



# Keeping tabs on our birds

Lord Howe Island lies about 600 km off the coast of northern New South Wales. As well as being a very beautiful haven for tourists, it provides refuge for one of the world's rarest birds—the Lord Howe Island woodhen. The entire breeding population of this flightless fowl numbers about 25.

When the Island was discovered in 1788, the woodhens occurred in quantity throughout. But they were tame and curious, and easily killed. An early visitor, Captain Gilbert, recorded in his journal: 'Partridges likewise in great plenty ran along the ground, very fat and exceedingly well tasted. Several of these I knocked down, and their legs being broken, I placed them near me as I sat under a tree. The pain they suffered caused them to make a doleful cry which brought five or six dozen of the same kind to them, and by that means I was able to take nearly the whole of them.'

By 1853, 19 years after Lord Howe Island was first settled, woodhens were seen only in the more mountainous areas, and in 1888, when the Australian Museum made a survey, the birds could be found only with difficulty. A Mr Roy Bell collected 82 between July 1913 and August 1914, but he could find them only in very limited areas. Since then woodhens have been reported a number of

times, but their range seemed to be steadily diminishing.

In 1971, when the Australian Museum in Sydney began an intensive 3-year study of the woodhen, the few that remained all lived only at the summits of Mt Gower and Mt Lidgbird.

The scientists hoped that their survey would give an accurate picture of the numbers, habits, and movements of the birds so that it would be possible to draw up a strategy for preserving the species. One of their first tasks was to band every living bird, to allow them to count the entire population and recognize individuals. The biologists placed a metal band bearing a serial number on one leg of each bird, and three coloured plastic bands on the other to permit each individual to be recognized.

## Little room at the top

The survey revealed that each pair of woodhens vigorously maintains a territory throughout the year. The problem is that

the 26-ha plateau atop Mt Gower allows room for only about nine of these territories, and the steep-sided Mt Lidgbird supports even fewer.

Once young birds have left their parents they have to lead a skulking existence on the fringes of the territories. They can breed only if an established territory becomes vacant. Thus, although there are a few surplus young, they may never breed and so the total woodhen population remains more or less static.

The study indicated that a surplus of about 10 yearling birds accrues over eight seasons—a finding that perhaps offers the chance of building up the numbers again by using these spare young, either to reintroduce the woodhens to other parts of the island or to build up breeding populations in captivity.

Without the technique of banding, conserving birds like the Lord Howe Island woodhen would be extremely difficult. Nobody would have any way of telling with any degree of certainty whether a bird seen in an area one day was the same one that was there a day later. For example, one amateur ornithologist in the Blue Mountains near Sydney was astonished to discover that no less than 600 different satin bower-birds had frequented her garden during a 3-year period. Only by banding the local bower-

Mt Lidgbird and Mt Gower, Lord Howe Island.



Lord Howe Island woodhen.





birds had it been possible to distinguish between individuals.

### Danish schoolmaster

Bird-banding was first used for scientific purposes in 1899 by Christian Mortensen, a Danish schoolmaster and naturalist. He hit on the idea of finding out where birds went by marking them with lightweight aluminium leg bands stamped with a serial number and address. He began with starlings.

Other naturalists in Europe and North America soon adopted Mortensen's method, and nowadays many countries have national bird-banding organizations.

In Australia, bands were first used in 1912, when members of the Melbourne Bird Observers' Club and the Royal Australasian Ornithologists Union placed them on Tasmanian mutton-birds (short-tailed shearwaters) and on white-faced storm petrels. However, it was not until 1947, when CSIRO and the Tasmanian Fauna Board began a banding program on mutton-birds, that the technique was used here on a large scale.

Several States started waterfowl-banding schemes shortly afterwards, and most of these still continue. Then in 1953 the CSIRO Division of Wildlife Research launched a national project, the Australian Bird-banding Scheme.

At the Division's Canberra headquarters, Mr David Purchase, who is in charge of the Scheme, makes bands available to approved ornithologists, both amateur and professional, for use in projects on a wide variety of species. Currently the Scheme is assisting in 269 studies, 177 of which are being carried out by amateurs.

