GOGO FOSSIL FISHING

The search for a fossil emblem for Western Australia began after schoolchildren from the Sutherland District Primary School, in Dianella, suggested the idea of having a fossil fish from Gogo Station in the Kimberley district of Western Australia, and forwarded a detailed submission to Premier Richard Court last year.

John Long, Curator of Fossil Vertebrates at the Western Australian Museum, was then given the task of heading up a team of scientists and representatives from industry to make a recommendation to the Minister for Arts, Hon. Peter Foss. Submissions closed on 30 June 1995 and included fossil stromatolites from the Pilbara, ancient lamp shells and sea lilies from the Gascoyne region, and sea scorpion track-ways and marine reptiles from near Kalbarri. (Regular readers might recall articles on stromatolites in *LANDSCOPE*, Summer 1991–92, and sea scorpion track-ways in *LANDSCOPE*, Winter 1993.) The Gogo fish (*Monamaraspis kaprios*) was suggested by the children after they had voted on a number of different fossil fishes.

So, what is so special about the Gogo fish? The fascinating history of this fossil spans 370 million years, which makes it imperative that it and its contemporaries be jealously guarded from damage or loss. John Long has had a long association with the Gogo fish, having studied it for many years. His new book, *The Rise of Fishes—500 million years of evolution*, has just been published by the University of New South Wales Press, Sydney. It features the Gogo fish skull on its cover, and John remembers the excitement he experienced at the time he found the skull:

The fossilised skull of the Gogo fish (above) also features on the cover of John Long's new book (left).
Photo – Kristine Brimmell

"The hammer struck another limestone nodule, and after hours of searching in the hot Kimberley sun, I spotted a glint of shining bone. It was a fossil fish, but not just any ordinary fossil. The fish entombed by the calcareous rock was soon freed to reveal its delicate bones in perfect three-dimensional form."

Such marvellous preservation makes the Gogo Formation, in the north of Western Australia, one of the world's most important fossil localities.

These ancient fishes lived around a great barrier reef system fringing the southern part of what is now the Kimberley region. Today, the fossil remains of these fishes and other reef-dwelling creatures are to be found, preserved inside the orange limestone nodules of the Gogo Formation. The great diversity of fishes found in these deposits are preserved in such exquisite detail because of the lack of later geological activity such as large movements of the Earth's crust, which usually deform and compress fossils of this age.

Gogo is significant, not only because the superb state of the fossils tells us much about the anatomy and structure of these early fishes, but also because of the great diversity of species found so far—more than on any other site of this age in the world. At the same time as the Gogo fishes were swimming around the Kimberley, the oldest-known amphibians were taking their first tentative steps on land in eastern Australia, and they provide valuable scientific information about this great leap in evolution.

John found the first complete skull of one of these rare fishes in 1986 and a second specimen was found in 1990. In all, about 40 new species of fossil fish have been identified from the Gogo deposits.

It is significant that the Gogo fish was found near Mimbi Caves, an important area of the Kimberley that is being proposed for classification as a nature reserve. To date, Mimbi Caves have been a well-kept secret by many people concerned that

the ecologically fragile area could be irrevocably damaged by too many visitors. But even the best-kept secret will out, and more and more people are seeking information on how to gain access to the caves.

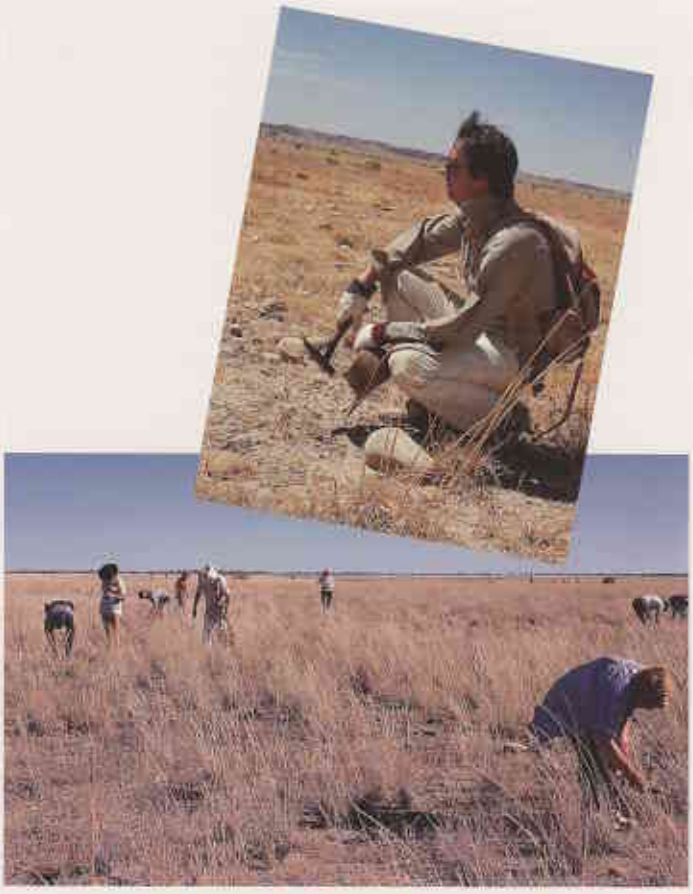
In response, and with a view to protecting important fossil deposits and Aboriginal cultural sites, the Department of Conservation and Land Management (CALM) is helping the Mimbi Aboriginal Corporation (MAC) to secure land tenure over the area.

