



Back from the brink

A small relative of the lyrebird, the noisy scrub-bird, created a stir in 1961 when — after some 70 years of presumed extinction — the male's loud penetrating song impinged once more on human ears.

Its only known whereabouts then was the densely thicketed gullies and slopes of Mt Gardner, an isolated headland overlooking Two Peoples Bay on Western Australia's south-western coast. The protruding bare granite ridges there have probably been the bird's life-saver. They lie across the travel of prevailing winds, acting as a firebreak.

Fire has erupted there, but probably the entire area has never suffered from the one conflagration. Elsewhere in the south-west, fire and clearing have destroyed the

bird's favoured moist dense gullies.

At the time of its re-discovery, the species probably comprised between 40 and 50 breeding pairs.

Dr Graeme Smith of the Perth laboratory of the CSIRO Division of Wildlife and Rangelands Research has taken a special interest in the bird since 1970. In that year he carried out the first rigorous census of the Mt Gardner area and noted 45 singing males.

Counting the number of territorial males uttering their distinctive, loud, and penetrating song is the only feasible census method. It's nearly impossible to see a noisy scrub-bird, which is secretive — choosing to live in low forest with a dense shrub understorey and covering itself in plumage to match.

Females do not sing, and neither do juvenile males (only infrequent alarm calls are heard). But breeding males defend their territory, ranging from 6 to 9 ha, with a song that may be clearly heard 1.5 km away on a calm day. Territorial males sing throughout the year, although singing peaks in May and June, when it is almost continuous in the 2 or 3 hours after sunrise. A male sings mostly within a core area of 1–2 ha, which remains fixed throughout the day and between seasons; the distance



Noisy scrub-bird territory.

between core areas ranges from 200 to 500 m.

The census method that Dr Smith devised, in association with Mr Robert Forrester of the CSIRO Division of Mathematics and Statistics, involves taking a morning walk over five marked trails, a total distance of 28 km. This is done at least three times during active months. Areas with suitable vegetation, but not yet populated, are also visited. This technique should, after three walks, show up at least 98% of the singing males.

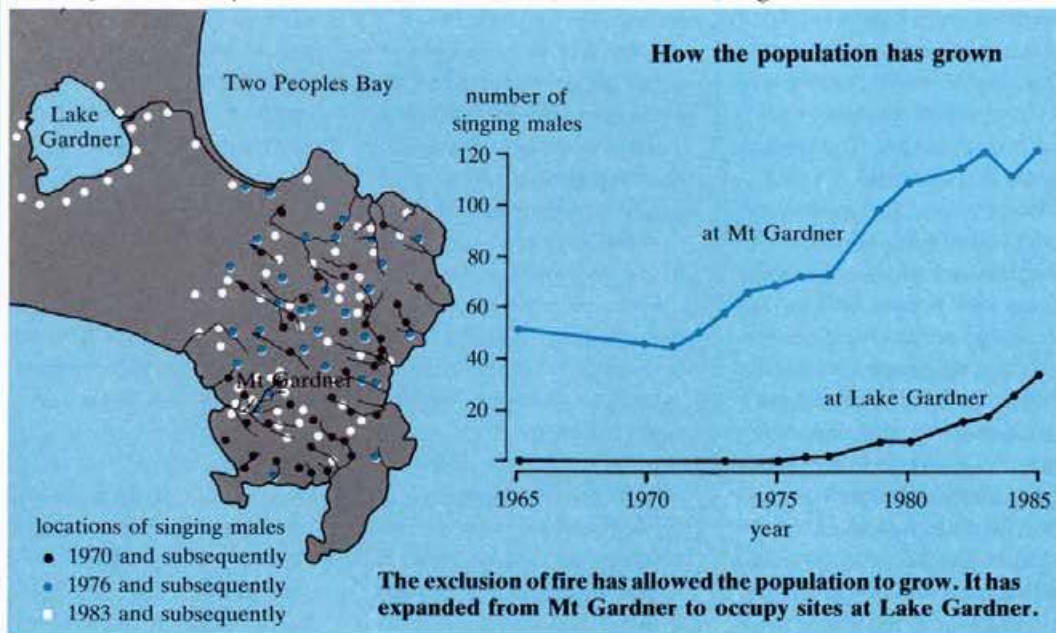
At low population densities, and with a surplus of suitable habitat, the number of singing males gives a good indication of the number of breeding pairs. However, it takes no account of some polygamy, nor of subordinate males, circumstances that operate at higher bird concentrations.

Every year since 1970 (except 1978 and 1981), Dr Smith has conducted an auditory census of the noisy scrub-bird population with the help of Mr Mike Ellis, Mr Les Moore, and the ranger at Two Peoples Bay, Mr Graeme Folley. The Western Australian Department of Conservation and Land Management, which manages the reserve that harbours the birds, asked CSIRO to study the species so that long-term management of its habitat could be based on good data.

The area is presently an 'A' Class Reserve, and about half the scrub-bird habitat is set aside as a prohibited area, with access available only to those with a special permit. In the other half, entry on foot is allowed.

Conditions in the Reserve obviously suit the bird. Dr Smith's surveys have shown a slow but steady increase in its numbers (see the graph), which have risen from 45 singing males recorded in 1970 to 157 last year.

As well as growing in number, the population has also widened its range. It has expanded out of its headland stronghold, which has probably reached its maximum carrying capacity, to form a new subpopulation around Lake Gardner, as shown on the map. The new enclave is well separated from the major group by roads, firebreaks, and a strip of control-burnt blocks.



This move has given the birds a valuable safeguard against extinction, because fire — the most potent hazard — is unlikely to burn out both areas at the same time. Nevertheless, the expansion has been slow. The birds are poor dispersers, and there is no evidence that any individual has moved more than a few kilometres from its place of birth.

