary results suggest that estuary classification (eg. temporarily open/closed), winter precipitation and turbidity appear to be important factors driving the distribution of the species. Global change is likely to impact the distribution and vulnerability of \textit{Z. capensis} through human activities such as damming and urbanisation, as well as climate induced change such as flooding and sea-level rise. Our second goal is to assess the genomic vulnerability using a next-generation sequencing approach. Examining local adaptation, genetic plasticity and variation in \textit{Z. capensis} populations throughout its range will allow us to make management recommendations so that this important biological resource may be preserved. Results are to be discussed. This is the first look at reassessing vulnerability and assessment criteria of \textit{Z. capensis} and combining physiological and genomic plasticity will result in more meaningful conclusions.