Bands supplied by the Australian Bird-banding Scheme have been used in Papua New Guinea, Malaysia, Brunei, Fiji, on cays and reefs in the Coral Sea, and in Antarctica, as well as throughout Australia.

Since the Scheme began, more than 1 300 000 birds of 790 species have been banded. Of these, some 120 000 individuals from 500 species, or about 9%, have been recovered. About 80 000 birds are now banded each year.

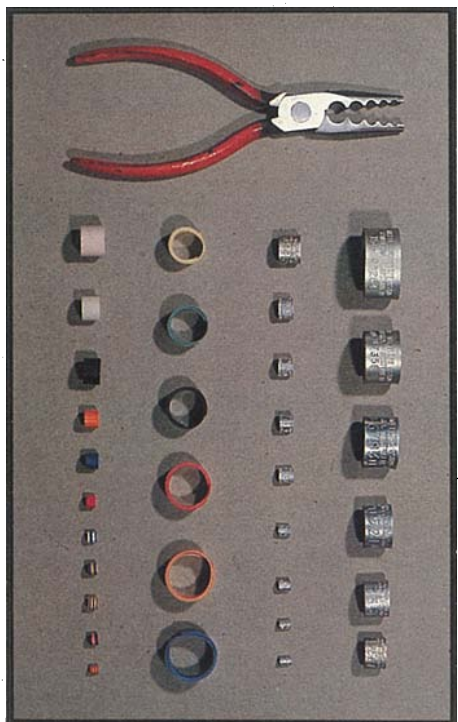
The success of the Australian Bird-banding Scheme depends largely on members of the public finding the banded birds and forwarding information to the address inscribed on the bands. Ideally this information includes when and where the bird was found, the cause of death (if known) or whether, if living, the bird was released still wearing the band.



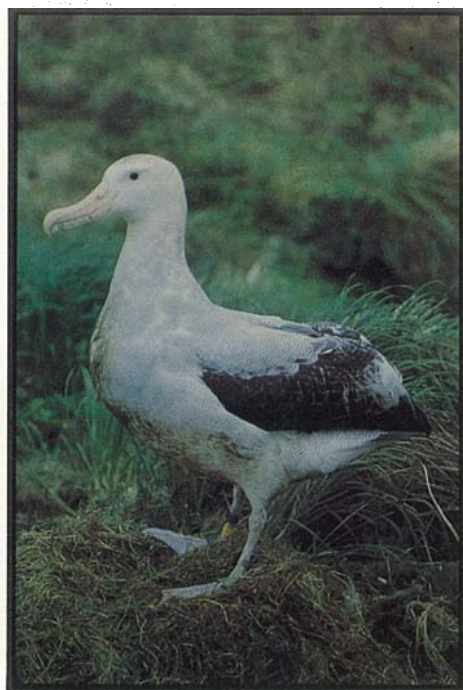
Male satin bower-bird arranging a stick in its display bower.

Already banding studies have revealed a great deal about the life histories of our native species as well as our migratory visitors. The records indicate how long individuals live, where they go, and where they breed and feed.

As well as being interesting in its own right, such information is of great value to government bodies—both Commonwealth and State—concerned with wildlife management. For example, in 1974



A selection of bands supplied by the Australian Bird-banding Scheme. The Scheme's bands have been used in Papua New Guinea, Malaysia, Brunei, Fiji, the Coral Sea, and Antarctica as well as in Australia.



Wandering albatross wearing metal and plastic bands.

Australia and Japan signed a treaty aimed at conserving the birds that migrate between these two lands. Bird-banding is supplying information about movements of these birds.

Again, several of our duck species are much sought-after as game birds, and large numbers are shot each year. In drought years birds may be particularly vulnerable to shooting, since they become concentrated on the few remaining inland bodies of water. Banding is playing its part in working out how to manage the ducks so that their survival is ensured and shooting may continue.

