Long-term patterns in the phytoplankton community of the Swan Canning Estuary: findings from analyses of a 25-year dataset

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The Swan Canning Estuary, like many temperate microtidal estuaries around the world, is highly modified and affected by eutrophication, pollution and climate change. Phytoplankton communities are a vital component of estuarine environments, often being the first to respond to changes in the environment, with those responses having cascading impacts on entire food webs. Phytoplankton and a range of water quality parameters have been monitored extensively throughout the Swan Canning Estuary since 1994, encompassing weekly samples collected from up to 29 sites. The findings of a detailed analysis of this long-term multivariate dataset will be presented; identifying the broad-scale shifts in phytoplankton community composition that have occurred over the last 25 years and their key hydrological and physico-chemical drivers. Spatial and temporal patterns in phytoplankton community composition will be characterised, and related to patterns in prevailing water quality conditions, with and without various lag periods. Key findings from this dataset highlight both the value and challenges of long-term environmental monitoring and provide insight into what trends can be expected in other temperate microtidal salt wedge estuaries.