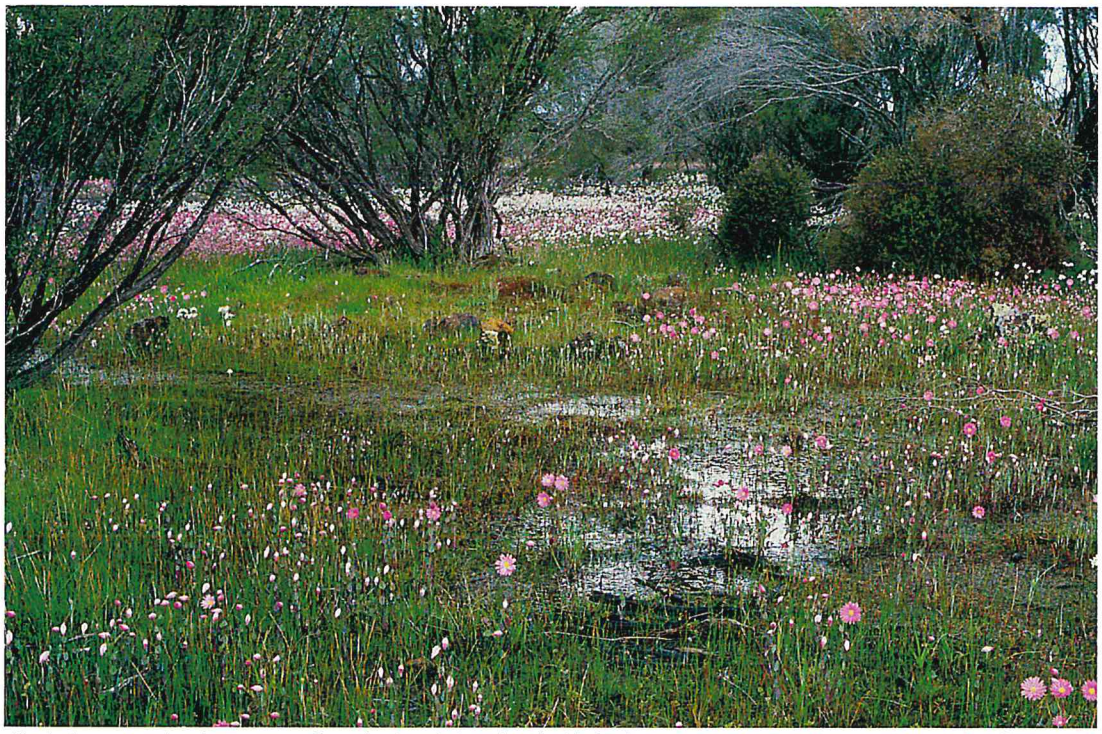
PLANT COMMUNITIES ON IRONSTONE & MUCHEA LIMESTONE
(Near Perth)

Two very unusual soil types occur near Perth, and are associated with equally remarkable plant communities. Both the 'bog ironstone' and 'Muchea Limestone' soil types are believed to have been associated with past springs, lakes, or swamps, with the iron or limestone being deposited by water percolating through the soil.



Gingin ironstone showing masses of everlastings is inundated with fresh water over winter. Photo – Alex Agafonoff

The Ironstone and Muchea Limestone deposits on the eastern side of the Swan Coastal Plain are usually associated with heavy clay soils. Approximately 97% of these heavy soils have been cleared as they were ideal for farming. The plant communities that occur on these soil types have been listed as Threatened Ecological Communities, as they are now extremely restricted in distribution. As there are only very small areas of each community remaining, and because of the level of threats to them, they have been ranked Critically Endangered.

Ironstone soil types occur in a number of areas in the southwest of Western Australia; near Kalbarri, near Eneabba, Gingin, Busselton and in the Scott River area. They are usually associated with extraordinary plant communities. Near Perth, the ironstone community is named 'shrublands and woodlands on Perth to Gingin ironstone'. The plant community on these ironstone soils is also the only one in the Perth area that is characterised by massed everlastings (*Rhodanthe* spp.) in the understorey. Floristic analyses of plots on this soil type link to 'herb rich shrublands in clay pans' as described in a floristic survey of the Southern Swan Coastal Plain by Neil Gibson and others.