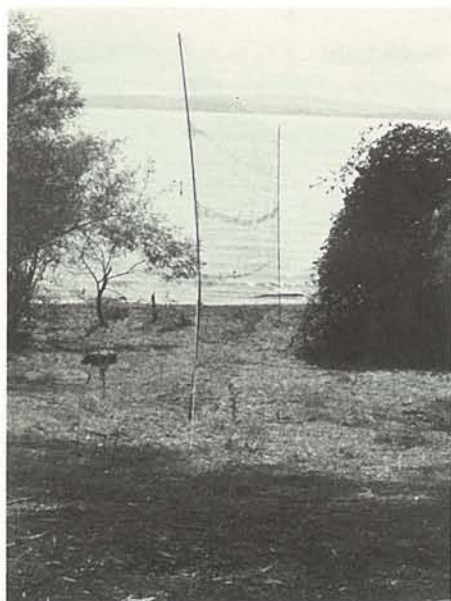
Incidentally, interpreting the banding results has its brighter side. Quite a few bands are returned during the closed season when no duck shooting is permitted. Reasons for the ducks' deaths have included hitting overhead wires, being killed by cats, and one, believe it or not, had reputedly fallen into a bucket of milk! Bands have occasionally turned up on the wrong species of bird also.

### Mutton-birds studied

In spite of such isolated incidents, bird banding is a most useful technique. It played a major part in studies of the Tasmanian mutton-bird. This was the project that CSIRO and the Tasmanian Fauna Board began in 1947.

Under the direction of Dr D. L. Serventy (then with the forerunner of the CSIRO Division of Fisheries and Oceanography), the study confirmed that this species migrates each year from its breeding places around the coast of south-





Mist net in position for catching bush birds.

eastern Australia, northwards across the equator into the northern Pacific and Bering Sea, and back.

In addition, the project revealed how commercial harvesting of Tasmanian mutton-birds on the Furneaux Group of islands north of Tasmania was affecting the populations that bred there.

For years, this seabird has formed the basis for an industry, which began early in the last century when the sealers turned to mutton-birding after they had almost wiped out the seals. At that time the fat from the birds was in great demand as a lubricant for use in sawmills and coal mines, and there was a large trade in feathers and down. Their eggs and flesh also provided food.

Early this century rigorous controls were imposed to control the exploitation of the birds. Since that time, taking

mutton-birds has been limited to a 6-week season.

Today, only young birds may be taken. The mutton-birds are frozen or salted and exported for food. As by-products, they still yield feathers, fat, and a valuable oil.

Dr Serventy's project showed that the controls imposed earlier this century had ensured that harvesting had been reduced to a level that the mutton-bird populations on the exploited islands could tolerate.

The Fauna Board's successor, the Tasmanian National Parks and Wildlife Service, still monitors the numbers of mutton-birds taken—every birder must keep records. In addition, each year the Service bands about 1000 nestlings so that the proportion being taken on each commercially exploited island can be calculated. At present the harvesting rate on

## Birds, bats, and bands

Bird banding is a skilled pastime. It is not something that the beginner should be encouraged to do without careful supervision. If mishandled, birds may easily die. However, a skilled bander can catch, band, and release birds without harming them.

The Australian Bird-banding Scheme strictly controls who receives bands. It registers all banders operating through it. In addition, all banders must have approval from the appropriate State or Territory fauna authority to trap and release birds.

Approved banders fall into two categories—experienced A-class banders who carry out research projects, and B-class banders who may assist them. Either they are interested private citizens, or they come from museums, State or Commonwealth departments, universities, colleges of advanced education, or schools. All banding by the biologists of the CSIRO Division of Wildlife Research while carrying out their research projects is done using bands issued by the Australian Bird-banding Scheme.

Bands come in many sizes. They are generally made from aluminium, aluminium alloy, or monel metal. Parrots can remove aluminium bands, so more-durable stainless steel ones are used for them. Birds that live for a long time—like gannets—also get stainless steel bands. In some programs, using a combination of coloured plastic bands has proved very worth while, since this technique allows instant recognition of individuals.

Each bird species needs to have the right-sized band. Using one that is too big can be disastrous for the bird. For this reason the Scheme issues specific bands of the right size for each species. For some birds—like the burrowing shearwaters, penguins, and pelicans—special bands have had to be designed.

