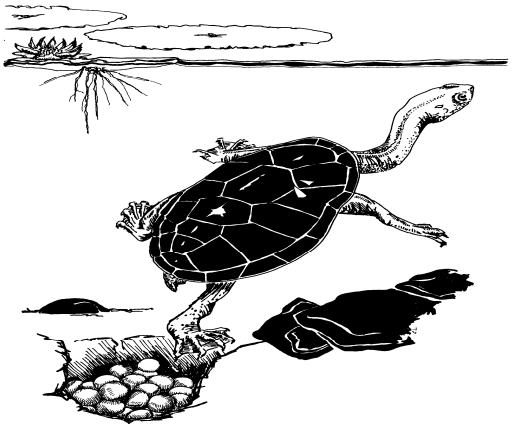
Groundwater Dependent Ecosystems: Howard East Aquifer

What are Groundwater Dependant Ecosystems?

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?

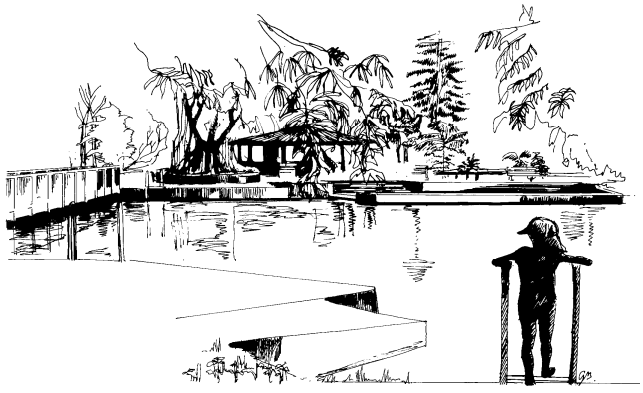
Not all ecosystems draw on groundwater directly. Some GDE's rely on groundwater below the surface but within the root zone. These types of ecosystems include some wetlands forests and woodland forests.

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 waterbody.

Where are the most dependant ecosystems?

1. Howard Springs – is a natural discharge point from the underground dolomite aquifer.
2. Howard 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.
3. Black Jungle – is a natural discharge point from the underground dolomite aquifer.
4. Mallaca Creek – base flow is vital to the riverine habitats and the animal's that are dependant upon it.



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.

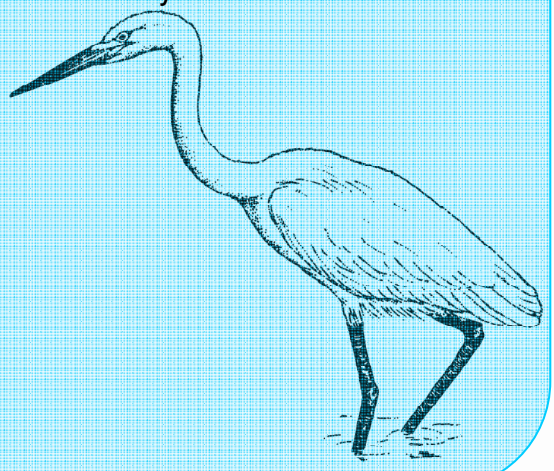
GDE's are important:

Every living organism relies upon a network of abiotic and biotic activities known as ecological processes. These include biogeochemical and hydrological cycles over long periods. When forests are felled, wetlands filled in, watercourses altered, and species over harvested, ecological processes are damaged or destroyed. As a result, many of nature's 'free' services to humanity are lost – the filtering of air and water, the assimilating of waste, the cycling of nutrients, and the creation of building materials. Humanity's survival depends on the survival of nature. Nature's survival depends on the way we choose to behave (Worboys, 2001).

Picture Above: Black Jungle

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, agricultural and industry use.



Further Information:

Water Resources Division

Department of Natural Resources, Environment, the Arts and Sport

Ph: (08) 8999 3678

Fax: (08) 8999 4445

Email: water.nretas@nt.gov.au

Web: www.nt.gov.au/nretas/water