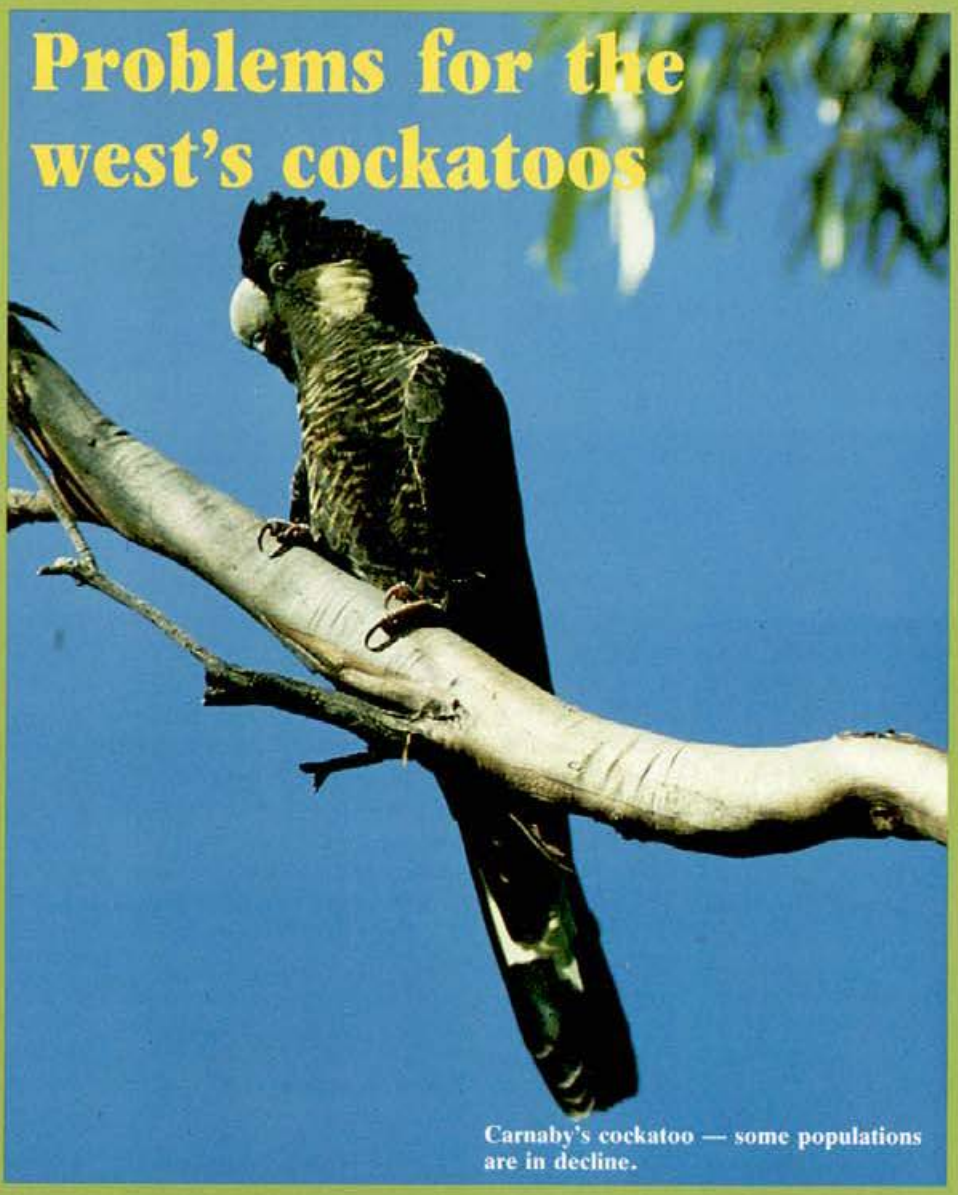
Problems for the west's cockatoos



Carnaby's cockatoo — some populations are in decline.

Western Australia's landscape has experienced radical change over the last century. Clearing of forests and woodlands — with replacement by cereal crops — has been on a scale, and at a rate, with few parallels anywhere else on this earth.

The figures show it all. European colonists arrived in 1827; and by 1890, with fire, axe, and muscle, they had cleared only 500 square kilometres for agriculture. Then the penetration of transport links into the hinterland, and various soldier settlement and new settlers schemes, brought an acceleration in tree-clearing, with the biggest impact coming after World War II. In fact, more than half the land developed for agriculture has been cleared since 1945. By 1985 more than 190 000 sq. km, or two-thirds of the south-western corner of the State, was being farmed.

