

THE LOWAN BIRD'S YEAR

- by KEITH HATELEY -

Mr Hateley, Lowan National Park Ranger, has been studying lowans since 1934

OCTOBER TO DECEMBER

The mallee-fowl, or lowan, is Victoria's only mound-building bird. Unlike other Australian mound-builders it prefers dry, semi-arid regions and conditions at the Little Desert National Park near Kiata suit it well.

The lowan is a shy, plump bird which grows to 24 inches. He is not unlike the English pheasant when seen running through the bush with his handsome brown, grey and white plumage. The coloring makes good camouflage in the light and shade of the scrub.

Early in October the female lowan is ready to lay in the mound which the birds have prepared through the winter. The mound has an egg-chamber of vegetation which will ferment and produce heat before the full heat of summer can take over incubation.

The male bird opens the top of the mound and digs out, with its feet, to the egg-chamber level. He has to dig deep because the weight of sand on the rotting vegetation will have compressed the material.

The hen braces her chest against the inner wall of the mound for laying. The average clutch is twenty eggs, weighing from six ounces. Weighing 200 eggs at Kiata has not produced one under six ounces. This means that the four-pound hen produces at least twice her weight in eggs in a laying season.

Her eggs are, at first, pink but they soon stain brown from the egg-chamber. Birds which hatch their eggs by body-heat usually turn eggs regularly and eggs will not hatch unless turned.

This does not matter to the lowan. In experiments at Kiata, the position of eggs in the mound has been changed, some turned upside-down and others placed on one side. The birds made no attempt to return them to original positions and eggs hatched normally.

If the hen is off-balance when laying, the expelled egg may land at an angle instead of being placed neatly in the chamber cavity. The male bird will cover the egg normally. Laying is at average intervals of five days or more and each time the mound is opened for a new egg an enormous amount of heat is lost. By the end of November material in the egg-chamber is dried and useless as a producer of heat. Birds must then rely on the increasingly-hot sun for incubation.

The male bird takes over and constantly checks the temperature which must be maintained about 94 degrees. He works to scratch the mound open on some days to allow heat to the eggs.

On others he will cover the mound to keep excessive heat away.

Laying will continue while the male cares for the mound. If a day is unsuitable for exposure of the eggs in the chamber, the male will not allow the female into the mound. He will chase her away and, if she is forced to lay, she will scratch a shallow hole and lay the egg which is lost and does not hatch.

The eggs have been compared to reptile eggs - they contain little albumen and there is no division between the white and the yoke. The yoke provides a large food-store for the chicken which must have sufficient strength at birth to scratch its way from the mound.

The average clutch is twenty eggs. The largest for 1968-69 was 26 eggs and in an average clutch all but three will hatch.

From October to the end of the year the birds work hard with laying and mound-adjustment. Laying will continue into the heat of summer with the bird's main problem then being protection from the harsh sun.

JANUARY TO MARCH

In January the lowan is fighting the heat of the summer sun. The male will be protecting the mound which contains incubating eggs and the female will continue laying.

At the beginning of the year it is quite usual to see a mound built very high, to reduce internal heat, and it may even be thatched with sticks and leaves.

Mounds are almost always built where they can receive direct sunlight, particularly in the middle of the day. When the air temperature reaches 100 degrees, sand temperature on top of a mound can be up to 154 degrees between 11 am and 5 pm. The sand, therefore, has two uses: to keep heat in before summer's peak and to keep it out later in the incubation period.

Incubation averages 57 to 60 days. First eggs are laid in the first week in October but with an average clutch of twenty the last may not be laid until mid-February.

This means chicks are emerging from the mound while egg-laying continues. When an egg is laid in the morning and a chick emerges from the mound a couple of hours later it looks as though the birds have the secret of producing instant chickens!

