



## **Swan Bay seagrass fluctuates in response to long-term climate cycles**

Scientists from the Marine and Freshwater Resources Institute (MAFRI) suggest that long-term climate cycles are responsible for seagrass fluctuations in Swan Bay. This is the result of a two-year study assessing the causal factors of seagrass loss in this bay.

Swan Bay is a small marine bay opening into Port Phillip Bay. It has international significance as a habitat for migratory wading birds and local significance as a nursery for juvenile fish.

Both birds and fish in Swan Bay depend on the food web and/or shelter provided by seagrass and more than half of the seagrass found in Port Phillip Bay is found in Swan Bay. Coverage of seagrass within Swan Bay has varied from relatively dense in the early 1980s to extremely sparse in the mid 1990s.

Seagrass is thought to expand during droughts and periods of calm weather. After a period of drought, storms cause flooding in catchment streams, which deliver pulses of nutrients and sediment into the bay. Seaweed growth is promoted, which smothers and kills the seagrass. Strong winds resuspend the sediments, as they are no longer bound together by the seagrass. Sediment re-suspension further reduces the amount of light reaching seagrass and causes more seagrass loss. This cycle of seagrass loss and sediment re-suspension persists until the weather changes. Long dry and calm periods allow the seagrass to germinate and grow in clear water and gradually expand its range.

Recent seagrass loss in Swan Bay was probably initiated in 1992, which was the wettest for 20 years. Thereafter several years of windy weather followed, promoting the cycle of seagrass loss and sediment re-suspension. Large areas devoid of seagrass were created which persisted until 1998. Seagrass began to re-establish in Swan Bay during 1998-1999, when rainfall totals were below average and zonal westerly winds were the calmest for 50 years. Seagrass growth has continued since. In 2002 seagrass cover in Swan Bay was similar to that mapped in 1980 and 2000, and in selected areas, seagrass appears denser than in 2000.

Long-term climate predictions for south-eastern Australia suggest higher than average rainfall in the future, with more falling in storm events. The management of the seagrass habitat within Swan Bay will therefore be dependent on our ability to reduce the erosive impact of heavy rains within the catchment. Swan Bay may be more vulnerable to these impacts than other seagrass beds in Port Phillip Bay, which lie in areas with little storm water input.

Over the past decade, with funding from State and Federal governments, land holders have extensively replanted native vegetation along stream banks in the Swan Bay catchment. These and subsequent plantings in the Swan Bay catchment are likely to become increasingly important in reducing erosion and will play an important role in managing Swan Bay's seagrass into the future.

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For more information about this project, please contact Andy Longmore on 5258 0111.