Groundwater Dependent Ecosystems-Katherine River

What is a Groundwater Dependent Ecosystem?
Groundwater Dependent Ecosystems need groundwater to ensure their survival. Their dependence can range from total reliance to partial reliance. The Northern Territory environment contains a range of Groundwater Dependent Ecosystems. These Groundwater Dependent Ecosystems are often crucial to the maintenance of healthy and functioning ecosystems. They include:

- Terrestrial vegetation and Fauna - vegetation often depend on the diffuse discharge of shallow groundwater, either to sustain transpiration and growth through a dry season or for the maintenance of perennially lush ecosystems in otherwise arid environments. Groundwater dependent fauna have a reliance on Groundwater Dependent Ecosystems not only for habitat, but as a source of drinking water.
- Wetlands - Groundwater dependent wetland ecosystems are those that are at least seasonally waterlogged or flooded and often depend upon high groundwater levels to maintain that environment.
- River base flow systems - Stream flows may rely on groundwater discharge (to the surface) for a large portion of total flow. This often maintains in-stream and near-stream ecosystems when it is not raining.
- Aquifer and cave ecosystems - Subterranean life exists in different types of cavernous, porous and fissured aquifers.
- Estuarine and near shore marine systems - These types of ecosystems are the marine counterparts of the terrestrial ecosystems and can include coastal mangroves and salt marshes, coastal lakes, sea grass beds and marine animals. Some marine and estuarine animals depend on groundwater discharge to provide a suitable habitat or an appropriate environment in which species of plants and/or animals they eat will prosper.

How are we ensuring that Groundwater Dependent Ecosystem's are protected?
The Northern Territory Water Act provides for the investigation, allocation, use, control, protection, management and administration of water resources, except in regard to the extraction of surface water and groundwater for mining and petroleum activities.

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 recharge retained for environmental use.

For the arid zone, where significant recharge events are relatively rare, the water requirements of all Groundwater Dependent Ecosystems must be maintained and total groundwater extraction over not less than 100 years must not exceed 80% of aquifer storage as assessed before any extraction commenced.

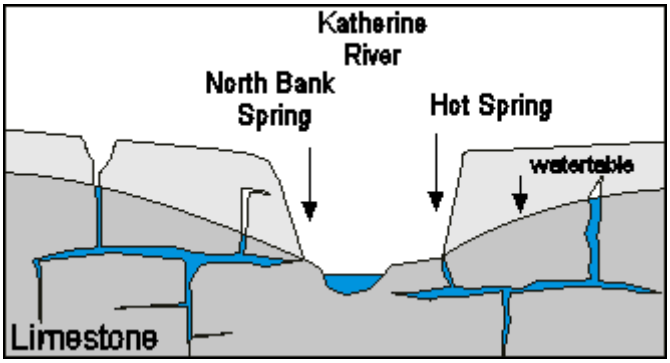
Case Study: Katherine River
The Katherine, Daly and Douglas Rivers rely on groundwater discharge to maintain a variety of Groundwater Dependent Ecosystem's including river baseflow, thermal springs and sinkhole systems. This region consist of three underpinning aquifers; the Oolloo Dolostone, Tindall Limestone and Jinduckin Formation. Groundwater and surface water in this region is predominately used for domestic, industrial, horticultural, agricultural, tourism and recreational purposes. Places such as the Katherine Thermal Springs and the Douglas Hot Springs have recreational and cultural values to local residents and indigenous custodians.

Northern Territory Government

TECHNICAL FACT SHEET

What is a Spring?

The Tindall Limestone aquifer is an extensive fractured and cavernous aquifer system. Most of the water in this type of aquifer is contained within these fractures and large caverns. The Katherine River cuts into the Tindall Limestone and also into the watertable. The groundwater is then able to drain into the Katherine River through fractures and cavities, known commonly as springs. Three major springs are found along the Katherine River adjacent to the town of Katherine. The Groundwater Dependent Ecosystems of the Katherine River rely on the flow of these springs to flourish. Management of this water source is critical as the discharge from these springs in the bed and bank of the Katherine River ensure the river flows all year round.




GDE-In-stream habitat Katherine River


GDE- Stream bank Vegetation, Katherine River


Thermal Spring, Katherine River Tributary

Where Does the Water Come From and Why is it Important for Groundwater Dependent Ecosystem's?

The Hot Spring is on the south bank of the Katherine River while the other two, North Bank and Springvale are on the north bank. Spring flows progressively decrease through the Dry season (April to November). Late Dry season flows for the Hot Spring, North Bank and Springvale springs have the following observed ranges: 284 to 555, 38 to 55 and 65 to 297 litres/second respectively. The Katherine River gains on average some 2000 to 3000 litres/second where it crosses the aquifer, indicating there are many more inflow points than these three major springs. Increasing changes in climate and seasonal weather patterns and increasing demands on groundwater and surface water for domestic, horticulture and industry use can place pressure on groundwater reserves. It is important that Groundwater Dependent Ecosystem's are maintained to ensure sustainable ecosystem health.

For assistance, contact the Water Management Branch:

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