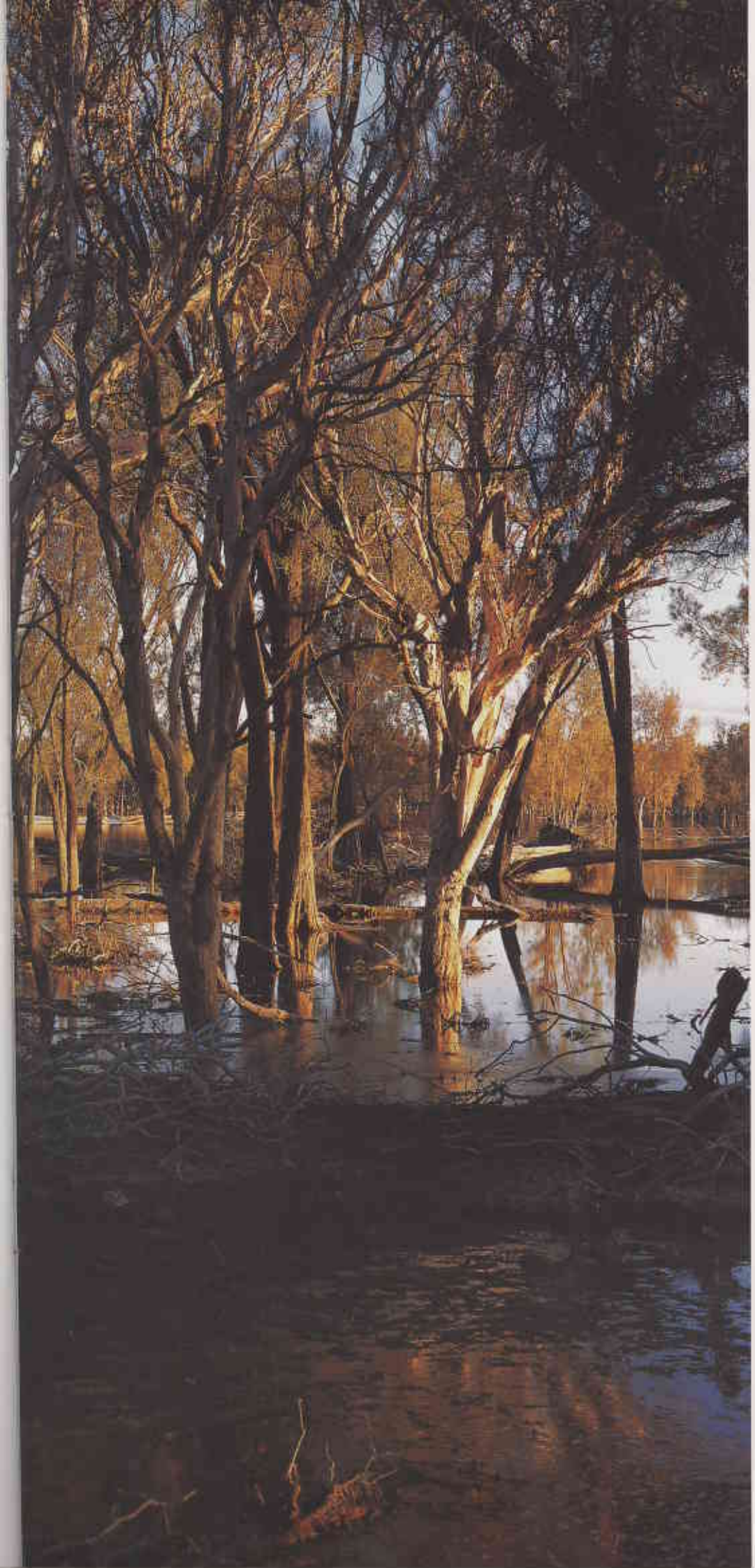

RECOVERING LAKE TOOLIBIN

by Kate Hooper and Ken Wallace

'. . . [the lakes] were all mostly swamp sheoak and stuff like that, with just a complete canopy. When you got in underneath it on a hot summer's day it was just like going into a refrigerator - it was beautiful in there. Absolutely covered from one end to the other, it was almost impossible to get a little punt through it. You could get through with a canoe alright, with something sharp-nosed, but it was absolutely thick.'

Ray Rigby, who grew up in Yealering, remembering Wheatbelt freshwater lakes in the 1930s.

Increasing salinity of our land and waters threatens nature conservation and agriculture in Western Australia's Wheatbelt. Some solutions to this enormous problem may lie in an ambitious plan to save Lake Toolibin, a unique freshwater wetland in the Wheatbelt.