The Muchea Limestone soil type once extended from Muchea to Benger approximately parallel to the scarp, and may have been indicative of a fracture line associated with the Darling Scarp. Sometimes the limestone is mistaken for coastal limestone but it is a precipitate and sediment from fresh water. The largest areas of the soil type occurred north west of Gingin and the most westerly occurrences are along the Gingin Brook. The plant community that occurs on these soils reflects the unusual mixture of limestone, clay and sands, with differences in the plant assemblages occurring as a result of the relative amounts of each. The community is named 'Shrublands and Woodlands on Muchea Limestone'. During a survey of the Southern Swan Coastal Plain in 1994, no significant remnants of the Muchea Limestone community were located on public lands and the community was thought to have been totally destroyed. Since then, vegetated occurrences have been located from Gosnells to north of Gingin. Most of the vegetated areas containing the Muchea Limestone are extremely small or degraded. The remnants in best condition where the Muchea Limestone is most developed in the soils are rises dominated by shrublands of *Melaleuca huegelii* (chenille honeymyrtle) or the mallee *Eucalyptus decipiens* (redheart).

Vegetated areas of Perth to Gingin Ironstone and Muchea Limestone are threatened by processes that cause changes to water levels and quality, such as excessive groundwater abstraction, grazing, mining, and other disturbances. The vegetated areas of the Ironstone and Muchea Limestone occur on or near the Gnangara Mound and are seasonally inundated with fresh water that may be either surface water and/or from contact with the groundwater table. Therefore maintaining local hydrogeology is likely to be very important for the community.

Recovery
of threatened ecological communities

The Department of Conservation and Land Management (the Department) is committed to ensuring that Critically Endangered Ecological Communities are not totally destroyed. This is done through the preparation of an Interim Recovery Plan (IRP), which outlines the recovery actions that are required to urgently address those threatening processes most affecting the ongoing survival of threatened ecological communities in the wild and begin the recovery process.

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Other threats to the plant communities include grazing and inappropriate fire regimes. Historical grazing would almost certainly have increased weed invasion in the communities. It is unknown to what extent fire has influenced the present structures or composition of each community.

For further information please contact the Department's Swan Region office on (08) 9368 4399.

The Department has set up a Threatened Flora and Communities Recovery Team for the Swan Region to coordinate the implementation of recovery actions that address the greatest threats to the survival of the shrublands and woodlands on Perth to Gingin ironstone and Muchea Limestone communities in the wild. Recovery Teams consist of representatives from the Department, community groups, private landowners, local shires and various government agencies. Recovery actions that have been, and will be, progressively implemented to protect the threatened ecological communities include:

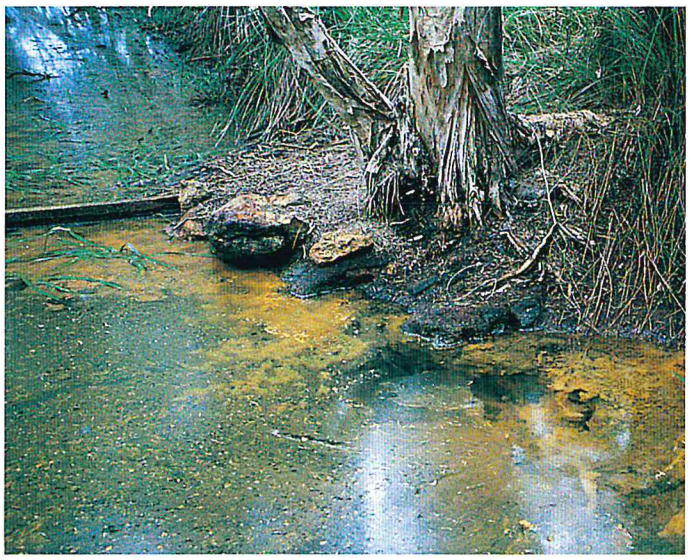
Protection from current threats:

Weed control, fencing, conducting further surveys, and regular monitoring of the health of each community.

Protection from future threats:

The development of strategies to manage fire, acquiring areas as conservation reserves, rehabilitation, ensuring that all relevant people are aware of the communities' presence and the need to protect them, and that all are familiar with the threats identified in the Interim Recovery Plans.

IRPs will be deemed a success if the there is an increase in the area and/or number of occurrences of the communities under conservation management, the diversity and composition of native species and processes are maintained, and there is a reduction in the numbers of exotic species and of threatening processes.



Formation of ironstone in a Gingin spring. Photo – Val English

Cleared occurrence of Muchea Limestone. Photo – Val English

The Muchea Limestone community dominated by chenille honey murtle (*Melaleuca huegelii*) and redheart (*Eucalyptus decipiens*). Photo – Robyn Phillimore

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Government of Western Australia
Department of Conservation and Land Management
Conserving the nature of WA
Natural Heritage Trust
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