Dr Smith has little doubt that the main factor behind the increase in population is the management policy excluding fire from the reserve. This policy allows the vegetation to grow and provides more habitat for the species.

After a fire it takes from 4 to 10 years for the vegetation to grow back to a state suitable for noisy scrub-birds. Their most favoured habitat is low eucalypt forest in moist gullies, which can regenerate in 4 to 6 years. Here, breeding can take place every year.

Drier sites are less favoured, and breeding within them occurs irregularly. It takes about 10 years for these sites to recover from fire, passing through stages of heath and thicket. No evidence of breeding has been found in heath, and only two instances have been found of breeding in thicket.

The strength of the birds' preference for dense habitat can be seen in the vegetation types that emigrating

Dense habitat is preferred.



A noisy scrub-bird at her nest.

scrub-birds chose to live in when they moved to Lake Gardner. Of the 20 localities occupied in recent years, 18 have been in low forest with trees higher than 5 m; only two have been in sites with trees less than 5 m tall.

Because of this preference, Dr Smith expects the Lake Gardner birds to rapidly fill vacant ideal habitat to the west, which contains enough space for at least 20 additional males.

Fire has been absent from the headland for more than 20 years, and the habitat has become increasingly favourable for noisy scrub-birds over this time. Little further improvement is now possible. Indeed, since 1977, increasing numbers of males on the headland have been counted in vegetation — heath and thicket — that previously would have been considered unsuitable, or at least marginal, for the species. The number of birds at Mt Gardner seems to have reached a plateau. The graph shows the situation.

If the population grows any more, more birds will be forced to use poorer habitat, where their chances of breeding and surviving are reduced. Alternatively, we could see a significant increase in the proportion of territories containing subordinate males.

Either way, the increase in the breeding population has become less than the population count suggests. Although the number of males

on the headland has increased since 1970 from near 45 to 120, Dr Smith estimates that the number breeding has only increased from 34 to 71.

These figures suggest that birds could be taken from Two

Peoples Bay to start other populations without adversely affecting the breeding potential. Actually, a translocation program is already under way, and 32 birds (18 males and 14 females) have been trapped and released at Mt Manypeaks, some 15 km away. The program began in 1983, when 10 males and 6 females were shifted, and a further 16 birds were moved in 1985, one of which was reared in captivity.

The translocation program is managed by the ranger, Mr Folley. With the help of volunteers, he finds that trapping males is relatively easy; the hard part is getting

How close to extinction?

If absence of fire has been the main factor allowing the noisy scrub-bird to increase in numbers, can we estimate the size of the population many decades previously, when fire was a regular feature of the reserve?

Dr Smith located aerial photographs of Two Peoples Bay taken in 1946. These photographs show that in the previous 3–5 years the area had suffered a number of small fires, and one of moderate size. Signs of older fires include the greater number of exposed rock outcrops and the generally patchy look of the vegetation compared with today.

Aerial photographs from 1965, 1969, 1970, and 1973 were also available, so vegetation cover in these years could be correlated with the census numbers recorded in the same period. (Only in 1962 and 1964 have fires affected the Mt Gardner area. Since 1970 there have been no fires.)

During the census periods from 1970 to 1983, Dr Smith located 145 sites of 1 or 2 ha that had been used at one time or another as the core area of a territorial male. These sites reasonably represent most of the available habitat and, using the aerial photographs, he rated them on a four-point scale ranging from recently burnt to no evidence of burning. The ranking also gives the habitat's suitability for scrub-birds.

The suitability assessed from the aerial photographs matched quite well the actual bird numbers given by the census counts. For example, a 1969 photograph gave 31 sites as suitable or probably suitable — this number comes close to the 38 singing males recorded in 1968.

From the 1946 photograph, only 21 sites were ranked as suitable or probably suitable, with 10 considered possible additions. And so it is reasonable to assume that in 1946 there were 21 to 31 males in the Mt Gardner area — a close brush with extinction.

Fire effects on populations of the noisy scrub-bird (*Atrichornis clamosus*), western bristle-bird (*Dasyornis longirostris*) and western whip-bird (*Psophodes nigrogularis*). G.T. Smith. *Western Australian Institute of Technology Environmental Studies Group, Bulletin No. 13, 1985.*

females. Their nests need to be found, which is a time-consuming task.

Mt Manypeaks is very rugged, and thus difficult to census; however, this year Mr Folley was happy to record the song of 14 males there. It may be another year or two before juvenile males reach maturity and begin to sing too.

Mr Folley has found that other males soon take over the territories at Two Peoples Bay formerly occupied by the

males transferred to Mt Manypeaks.

Translocation is a better method of securing the birds' existence than another technique that has been attempted. Several years ago, after an apparent decline in bird numbers, Dr Smith tried to breed the birds in captivity.

The enterprise proved difficult, although he finally had success in 1979 when a female hatched from the egg of captive parents. But newly

hatched noisy scrub-birds don't survive well in captivity, apparently because of special dietary needs (although adult birds captured from the wild survive perfectly well).

If the translocation program succeeds as expected — and there are plans to establish populations at a further six or more sites — then the prospects for long-term survival of the noisy scrub-bird look good.

Andrew Bell

Population and habitat selection of the noisy scrub-bird, *Atrichornis clamosus*, 1962–83. G.T. Smith. *Australian Wildlife Research*, 1985, **12**, 479–85.

Noisy scrub-bird — then and now. *Ecos* No. 6, 1975, 15–16.

The status of the noisy scrub-bird *Atrichornis clamosus*. G.T. Smith and R.I Forrester. *Biological Conservation*, 1981, **19**, 239–54.