

The impact of Black Swan (*Cygnus atratus*) herbivory on the seagrass *Halophila ovalis* in the Lower Swan River estuary

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Waterfowl are often considered significant grazers in temporal lagoons and estuaries. This study investigated some of the strategies seagrasses use to cope with grazing by black swans (*Cygnus atratus*) in a temperate, estuarine seagrass ecosystem. Seagrasses can tolerate grazing through increased growth & utilisation of stored reserves, yet few studies have examined if these responses are consistent at different times of year. Some terrestrial plants have shown increased reproductive output and changes in the sex ratio after grazing, yet few studies have investigated the sexual reproductive response of seagrasses to grazing. This study assessed how the vegetative growth of the seagrass *Halophila ovalis* responds to grazing at different times of year, and if grazing effects sexual reproduction. Both an observational approach across a natural grazing gradient and experimental manipulations (simulated grazing) were used to address these questions. Across the swan-grazing gradient there were associations with vegetative growth, the nature of which depended on the time of year: seagrass production was greater in summer with higher grazing pressure, but reduced in winter. Similarly, branching increased in the grazing treatments during summer (Control - 0.18 branches node⁻¹, Treatment - 0.58 branches node⁻¹), but declined in winter (Control - 0.34 branches node⁻¹, Treatment - 0.08 branches node⁻¹). Across the natural grazing intensity gradient flowering and seed production were positively associated with grazing, and simulated grazing resulted in increased flowering (Control - 12 %, Treatment - 25%). *H. ovalis* has a variety of vegetative growth traits that allow it to tolerate grazing, however, its capacity to respond to grazing is reduced in winter. This may have important implications for the seagrass habitat if the grazing pressure increases during winter. This is the first study to demonstrate an increase in flowering in seagrasses following simulated grazing, and may indicate another trait that allows seagrasses to tolerate grazing.