Lake Toolibin is the largest in a chain of seasonal freshwater wetlands in the headwaters of the Arthur River, east of Narrogin. Thickets of graceful swamp sheoaks (*Casuarina obesa*) and gnarled white paperbarks (*Melaleuca strobophylla*) grow across the bed of the lake, providing cover and nesting sites for many rare and protected waterbirds. The secretive freckled duck (*Stictonetta naevosa*) shelters in the denser vegetation, and larger birds such as the great egret (*Egretta alba*) and yellow-billed spoonbill (*Platalea flavipes*) nest on the branches of taller trees. Rufous night herons (*Nycticorax caledonicus*) can be seen roosting in the paperbarks during the day. Large numbers of more common species such as the great cormorant (*Phalacrocorax carbo*) and the striking great crested grebe (*Podiceps cristatus*) also nest and raise their young there.

More species of waterbird breed in the Toolibin Reserve than in any other single wetland in south-western Australia. Without 'nurseries' such as this, many waterbirds will not be able to breed in the South West (see 'The Last Lake', *LANDSCOPE*, Winter 1988). But Lake Toolibin is much more than a refuge for waterfowl; it constitutes a unique community. It is the only remaining Wheatbelt wetland in which you can see extensive stands of living swamp sheoak growing across a lake floor.

Adjoining the lakes are woodlands of the sighing sheoak (*Allocasuarina huegeliana*) and the acorn banksia (*Banksia prionotes*). In spring, delicate orchids appear beneath the trees. Natural woodlands of York gum (*Eucalyptus loxophleba*) and jam wattle (*Acacia acuminata*), which are now rare in the Wheatbelt, grow around the edges of the wetland. Toolibin is one of the last wooded freshwater lakes in the southern Wheatbelt.

Previous page
The areas of swamp sheoak and paperbark are one of the features of Lake Toolibin that make it so special.
Photo - Kim Howe

Right: A local farmer planting trees for land conservation. Trees help to lower the water table and thus help reduce salination problems.
Photo - Kim Howe

SALINATION

Until the first wave of clearing for agriculture (1890-1930s), freshwater wetlands were widespread throughout inland south-western Australia.

Most of these wetlands have fallen

Opposite page: Lake Taarblin was once a freshwater lake. It is now dominated by dead trees and samphire.
Photo - Kim Howe

Left: Mallees planted in the Toolibin Catchment for both land conservation and potential eucalyptus oil production.
Photo - Kim Howe

victim to salination, waterlogging and inundation. The trees die because they cannot survive the combination of increasingly salty water and being inundated with water for longer periods. Many waterbirds disappear as the sedges and trees that shelter them die and their aquatic food changes. Some hatchlings, such as most ducks, grebes and coots that require fresh—or only slightly brackish—water for the first few days of their lives, cannot survive.

Visitors to the Wheatbelt cannot fail to notice the graveyards of dead trees that fill many lakes. These are all that remain of the many freshwater wetlands that once dotted the landscape.

It is precisely because the grey starkness of saline lakes such as Lake Taarblin has become so familiar, that the greenness and variety of nearby Lake Toolibin is so striking. It reminds us of what we have already lost.

THREAT TO AGRICULTURE

Australians have been clearing trees to establish farmland for decades, and without our agricultural industries we would not have prospered. But the decline of wetlands was the first sign of the trouble facing our agricultural lands; farmers are now seeing the bitter harvest of salt.

In the early 1970s, trees began dying along the western shore of Lake Toolibin. Concerns from the local community led to the formation of the Northern Arthur River Wetlands Rehabilitation Committee in 1976. The main aim was to ensure the continued existence of the lake as a breeding area for waterbirds, but the committee's studies highlighted the need for control of salinity within the whole Toolibin catchment.

The flat farmland near the lake is becoming increasingly waterlogged and salty, and much of the impetus for change came from concerned local landholders. The Wickepin Land Conservation District Committee, one of the first in WA, was formed in 1985 and led a major community effort to rehabilitate salt-affected land and plant trees in the catchment.

If the water balance of the area is not restored, not only the wetlands but the agricultural productivity of huge parts of the catchment will be lost. In 1988 alone, the cost of lost rural production due to land salination in the Wheatbelt is estimated to have been 44.2 million dollars.

Government agencies have also been promoting initiatives aimed at conserving the lake and its environs. The Department of Conservation and Land Management (CALM) has purchased and rehabilitated land adjacent to the lake, so that perennial vegetation now completely surrounds the lake. The Department of Agriculture and CALM are encouraging the planting of trees and shrubs in the catchment. These act as biological pumps and some may be harvested commercially. Bores and pumps have been installed to extract groundwater from under the lake and to test whether pumping on a larger scale could lower groundwater to a safe level; the results so far are encouraging.