With its reliable winter rainfall, the area — at least in agricultural terms — has been very successful, but there can be little doubt that the replacement of forest and woodland with exotic annual vegetation has had a dramatic impact on the ecology of the region. The native animals in particular have been hard hit. One estimate suggests that, of the 46 indigenous mammals occupying the wheat region at the time of European settlement, 13, or 28%, can no longer be found.

Native birds are also at risk. The effects of the recent changes on the eight cockatoo species resident in the area have been investigated by Dr Denis Saunders, Dr Graeme Smith, and Mr Ian Rowley, of the CSIRO Division of Wildlife and Rangelands Research. Their surveys have shown how the swing to agriculture, and in certain areas to mining and forestry, has influenced the distribution and prospects for continuing survival of each species.

A pair of Major Mitchell cockatoos.

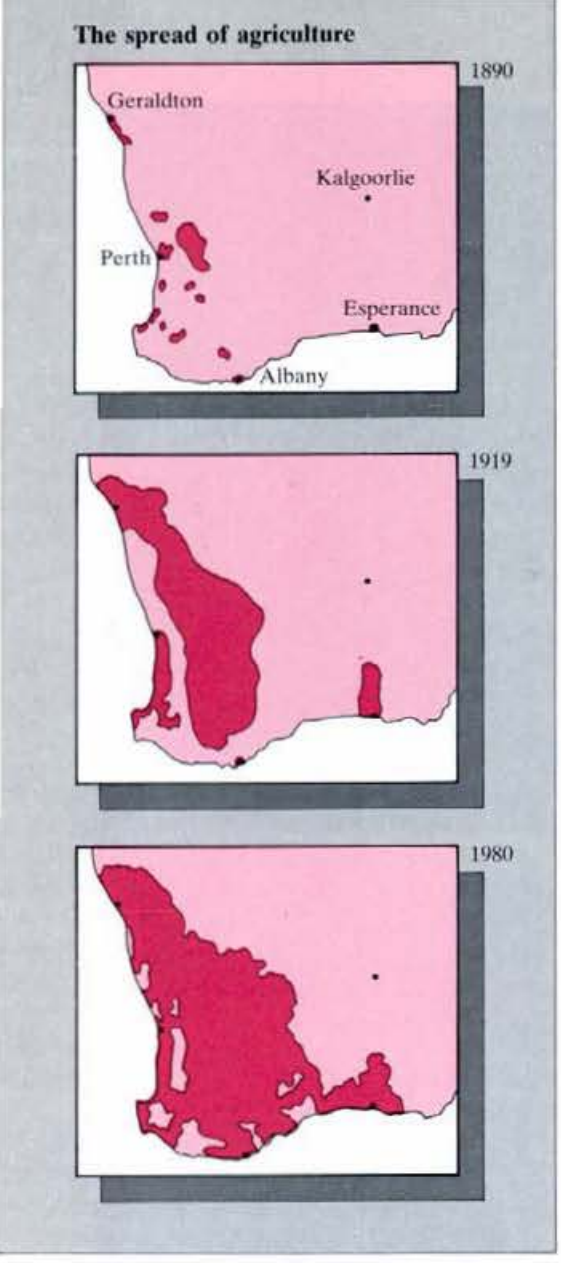
Feed and nests

For those cockatoos sufficiently versatile to accept cereal grain and seeds of the newly introduced weeds into their diet, agriculture has been a boon. The galah, little corella, long-billed corella, and inland red-tailed black cockatoo have all increased their ranges and, presumably, their populations with the expansion of cereal-cropping.

The galah probably provides the best example of this expansion. Before the Europeans came, it was largely confined to small areas surrounding the watercourses running through semi-arid and arid areas. It fed on grass and wattle seeds and used the trees along the watercourses for nesting, and was generally found north and east of the present wheat belt.

The birds have lost the bulk of their habitat and what remains is in decline.

However, with clearing came abundant food and nesting sites in the remnant vegetation, and the galah's south-westward expansion, even as far as the coast around Perth, was assured. In the latter stages of this expansion the bird has profited from



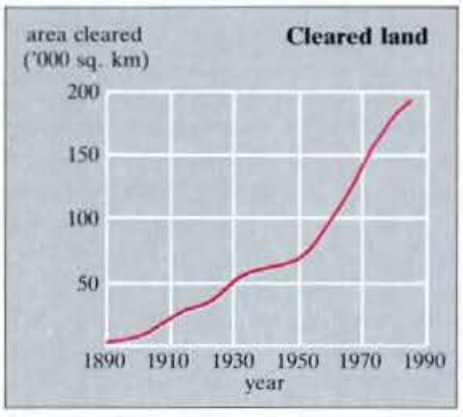
The landscape of south-western Western Australia has been transformed by clearing for agriculture.

the urban-dwellers' love of horses. Generally these animals are confined to small paddocks without enough grass to support them; instead they are fed grain, much of which passes through undigested. Since the galah is not a fussy feeder, it thrives.

