

# BACK BOX

## Australian birds—migrants or nomads?

Text books often say that few Australian birds regularly migrate from one place to another—they are merely nomads, finding feed where they can get it.

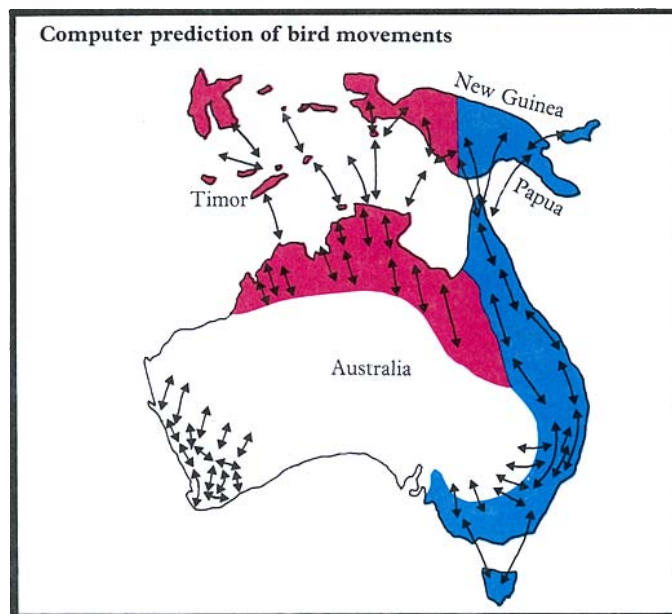
Mr Henry Nix, a scientist at the CSIRO Division of Land Use Research, is not so sure. He noticed, for example, that if he travelled to the brigalow in central Queensland late in autumn he saw large concentrations of many bird species that had disappeared from his home base of Canberra some weeks previously.

Using a computer model previously developed to predict the timing of plant growth over the whole surface of Australia, Mr Nix simulated where a bird would go to obtain enough food to survive. He also checked the breeding times and seasonal movements of birds at six representative locations in Australia and two in New Guinea to see whether these times coincided with predicted peaks in plant growth.

The results showed that at each location most species in fact breed in the quarter of the year when plant growth is at a maximum. For example, on the Southern Tablelands of New South Wales near Canberra there is usually a peak of plant growth during spring. Practically all the bird species that eat nectar, fruit, seeds, or insects breed during this period. Once the summer heat sets in, plants grow much less. In winter it is too cold for any plant



The rainbow bird and the sacred kingfisher migrate regularly in both eastern and western Australia.



growth, and many bird species disappear from the region altogether. Do they go to Queensland, or somewhere else?

Mr Nix's analyses of when plant growth begins and ceases at nearly 500 locations in Australia and New Guinea suggest that bird movements would be confined within four distinct regions—eastern Australia, Tasmania, and New Guinea; north-western Australia, West Irian, Timor, and other outlying islands of

eastern Indonesia; south-western Australia; and arid and semi-arid central Australia. Normally, very little mixing would occur between bird populations of these regions. Mr Nix included New Guinea and outlying islands because for birds they comprise one biological entity along with Australia.

According to his calculations, many of the migrant birds of south-eastern Australia over-winter in central and northern Queensland,

but many continue through to New Guinea. Bird movements in the centre are largely nomadic, but there is some migration northwards in summer and southwards in winter.

Perhaps the circular movement predicted for birds in south-western Australia is the most intriguing. Some evidence suggests that a number of species—the inland subspecies of the white-tailed black cockatoo for example—really do follow it either wholly or in part. These birds breed in the wheat belt during late spring, and then move southwards and westwards to the more humid coastal areas. In autumn they move to the north and north-west towards Geraldton to over-winter, and then return to the wheat belt to breed.

Evidence for the whole of Australia is sketchy, but Mr Nix considers that what there is tends to support his analysis. He points out that his predictions will not apply to every species, and the shapes of the four regions will vary each year depending on the seasonal conditions. Nevertheless, his ideas do create a pattern in what previously seemed like complete chaos.

Environmental control of breeding and post-breeding dispersal and migration of birds in the Australian region. H. A. Nix. *Proceedings of the 16th International Ornithological Congress*, 1974 (in press).