Swan Lake

Approximately 60% of the catchment has been cleared of native vegetation for livestock and now tree plantation.

Water quality monitoring commenced in November 2005 which included physical, chemical and biological parameters as outlined in the appendices.

Wetland Classification

Wetland type	Water Salinity	Consistency of Salinity	Size (Metres)	Shape
Lake	Subhaline - Hy-posaline	Poikilohaline	Mesoscale 980 x 755	Irregular

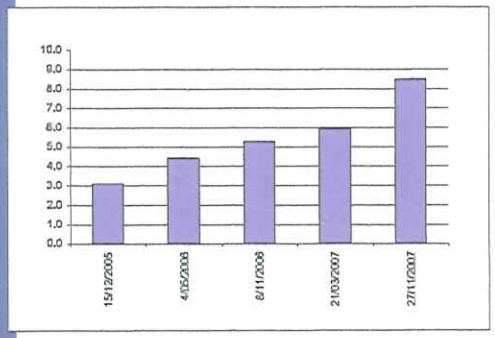
Classification of Swan Lake has been evaluated on the basis of guidelines developed by V & C Semeniuk Research Group. For further explanation please refer to the appendices.

Salinity

Salinity over the sample period ranged between Brackish (3.13mS/cm) and moderately saline (5.97mS/cm). Fluctuations in salinities relate to seasonal fluctuations in rainfall, evaporation and water levels.

Historically the lake would have acted like an estuary and drained to the ocean however it is likely that wind migration of sand dunes and infilling of creek lines has separated the lake from the ocean.

Salt may enter Swan Lake through surface and sub surface flow and through the three drainage channels entering the lake. Although the lake is perched above and recharges the groundwater, saline groundwater may discharge to the creek lines to the north.

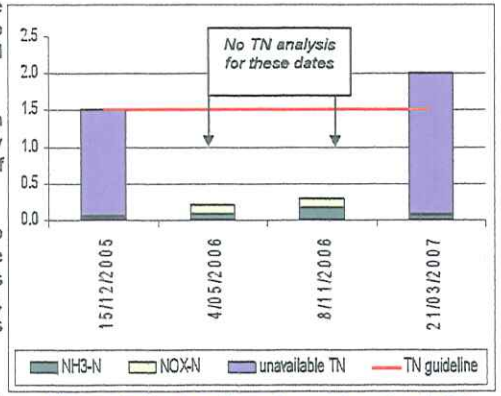


Salinity (mS/cm) over sample period

Nutrients

Total Nitrogen (TN) concentrations ranged between 0.85-2mg/L which exceeded the guidelines developed for ecosystem protection for southwest Australian wetlands for slightly disturbed systems of 1.5mg/L on one of the three sample occasions.

Dissolved inorganic nitrogen fractions of ammonia (NH_3-N) ranged between 0.01-0.17mg/L which exceeded the recommended guideline value of 0.04mg/L on two of the five sample occasions. Total oxidised nitrogen (NOx-N) ranged between 0.01-0.13mg/L which exceeded the recommended guideline value of 0.1mg/L on two of the five sample occasions.



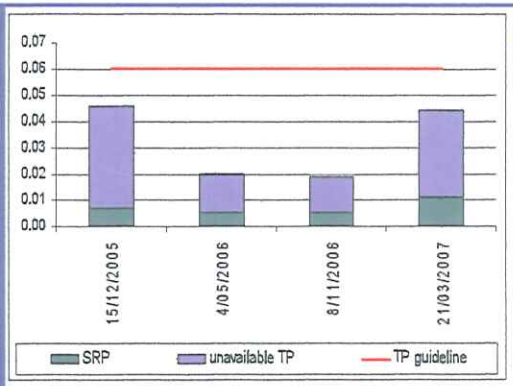
Nitrogen fractions in mg/L over the sample period with TN guideline illustrated

Total Phosphorus (TP) concentration ranged between 0.016-0.046mg/L which did not exceed the water quality guidelines of 0.06mg/L on any sample occasion.

Soluble Reactive Phosphorus (SRP) (form of phosphorus available for uptake by plants) ranged between 0.005-0.01mg/L which did not exceed the recommended water quality guideline value of 0.03mg/L on any sample occasion.

Swan Lake

South Coast Wetland Monitoring Project June 2008



Phosphorus fractions in mg/L over the sample period with TP guideline illustrated

Nutrients are recycled naturally through the swamp due to uptake and assimilation of nutrients by plants and animals and through release of nutrients for example through microbial breakdown of organic material.

Nutrients stores in the catchment may enter Swan Lake through surface and sub surface drainage flow from the surrounding land and through the three drainage channels.

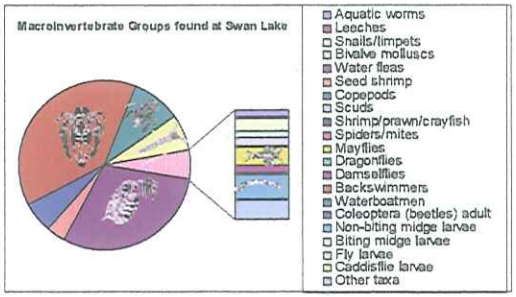
The low levels of nutrients may mean they have been readily taken up for growth by plants and algae. During sampling in March 2007 there was a thick scum of *Microcystis flos-aquae,* a cyanobacterium which can be toxic at high densities to humans and animals. Another bloom was observed after summer 2008 also.

Microcystis flos-aquae (cyanobacterium) accumulation on shoreline of Swan Lake

Macroinvertebrates

Twenty one groups of macroinvertebrates were found at Swan Lake during the monitoring period of which the most abundant included; Cladocera (water fleas), Ostracoda (seed shrimp), Copepoda (copepods), Notonectidae (backswimmers), Corixidae (waterboatmen), and Trichoptera (caddisflie larvae).

Other groups of less abundance were found including; Oligochaeta (aquatic worms), Hirudinea (leeches), Gastropoda (snails/limpets), Bivalvia (bivalve molluscs), Amphipoda (scuds), Decopoda (shrimp/prawn/crayfish), Acarina (spiders/mites), Ephemeroptera (mayflies), Epiproctophora (dragonflies), Zygoptera (damselflies), Coleoptera (beetles) adult, Chironomidae (non-biting midge larvae), Ceratopogonidae (biting midge larvae), Other Diptera (fly larvae), and Other taxa.



The diversity of macroinvertebrates found over the sample period ranged between nine to twenty one groups with a median of eleven which rates as average based on the Ribbons of Blue Wetland Habitat Score.

Each group of Macroinvertebrate play a different role in the food chain, some feed on organic material (Shredders), others feed on fine organic particles (Collectors/filter feeders), others graze on algae (Scrapers), some feed on each other (Predators), others are parasitic (Parasites) and some are Macrophyte piercers that feed off living plants and algae fluids. These groups are called Functional Feeding Groups (FFG). Some Macroinvertebrates fit into more than one of these groups, for example the Water Boatman is a Predator, a Scraper and a Macrophyte piercer.

A healthy wetland should have a representative of each functional feeding group. A loss or dominance in a particular group may indicate a