Catching birds for banding can be done in various ways, depending on the species. Nowadays, the commonest method, especially for trapping bush birds, involves using a mist net—an almost invisible fine-meshed net that is slung between two poles. The birds become enmeshed in the net. The bander must continually watch his nets and remove the birds quickly, otherwise they may easily die of cold if the temperature is low, or may equally easily die of heat in hot weather.

Other catching methods include using food or water to entice birds into traps fitted with drop doors or funnel entrances, and using small cannons to fling nets over birds feeding on the ground. A technique widely used in the United Kingdom is to dazzle the birds at night with a bright light and then to trap them quickly with a butterfly net.

Many birds are banded as nestlings, after removal by hand from their nests. Adults of burrowing species such as the

Tasmanian mutton-bird can also be caught by hand.

Banding has been done on bats, too, both in Australia and overseas. An Australian Bat-banding Scheme (similar to the Bird-banding Scheme) is also under the charge of Mr Purchase.

Unfortunately, it now appears that banding bats may be counter-productive. In some parts of the world bat populations have been decreasing, and it seems that bat-banding may be one of several contributory causes. For one thing the bands have to be attached to the animals' wings. Sometimes the bats chew at the bands, which may quickly wear down their teeth. They may also injure their wings. Having worn teeth or being unable to fly makes it difficult for the bats to feed, so they probably starve.

In addition, some of the small insectivorous bats sink into a torpor for long periods during winter. When food is scarce they lower their body temperatures almost to that of the surrounding air, and in this torpid state they live off stored fat. Each time a bat is aroused from its torpor it draws heavily on its fat reserves—and any visitor merely entering a bat cave may cause enough disturbance to arouse them. If aroused several times, a bat may not have enough fat to survive the winter.

Because of factors like these, Mr Purchase is now only issuing bands for those species of bats that have been shown not to be adversely affected by banding.





these particular islands seems to be about 50%. The number of birds taken hasn't been declining, so presumably these island populations can tolerate this harvesting rate.

Incidentally, the birds taken would represent only a fraction of the total mutton-bird population, since the islands where commercial harvesting goes on represent only a small part of the breeding range of the species.

So banding Tasmanian mutton-birds has yielded knowledge about harvesting levels, and about this bird's amazing long-range migration to the Arctic Circle and back. The technique is also giving information on migrations, possibly on a similar scale, undertaken by other birds.

**Albatrosses also**

Perhaps one of the most interesting banding programs is the one being carried out by the New South Wales Albatross Study Group. This study comes under the umbrella of the Australian Bird-banding Scheme, but is in no way directed by the Division of Wildlife Research. It is being carried out entirely by enthusiastic amateurs, and is the only project where the birds are banded in large numbers away from their breeding grounds on islands close to Antarctica.

Each winter the Albatross Study Group bands large numbers of wandering alba-



Catching a wandering albatross off the New South Wales coast.

trosses off the New South Wales coast. Many albatrosses appear to be regular commuters between the New South Wales coast and the subantarctic.

On the continental scale, results from bird-banding have revealed surprises as well as confirming ornithologists' hunches. Bird experts were surprised to find that the white ibis, little egret, and white egret all move between southern Australia and New Guinea. Within Australia itself, white and straw-necked ibises have proved to be highly nomadic, as are grey teal and pink-eared duck. One grey teal banded near Griffith, N.S.W., turned up 3 months later 2800 km away at Mandurah, W.A. Not so long ago also a black duck banded at Lake George near Canberra was shot next day at Dowd's Morass—400 km to the south-sou'-west in Victoria!

Long-distance movements by birds of prey include 1500 km in 13 months by a swamp harrier; similarly a brown goshawk travelled 900 km in 7 months, a wedge-tailed eagle 850 km in 8 months, and a whistling kite 1650 km in 16 months.