State, federal and corporate resources needed to fund these and other projects have been provided through CALM, the WA Department of Agriculture, the Water Authority of WA, Alcoa, Greening WA, the National Landcare Program, the Australian Nature Conservation Agency and local landholders. None of this would have been possible without close co-operation between these groups.

RECOVERY

In 1992, it was decided that the most effective way of co-ordinating the many actions needed to save Lake Toolibin was to draw up a recovery plan for the management of the whole catchment. Conservation managers, scientists and members of the local farming community got together to decide on the actions needed to protect the lake and

SALINATION OF WETLANDS

Salination is caused by changes in the delicate balance between surface water and groundwater systems.

In many agricultural areas of Australia, water tables are rising because perennial native vegetation has been replaced with crops and pastures that use less water. As it rises, the groundwater dissolves naturally occurring soil salts and brings them towards the surface.

A rising water table can cause salination of freshwater wetlands in two ways. Low-lying swampy areas can become overwhelmed as saline groundwater rises up through their beds. Alternatively, salt that has been brought to the surface and deposited in surrounding farmland can be washed into the wetlands as surface run-off after rain.

In addition, clearing of native vegetation means that less rainwater is trapped by the vegetation and more runs off into the wetlands. There is simply more water about, so seasonal wetlands are wetter for longer.

Any attempt to address the problem of salination must tackle these three issues and the complex interactions between them.

surrounding lands. All those concerned recognised the need for urgent action, and there was a broad consensus on the recovery procedures that should be implemented.

The recovery plan integrates short-term measures, such as drainage and pumping of saline groundwater from under or around the lake, with long-term measures such as revegetation. The plan will also encourage and help to implement sustainable land use throughout the catchment. Local farmers are actively involved and have formed the Toolibin Catchment Group, which focuses on the sustainable agricultural practices necessary to save the lake and maintain farm productivity. Good land management by farmers is as essential as pumping and tree planting around the lake. For example, selecting crops that use more water can improve the water balance for all land users in the catchment.

Land management programs of this kind are not merely technical and financial projects; their success also rests on social and cultural issues. Catchment boundaries do not necessarily reflect social boundaries, and the problems facing land managers may differ across the landscape. Land management strategies can stand or fall on these kinds of issues. This is why programs that integrate the land management of individual farms and reserves are so essential.

One of the most important achievements of the Lake Toolibin Recovery Plan is the fact that it represents a co-ordinated effort between local communities and government agencies.

AN ACHIEVABLE VISION

Although the main objective of the Recovery Plan is to conserve the unique plant and animal communities of Lake Toolibin, it is designed to achieve much more. Conservation must go hand in hand with increasing the productivity of agricultural lands within the catchment in a sustainable manner.

There is no cheap or easy way of reversing the salination process, and some argue that we should simply adapt our agriculture and switch to saline grazing systems. But if we do not fight salination it is estimated that at least 2.4 million hectares of agricultural land in WA (or 15 per cent of arable land) will become acutely degraded, and much larger areas will probably be mildly affected by salt.

The Toolibin project offers a unique opportunity to find biological, drainage and engineering solutions to these problems. What we achieve with this project will be a model for conservation and sustainable land use in the Wheatbelt and the rest of Australia.

Above: A juvenile rufous night heron—one of several bird species that visit this Wheatbelt lake.
Photo - Jiri Lochman

Below: Paperbarks and swamp sheoaks provide a welcome habitat for freckled ducks.
Photo - Mike Power

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Yellow-billed spoonbills have visited Star Swamp for the last three years. They sift small crustaceans from the shallow water. The story of this suburban wetland is told on page 45.

About a quarter of Stirling Range National Park has been closed to protect its unique flora from dieback desease. Turn to page 10 to discover these plants on the edge.

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A marine park is proposed to adjoin the Prince Regent Nature Reserve. The Complex Coast (page 49) discusses the need for integrated management of land and sea around our coast.

Found all over Australia, short-beaked echidnas are one of two Australian egg-laying mammals. They still occur around Perth. See page 18.

The orange-bellied frog is part of the South West's fine-scale richness and variety. Find out more about these fascinating creatures on page 35.

FEATURES

REGULARS

SPECIALS

COVER

The coral gardens in the sheltered lagoons of the Rowley Shoals contain dozens of different varieties of staghorn coral and are inhabited by a huge range of colourful reef fish. See 'Coral for Keeps' on page 28.

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