



## The Lakes Of Fraser Island

Fraser Island is frequently described as a natural wonder and it is not surprising as this island, surrounded by salt water and formed entirely by sand, supports more than 100 freshwater lakes and numerous freshwater streams and tributaries.

Much of the water from the annual average rainfall of 1600mm is absorbed into an enormous dome shaped water table below the dunes. It has been estimated somewhere between 10 and 20 million mega litres of freshwater may be held in natural storage systems on Fraser Island.

Some of this water may be stored 30 metres or more below sea level and for up to 100 years before resurfacing. The volume and pressure of freshwater held, and the amount that flows out from the island daily, prevents intrusion by the surrounding salty, sea water.

The only area in Australia that has a higher concentration of lakes than Fraser Island is Tasmania. Forty of Fraser's freshwater lakes are perched in the tops of sand dunes high above sea level. Fraser Island also supports the largest perched lake in the world, Lake Boomanjin at 200 hectares, and has half of the world's perched lakes.

Perched lakes sit upon a layer of humus-impregnated sand or *coffee rock* formed from accumulating organic matter and sand cementing together into a largely impervious seal. Perched lakes are dependent on rainfall for the maintenance of water levels.

There is a slow loss of water from perched lakes due in part to evaporation and seepage through the coffee rock. Perched lakes are oligotrophic, meaning they have a low nutrient status, so little aquatic flora and fauna is found in these lakes. Another factor contributing to the low levels of organisms is the acidity (low pH) of the water caused by decaying organic matter. Most of the lakes contain only one species of zooplankton (*Calamoecia tasmanica*).

The island also has *window lakes*, formed when a depression exposes part of the regional water table. Window lakes are aptly named as they provide a window into the water table. These lakes are generally found close to the coast in dune depressions where the water table is higher than the ground surface level.

Many lakes north of Orchid Beach are thought to be window lakes due to the low elevation of the surrounding dunes. Because of the dynamic nature of many sand dunes, occasionally one will block the path of a flowing creek or stream forming a barrage lake.

Lake Wabby, an excellent example of a barrage lake, actually comprises two emerald-green lakes surrounded on one side by tall forest and on the other by the massive Hammerstone Sandblow. It is about a fifty minute walk from Seventy-Five Mile Beach. The lake is slowly being invaded by the sand dune and one day



may be completely covered.

Water is not thought of as coloured, yet the water of Fraser Island's lakes and streams is described as being either black or white. Black waters are coloured, or stained black, by organic matter. Black water is more acidic and contains higher amounts of aluminium and iron and around half the amount of silica that is found in white water.

The lakes of Fraser Island can hold water for a number of years before they are flushed. It is important that visitors to these lakes do not use any soaps or detergents in them as they may accumulate, change the chemistry of the water and harm the plant and animal life. Many soaps and detergents are biodegradable and so release additional nutrients, which may possibly affect the natural balance of the lakes.

There are numerous freshwater creeks flowing into the ocean from Fraser Island. Many of these creeks begin life as freshwater springs and some flow from points where the water table slowly seeps through the ground surface. During intense rainfall, water will run off dunes along drainage lines and into streams.

The largest number of creeks is located on the eastern side of the island; best known is popular beauty spot Eli Creek which pours out 80 mega litres of water daily. But at 160 mega litres per day, Bogimbah Creek, on the western side, is responsible for nearly half the island's surface run off of 325 mega litres per day.