**Limited freedom**

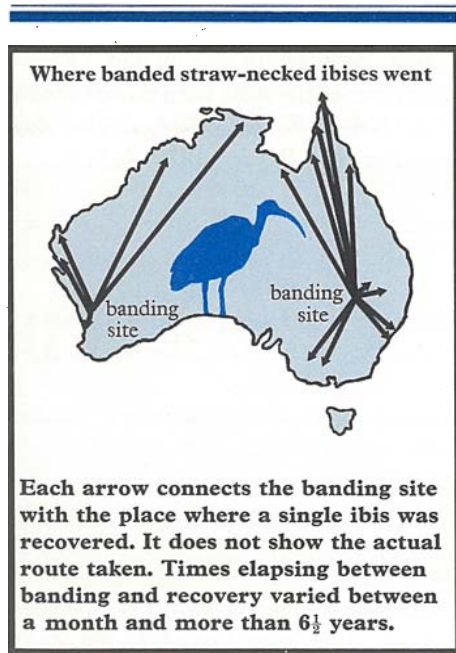
Banding has also revealed that some birds move only over very short distances. We hear people say 'as free as a bird', meaning free to go anywhere. For some birds, banding shows that this freedom is very limited indeed. In the Brindabella Ranges near Canberra, one particular white-browed scrub wren was first banded on a forestry access road 14 years ago. In the intervening years it has been caught in a mist net no less than 18 times—always within 100 metres of where it was first banded. Probably this distance represents

the limits of the wren's territory.

Fourteen years seems a long time for a bird half the weight of a sparrow to live. But the Australian Bird-banding Scheme has been operating for more than 20 years, and its records show that it's not only the white-browed scrub wren that may live to a ripe old age, as the accompanying table shows. Strangely, many Australian song birds seem to live longer than their counterparts in Europe.

As well as showing where birds move

*No less than 600 different satin bower-birds had frequented her garden during a 3-year period.*



*Many albatrosses appear to be regular commuters between the New South Wales coast and the subantarctic.*

How long do birds live?	
longest time elapsed between banding and most recent recapture	
years	
Australian magpie	20
white-browed scrub wren	15
fuscous honey-eater	14
brown thornbill	12
white-naped honey-eater	13
rufous whistler	12
little wattlebird	11
silveryeye	10
superb blue wren	9

Size does not seem to affect how long birds live. Except for the much larger magpie, all the birds listed here weighed between 7 grams (brown thornbill) and 70 grams (little wattlebird).





**White-browed scrub wren. A banded wild one is already at least 14 years old.**



**Whistling kite: banding records revealed that one moved 1650 km in 16 months.**

to and their ages, banding can do another useful thing—it can indicate how many birds of a particular species are inhabiting a particular area or habitat. Such knowledge can give a clear understanding about the sort of conditions a species may need to thrive, or how it may survive natural disasters such as fire or drought.

### **Flame robins fired**

Records of flame robins in the Brindabella Ranges show very clearly how this spectacular red-breasted species reacted to a forest fire in December 1972. This is one of the few examples available of a fire passing through an area where the bird life was already under close observation.

Immediately after the fire, the numbers of most bird species fell, partly no doubt because some died in the fire. As the forest regenerated and the habitat recovered, the numbers of most species gradually increased once more.

The flame robin did not conform to this pattern. Amateur ornithologists had been banding the species every year since 1961. In the 9 years before the 1972 forest fire, the banders had trapped and released 130 flame robins at 20 sites. In the 28 months following the fire, they banded 93 flame robins. Nearly all the birds taken after the fire came from the 14 sites in the burnt area, while before the fire flame robins seemed to be randomly distributed among all 20 banding sites. In the years that followed, the numbers of robins caught in the burnt area declined once more.

Flame robins prefer open country, so,

by opening up the forest, the fire probably altered the habitat to the species' advantage. Once the vegetation began to grow thickly again, the habitat once more became unsuitable and so flame robin numbers dropped as those of forest-adapted species increased.

Results like these bear witness to the value of the Australian Bird-banding Scheme, with its blend of professional and enthusiastic amateur ornithologists.

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*About 80 000 birds are now banded each year.*

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**Banding a white-plumed honey-eater.**

Much remains to be learnt about the bird life of this continent. Indeed what we now know may do little more than scratch the surface. The professional ornithologists are too few to be able to study more than a few species at once, and often it is not possible for them to carry out long-term studies like the one in the Brindabella Ranges. Here the amateur has much to contribute. So it's gratifying indeed that nearly two-thirds of the 270-odd projects now being undertaken under the umbrella of the Australian Bird-banding Scheme are being carried out by amateurs.

### **More about the topic**

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