Aiding its spread is the decided territorial advantage the galah pairs have over other breeding cockatoos. While the others only use their breeding holes once a year, the galahs maintain a continuing attachment — visiting their favoured hole at least once a day throughout the non-breeding season. If they sense a take-over bid they are prepared to fight and, as observers generally note, they win in the end.

Some of the other cockatoos have not fared nearly as well. In particular, the Western Australian populations of Major Mitchell's cockatoo and the short-billed white-tailed black cockatoo (or Carnaby's cockatoo) are in difficult positions.

The Major Mitchell, at first glance,



Clearing of land in the south-west of Western Australia has been at a pace with few precedents.

seems an unlikely species to be threatened by agricultural expansion. It's a versatile feeder, consuming a variety of seeds from cones, nuts, and fruit; when it's in the wheat belt, spilt grain and weed seeds provide the major part of its diet. The trouble is that it is a very territorial bird and a breeding pair won't tolerate another couple within 2 km of the nest.

This territorial habit imposes a severe restriction on the Major Mitchell's population potential. In a 450-sq.-km study area — essentially a patchwork of woodlands set amid large wheat paddocks — Mr Rowley found only 16 breeding pairs, with another 100 Major Mitchells forming a non-breeding flock. The corresponding figures for the galah would be approximately 350 breeding pairs, and a non-breeding flock of more than 3000 birds. As the woodlands are cleared for crops Major Mitchell couples are displaced and often can't re-establish themselves; as a consequence the population is in decline.

Native feeders suffer

Birds that depend on the native vegetation for sustenance face even more severe problems when woodlands and forests are felled. Such a bird is Carnaby's cockatoo.

Its prime food source is seed from eucalypts and the Proteaceae family (grevilleas, melaleucas, and hakeas), and it has very few alternatives when these are in short supply. Dr Saunders has followed the fortunes of Carnaby's cockatoo at several sites scattered through the wheat belt from 1969 to 1984. The data he has collected illustrate how clearing for agriculture can lead to local extinctions.

At one site (Manmanning), agricultural development began in the 1920s, and by 1962 more than 90% of the area was devoted to farming. At the beginning of the survey it was obvious that the bird population was in trouble: the patchy vegetation meant parents had to forage further for food and often didn't return to the nest between dawn and dusk. As a result nestlings were underfed and neglected and nesting success was low, with the fledglings that did emerge being smaller than comparable birds at other sites. By 1977 Carnaby's cockatoo was no longer found in the area.

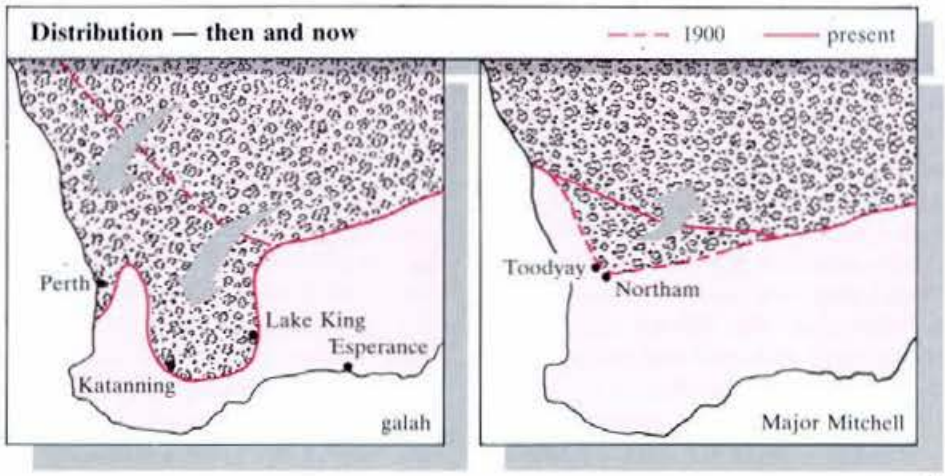
Similar scenes are being played out right throughout the wheat belt. And, while large flocks of Carnaby's cockatoo congregate around Perth during the non-breeding season, indicating to the casual observer that all is well, these may be old birds that are drawn from very large areas — areas where large-scale change has occurred or is still in progress, and where the birds may not be breeding successfully.

