

Gondwana Link groups have developed a plan for the section of Gondwana Link between the Fitzgerald River and Stirling Range National Parks, or what we call the Fitz-Stirling section. This identifies several targets for protection and restoration, each of which is described in a separate leaflet in this series. A short summary of the plan is also available.

These targets are not the only systems or species that are important in this landscape, but by concentrating on the chosen targets we believe we can most effectively improve the ecological health of the Fitz-Stirling area.

Our 6 targets are:

- creeks
- proteaceous rich communities
- tammar & black-gloved wallabies
- mallet and moort woodlands
- flat-topped yate woodlands
- **freshwater systems**



Freshwater rock pool. Photo: P.Deegan

WHY ARE FRESHWATER SYSTEMS A CONSERVATION TARGET?

We believe that these small systems in the Fitz-Stirling play a critical role in the survival of some fauna and flora species including some dragonflies, mammals, frogs and seed eating birds. Even water filled depressions in gravel pits and roadside drains provide frog breeding habitat where, surprisingly, white-faced herons are sometimes seen feeding on the frogs and tadpoles. Small freshwater sources may also be vital to fresh water aquatic plants such as the native nardoo (*Marsilea drummondii*).

Freshwater systems can be large or small and vary from spring fed pools such as this one beside the Pallinup River (Centre) to rain filled depressions in the granite rock.



A spider waits patiently beside a freshwater pool to catch its dinner.
Photo P Deegan.

Species that are reliant on freshwater sources are generally intolerant of saline water. For example, there is anecdotal evidence that frog populations have declined dramatically in the Fitz-Stirling over the past 20-25 years. Frogs are known to be sensitive to increased salinity with very small changes resulting in decreased growth rates and increased mortality in tadpoles. While we can't rule out other factors such as use of herbicides and insecticides in their decline, we believe that protecting the freshwater occurrences should help to keep frogs in this landscape.

Very little research has been carried out on the flora and fauna of freshwater occurrences in the Fitz-Stirling, but information from other areas has highlighted their importance for wildlife. Many birds such as parrots and other seed eaters, like bronzewing pigeons, need to drink every day and these freshwater pools may be their only source of drinking water (particularly where there are no close farm dams). Freshwater shrimps also rely on these water sources to survive. There may also be new species of crustaceans or invertebrates awaiting discovery in some pools.

WHAT ARE FRESHWATER SYSTEMS?

Freshwater systems can occur as spring or rain fed pools adjacent to saline creeks, or in granite systems or clay pans. Early maps of the area show many freshwater springs and seeps, but few of these remain today. Those that do are mostly small rock pools adjacent to creeklines and some are not permanent. They are usually muddy in appearance and can have nardoo growing in them. During winter they can be seething with tadpoles and invertebrate life.

Freshwater systems are often places of great significance for Noongar people.

THREATS

Freshwater systems are threatened by:

- physical disturbance (eg clearing, cultivation, road construction, etc)
- being buried under high silt loads
- increased salinity.

WHAT NEEDS TO BE DONE?

Identifying where the freshwater systems are located is the first step in improving our understanding of their ecology. Where they exist as rain-fed clay pans, it is important that they not be destroyed by earth movements, either for cultivation or road and track access. The spring-fed occurrences are likely to be most sensitive to local and regional changes in hydrology, so protection of their recharge areas is important. For any of these systems, it is also important that they are buffered by native vegetation to give their dependent fauna and flora the best chance of survival.

WHAT IS HAPPENING THROUGH GONDWANA LINK



Nardoo is a native plant found on freshwater pools. Photo Angela Sanders.

Using a range of sources to locate possible occurrences, we are recording information such as the plants and animals present and the water quality. At some sites we will establish regular monitoring to detect any changes in their condition. Once we have a better idea of the nature and distribution of these systems, we can work with other land owners to develop strategies to protect them.

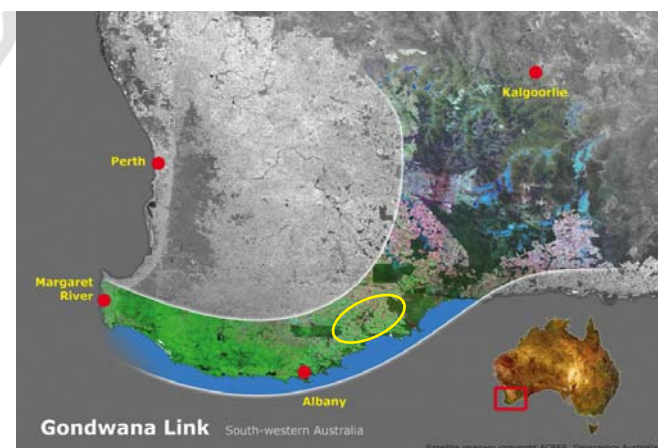
Frogs can be a good indicator of fresh water and during winter 2007 community members carried out a volunteer project where they noted frogs that were calling in the Fitz-Stirling. Although no new fresh water occurrences were found (most of the frogs were using dams or were around homes) this project was useful for identifying frog breeding areas. This survey is being continued so that we can monitor the health of the frog populations.



Many frogs rely on freshwater systems for their survival. Photos: G Harold.

Gondwana Link is one of the most ambitious ecological programs in Australia. A wide range of groups are collaborating to protect, manage and restore bushland in a 1000 kilometre-long pathway, from the wet forests of Australia's south west corner to the woodlands and mallee bordering the Nullarbor plain.

Fitz-Stirling section of Gondwana Link sits between the Stirling Range and Fitzgerald River National Parks.



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