West Kimberley District Manager Allen Grosse says that when this matter is resolved, it is intended that CALM and MAC will enter into an agreement to manage the area as the Mimbi Caves Conservation Park.

Apart from the important fossil fish deposits in this part of the Kimberley, the most predominant physical feature of the area is the extensive labyrinth of caves, tunnels and narrow gorges that pass through the Lawford Range.

"Many of these features are easily accessible. Several caves have permanent, fresh-water pools. The cave system is believed to be among the largest in Australia," Allen said.

Obviously, the fossil history and geological importance of this area demands that the area be managed with with a high degree of sensitivity, so the management plan will include steps to be taken to minimise any negative visitor-impact on the area.



Above right: *John Long searching for Gogo fish fossils east of Fitzroy Crossing, near Mimbi Caves.*

Right: *Volunteer helpers searching for fish fossils in the valleys around the ancient Devonian Reef.*
Photos – John Long.

THE MALLEE MUNCHER

A prototype mallee harvester, developed by CALM senior technical officer Tim Birmingham, is attracting keen interest among farmers interested in oil mallees as a viable cash crop for the lucrative eucalyptus oil industry.

Tim developed the harvester, known as "the mallee muncher", by modifying an old wheat harvester in CALM's Dwellingup workshop.

This, in conjunction with a still developed by Phil Scott from the Department of Agriculture, has been used at oil mallee field days to demonstrate how more than 200 litres of eucalyptus oil can be extracted from about 10 tonnes of mallee leaf material. Batches of this oil have been given to several large international companies for early market development.

In 1993, CALM's Vegetation and Tree Planting Advisory Service (VATPAS), in association with interested farmers and the Department of Agriculture, embarked on large-scale plantings as a beginning to the establishment of 5 000 hectares in each of six centres (or planting cells) at Canna, Woodanilling, Narembeen, Kalannie, Wickepin, and Esperance.

Also in 1993, more than 200 000 oil mallee seedlings were planted, increasing to more than a million seedlings in 1994, with nearly three million seedlings expected to be planted by the end of the 1995 planting season.

Photo – John Bartle

The seedlings are offered to the farmers in the planting cells as part of a share-farming contract with CALM.

All plantings are integrated into the farming system, where they will provide the maximum landcare benefit as well as a possible income from the sale of eucalyptus oil, should the industry develop.

As well as the large-scale plantings, more than 30 oil mallee species trials and 12 genetic improvement trials have been established throughout the Wheatbelt to further our knowledge on species selection and planting layouts. These plantings will also provide a workbase for further tree breeding to increase vigour and oil content.

LANDSCOPE

VOLUME ELEVEN NO. 1 SPRING ISSUE 1995

The threatened Wyalkatchem foxglove is being given a helping hand by scientists from CALM and Kings Park and Botanic Garden (see page 17).

This nesting pair of splendid fairy-wrens is one of the many 'Birds of the Stirling Range' (see page 36).

WA Goldfields timbers are fast becoming recognised as prime materials for producing world-class musical instruments. See 'Musical Timbers' on page 48.

A new CALM book, Dive & Snorkel Sites in Western Australia, *will encourage novice divers and snorkellers to explore the rich and diverse coastline of WA. See 'Secrets of the Sea' on page 10.*

The common rock-rat, photographed here in the Kimberley, has recently been recorded in the Kennedy Range National Park. See page 28 for a profile of this wonderful wilderness area.

FEATURES

REGULARS

COVER

The brilliant purple flowers of the twining fringed lily (*Thysanotus patersonii*) entwined around the burnt stem of a slender banksia (*B. attenuata*). See 'After the Burn' on page 21.

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Cartography: Promaco Geodraft
Marketing: Estelle de San Miguel ☎ (09) 334 0296 Fax: 334 0489
Subscription enquiries: ☎ (09) 334 0481
Colour Separation by Prepress Services
Printed in Western Australia by Lamb Print

Pubished by Dr s Shea, Executive Director
Department of Conservation and Land Management,
50 Hayman Road, Como, Western Australia 6152.