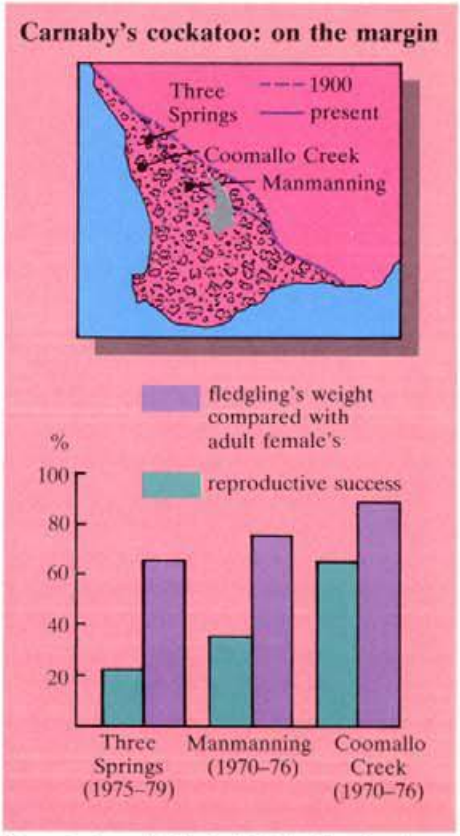
Trees in decline

A survey of the trees remaining in cleared agricultural areas suggests that the next big threat to the Western Australian cockatoos is a decline in the remaining habitat.

In one 15-ha block left standing after the surrounding area had been cleared for a mixed sheep–wheat farm, the CSIRO group found that very few new trees were being recruited to the woodland. Seedlings were being either eaten or trampled, and the

While the galah is advancing, the Major Mitchell cockatoo is retreating because of land clearing.





Carnaby's cockatoo's distribution is also shrinking. A 16-year field study revealed that at Three Springs and Manmanning poor food supplies were disrupting the populations. By 1978 Carnaby's cockatoo was no longer found at Manmanning.

smallest gum tree in the area had obviously established itself before sheep were introduced in 1929. The smallest tree with a hollow suitable for nesting was at least 130 years old, indicating that it is quite some time before a seedling turns into a tree mature enough to support a breeding pair.

Apart from the almost complete absence of seedling recruitment, the mature trees in the remaining woodland generally seem to be suffering from dieback. This dieback has no specific cause, although it is probably due to a combination of altered habitat, increased insect attack, and old age. In 1978 the 15-ha study area had 23% of its trees classified as 'healthy', and 19% as dead, with the remainder somewhere in between. By 1981 less than 5% were considered healthy and the number of dead trees had jumped to more than 40%.

Galahs can sometimes reach pest proportions. Here, hundreds of kilograms of bird flesh add another design consideration to radio aerials.

And next?

Clearly, the pace of development of Western Australia's primary industries has been too rapid to allow the cockatoos to reach an amicable accommodation with the development. While some species, notably the galah, have been resilient enough to exploit the short-term advantages of extra food, over the longer term their prospects don't look too good.

In essence, the birds have lost the bulk of their habitat and what remains is in decline. The galah may have plenty of food now and into the foreseeable future, but it will be limited by a lack of nesting sites. By contrast, Carnaby's cockatoo is already suffering from a lack of native food and, with the continuing decline in the population of native trees, it will suffer badly from food shortages and a lack of breeding opportunities.

The problem confronting Western Australians is a very fundamental conservation question: is it acceptable that birds once common in the region should be allowed to dwindle towards extinction? Presuming that the answer is no, then what can be done about a situation that is steadily deteriorating?

Dr Saunders urges an immediate ban on any further releases of Crown land for agriculture. At present about 18% of the south-west of the State is Crown land.

He would also like to see efforts made to regenerate and rehabilitate the native vegetation remaining in the wheat belt. Tree-felling should be discouraged, livestock excluded from selected areas to allow seedling regeneration, and tree-planting encouraged. He thinks public money may need to be spent to acquire remnant vegetation, much of which is privately owned.

In addition, Dr Saunders would like to see further research on how nesting holes are formed. Generally they result from some sort of damage or infection, so pruning or deliberate infection of trees with wood-rotting fungi may be needed to ensure a supply of holes and the future prospects of Western Australian cockatoos.

Wayne Ralph

Roadside verges are often the only places where native vegetation can be found.

More about the topic

Breeding season, nesting success and nestling growth in Carnaby's cockatoo, *Calyptorhynchus funereus latirostris*, over 16 years at Coomallo Creek, and a method for assessing the viability of populations in other areas. D.A. Saunders. *Australian Wildlife Research*, 1986, **13**, 261–73.

The effects of clearing for agriculture on the distribution of cockatoos in the south-west of Western Australia. D.A. Saunders, Ian Rowley, and G.T. Smith. In 'Birds of Eucalypt Forests and Woodlands: Ecology, Conservation Management', ed. A. Keast, H.F. Recher, H. Ford, and D. Saunders. (Royal Australasian Ornithologists Union, Surrey Beatty and Sons: Sydney 1986.)