FACTSHEET

Wetlands

ROTTNEST IS wildlife

FACTSHEET

Wetlands

Habitat type: Wetlands

Habitat description:

Rottnest's wetland system is made up of salt lakes, brackish (slightly salty) swamps, and small freshwater holes or wet spots called seeps. The wetlands are fed by rainfall and groundwater coming to the surface from the underground aquifer.

Salt Lakes

Rottnest has a system of salt lakes which covers 10% of the Island at more than 200 hectares. It is the only island out of over 200 islands in Western Australia which has a salt lake habitat of this size. There are 12 lakes in total and the three deepest lakes are Government House Lake, Lake Serpentine and Lake Herschel. The levels of salt in the lake water can vary enormously but on average the salinity (salt content) is about four times higher than sea water.

Seven of Rottnest's salt lakes are permanent, while other parts of the wetlands including 5 of the salt lakes dry up in the summer. The wetlands are very important as they support all of the ecosystems on Rottnest Island.

Rottnest's three deepest lakes are special because they show *seasonal meromixis. Seasonal meromixis* is when the wetland water separates into two layers. From winter through to spring, a layer of cold fresh water forms above a warm, salty layer.

The fresh water comes from rainfall and groundwater seeping in. The two layers do not mix as the warm salty water is denser meaning the fresh water floats on top. The temperature difference between the two layers can be as much as 10°C! Rottnest's wetlands are the only wetlands in Australia where this phenomenon can be seen.

Rottnest's salt lakes support lots of plant life which are adapted cope with high levels of salt. The Samphire species is found closest to the water's edge. The Coastal Bonefruit, Grey Saltbush, Shrubby Saltbush, Cockies' Tongue and Coastal Pigface grow beyond the high water mark. The Sedge species is found the furthest back from the water.

Freshwater seeps and Brackish Swamps

The freshwater seeps are the breeding ground for Rottnest's three unique frog species and supply moisture to a whole range of plants.

Up to 19 freshwater and saltwater invertebrate families live in the in the wetland system and these provide food for Rottnest's reptiles, amphibians, birds and mammals. The wetlands also provide vital water and food for migratory shorebirds, including over 1% of the world's population of the Banded Stilt.

The swamps are fed by rain water and ground water and keep their moisture all year round. The plants that grow around them are mainly from the sedge species. Other species include the Beaded Samphire, Grey Saltbush and Shrubby Samphire which grow around the more salty margins.

Seeps are small freshwater holes or wet spots which are fed from springs supplied with water from the underground aquifer (water table).

Samphire Community

The samphire communities are found edging the Rottnest salt lakes. They are made up of plants of the samphire species such as the Beaded Samphire and the Shrubby Samphire.

The samphire community is one component of the salt lakes ecosystem – refer to this fact sheet for more details

Conservation Status:

Listed as 'Wetlands of National Importance' under the *Directory of Important Wetlands in Australia*. The Island's wetland system is represented in every category within the directory from highly saline (very salty) to fresh.

BirdLife WA has been surveying migratory birds at Rottnest Island since the late 1970s, providing significant data which has led to the recognition of the Island as a Wetland of National Importance in 1993 and as an Important Bird Area for seabirds in 2005.

The salt lakes also come under the listing of 'Wetlands of National Importance' by the *Directory of Important Wetlands in Australia*.

The Subtropical and Temperate Coastal Saltmarsh Ecological Community (which form part of the salt lakes ecosystem) has been listed as 'Vulnerable' under *The Environment Protection and Biodiversity Conservation Act 1999*.

Rottnest's microbialite communities are listed as Priority Ecological Communities (PEC) under *The Wildlife Conservation Act 1950*.

Local species:

Moaning Frog *(Heleioporus eyrei)*, Squelching Froglet *(Crinia insignifera)*, Western Green Tree Frog or Motorbike Frog *(Litoria moorei)*, Beaded Samphire *(Sarcocornia quinqueflora)*, Shrubby Samphire *(Tecticornia halocnemoides)*, Coastal Bonefruit *(Threlkeldia diffusa)*, Grey Saltbush *(Artiplex cinerea)*, Seaberry Saltbush *(Rhagodia baccata)* Cockies' Tongues *(Templetonia retusa)*, Coastal Pigface *(Carpobrotus virescens)*, Coastal Raw Sedge *(Gahnia trifida)*, Coastal Sword Sedge *(Lepidosprema gladiatum)*, Coarse Club Rush *(Ficinia nodasa)*, Ruddy Turnstone *(Arenaria interpres)*, Australian Shelduck *(Tadorna tadornoides)*, White-faced Heron *(Egretta novaehollandiae)*, Red-capped Plover *(Charadrius ruficapillus)*, Pacific Black Duck *(Anas superciliosa)*, Grey Teal *(Anas gibberifrons)*, Brine Shrimp *(subspecies Artemia)*, Fairy Tern *(Sterna nereis)*.

Threats:

The major threat to the wetland ecosystem is human impact caused by:

- Increased salt levels in the lake-water due to human activity and sea water intrusion (inflow or seepage)
- Altered hydrological regimes (changes to the normal water cycle concerning the salt lakes such as too much nutrient-rich groundwater and sediment-heavy road run-off entering the lakes)
- Chemical or waste contamination
- Clearing
- Trampling (humans walking or cycling)

DID YOU KNOW?

The pinkish colour of the smaller lakes is partly caused by the algae Dunaliella salina. It contains a naturally occurring pink substance called beta-carotene. When the shrimp eat these algae, it gives them a red colour too!

You can spot the samphire community in the "pink zone" of the lakes.

Together with the salt lakes, the freshwater seeps and brackish swamps make up Rottnest's wetland system.

The Freshwater seeps provide vital freshwater for Rottnest's plants and animals. They are also the breeding sites for Rottnest's 3 species of frogs.