Groundwater Dependant Ecosystem: Mataranka–Tindall Limestone Aquifer

What is a Groundwater Dependent Ecosystem?

They are ecosystems that have evolved to exploit all physical resources, most of Australia is either semi arid or has seasonal drought. Therefore if groundwater is available within reach ecosystems will develop that are to some extent dependant upon it.

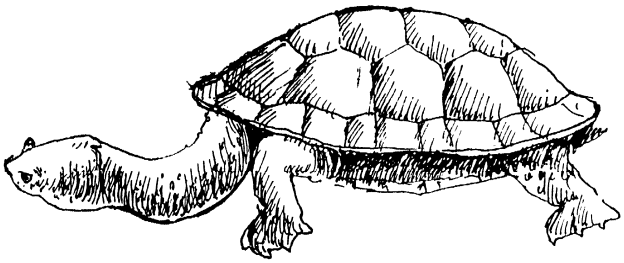
Ecosystems that are strongly groundwater dependant occupy only a small fraction of the Australian continent. However due to the Territories unique climate and landscape, groundwater plays a significant role in maintaining many ecosystems in the Top End and Arid Region.

Dependant or Not?

Not all ecosystems draw on groundwater directly. Some GDE's rely on groundwater below the surface but within the root zone. These types of ecosystems include some wetlands forests and woodland forests.

The most dependant type of ecosystems are those that rely on the discharge of groundwater to the surface – such as springs, rivers or wetlands.

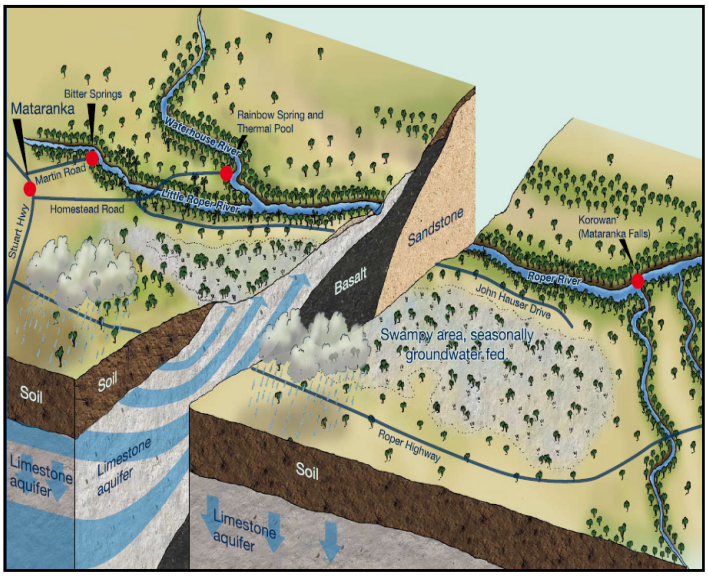
Rivers and creeks that flow all year are generally groundwater dependant because a significant proportion of their daily flow is derived from groundwater discharging into the waterway.



Where Are The Most Dependent Ecosystems?

- Mataranka Thermal Pools – is a natural discharge point from the underground Tindall Aquifer.
- Bitter Springs – is a natural discharge point from the underground Tindall Aquifer.
- Rainbow Springs – is a natural discharge point from the underground Tindall Aquifer.
- Fig Tree Springs – is a natural discharge point from the underground Tindall Aquifer.
- Elsey Creek – base flow is vital to the characteristic of in stream and near stream ecosystems, flora and fauna have a direct dependence on this available water.
- Salt Creek – base flow is vital to the characteristic of in stream and near stream ecosystems, flora and fauna have a direct dependence on this available water.
- Roper Creek – base flow is vital to the characteristic of in stream and near stream ecosystems, flora and fauna have a direct dependence on this available water.

- Roper River – base flow is vital to the characteristic of in stream and near stream ecosystems, flora and fauna have a direct dependence on this available water.
- Local swamps between the Roper River and Roper highway depend upon high groundwater levels to maintain its environment.



The water for these springs is sourced from underground water basins known as aquifers. The basin sourcing the Mataranka hot springs is the Tindall Limestone aquifer. The Tindall Limestone aquifer is an extensive fractured and cavernous aquifer system. Most of the water in this type of aquifer are contained within these fractures and large caverns.

How are Springs Formed?

During the wet season (Nov – March) water is fed in to the Tindall Limestone, in areas where the aquifer intercepts the surface of the ground. During the dry season (April – Oct) the aquifer forces the water out into these spring. This then feeds the Roper River during the dry season.

Major threats include:

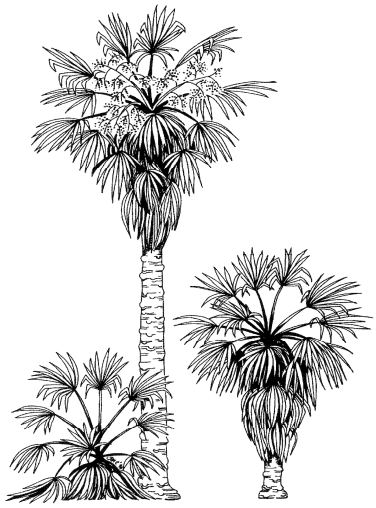
- Changes in groundwater levels,
- Increasing changes in climate and seasonal weather patterns,
- Increasing demands of groundwater and surface water for domestic,
horticultural and industry use.

How Are They Impacted?

The most poorly understood threat to GDE's arises as an unintended consequence of groundwater pumping/extraction. When groundwater is extracted at a rate that exceeds the rate of recharge the water table drops. This in turn reduces the flow of groundwater into nearby rivers, creeks and wetlands thereby causing these systems to become water stressed.

Water Resource Management

While annual monsoonal rainfall in the Top End generally assures full recharge of aquifers, the requirements of all Groundwater Dependent Ecosystems must be maintained all year round. In the Northern Territory, unless a Water Allocation Plan declares otherwise, strong attempts are made to limit total water extraction from an aquifer or river to no more than 20% of recharge. This leaves 80% of all recharged retained for environmental use.



***Livistonia rigida* are groundwater dependent.**

Further Information:

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