If the weather is cold and the birds cannot maintain the necessary 90 to 95 degrees in the mound, the incubation period lengthens. At Kiata the longest period has been 74 days. The longest lowan-chick incubation on record is 90 days. The new-born chick escapes from the mound after a battle lasting about two hours. During his, or her, escape from the

sand he seems to gain in strength. When the chick reaches the surface it can run almost at once. In four or five hours it can fly over six-foot bushes and is quite independent of its parents. A chick is never seen near the mound after hatching.

Adult birds and chickens may be seen feeding together but it is not known if the chicks belong to the adults.

An average seventeen chicks survive from each mound but after four or five months probably no more than three are left. The law of survival of the fittest applies. The bird that survives must be strong and healthy to carry-out its physically-demanding functions - the male as chief mound-architect and the female as an egg-laying machine.

If all the birds lived there would soon be severe overcrowding. In five hundred acres, with ten mounds in use, there would be 200 new chicks each year. The death-rate from old birds would not be enough to offset the birth-rate.

Starvation is probably the main cause of chick-mortality. The mortality rate in the 1967 drought at Kiata seemed very high. This was because the bird-population was at its maximum, not only from natural reproduction but because birds from surrounding areas had retreated to the sanctuary as scrubland was cleared for farming. The two previous years had been dry and food was not plentiful before the drought.

During the drought the effect of the poor food-supply was seen in the size of the clutches. The largest laying was eleven eggs, the smallest was three.

The last chicks emerge from the eggs around the end of April and the fowl are then preparing to work on their mounds for the next cycle of lowan reproduction.

APRIL TO JUNE

When the summer has lost its fiercest heat the last or the season's lowan chicks are hatched in the sandy mounds.

The last chick has escaped from its mound by the end of April and the male bird has a brief rest from mound-temperature control.

But by May he must consider the new mound for next season's eggs and the pair of birds will begin to dig-out the centre of a mound for a new egg-chamber. Digging will take almost two months and wet weather will help make sand easier to dig and scrape.

The birds will work on a mound from ten to twelve feet across - perhaps one not used the previous season. Birds like to use alternate mounds, usually within 200 yards. Mounds are not used year and year about but are changed when vegetation for an egg-chamber is no longer available close to the current mound. This may be after three or four years. One pair of birds has used the same mound for seven successive seasons. About

100 yards away they have an alternate mound with enough leaf fall and accumulation of dry material for the egg-chamber when they move. .

Lowans are territory-conscious. When nesting at one mound they will still guard their alternate mound and will not allow other lowans, or any other bird, near. A new pair of birds will take over a mound where owners have died; otherwise they face the huge job of building from scratch.

A new mound takes much longer than digging-out an established nest. A new pair of breeders, 3½ to 4 years old, will have started in February if they have to establish a new mound.

The birds work on their mounds through the winter, watching that it does not become too dry and adjusting the sand-cover for dampness. As they dig deeper they face problems of soil and sand falling back into the inverted cone of the hole. A large, established mound will contain several tons of sandy soil and may have to be dug-out five feet.

Normally the mound will be ready to receive leaves for fermentation by the end of July.

Lowans prefer a peaceful area to breed and build their mounds. Populations can be set-back if large numbers of animals such as emus and kangaroos destroy the bush floor from which they take seed and insect food.

Lowans have no food preferences. They can go without water because they take in moisture in herbage but they willingly patronise a dam in the Kiata sanctuary on hot evenings.

Their main food is seed but their diet includes insects. Seed was eaten-out in the 1967 drought and Wimmera people helped save the Kiata lowans with gifts of money and food.

JULY TO SEPTEMBER

By the end of July the lowans are usually ready to place vegetation in their mounds to start the fermentation process that will warm the first batches of eggs.

For four to five weeks after digging-out and preparing the mound they scratch debris from their territory, moving up to 100 yards from their mound for sticks and leaves.

They drag the material along two or three paths and tip it into the cone, which may be five feet deep, until it is filled to the top. Three feet of the cone may be below ground level.

If these ingenious and hard-working birds could be said to have any annual leave, it is in late August and early September. The mound and its egg-chamber are left ready to receive the moisture that will start the

fermentation process. Ideally, the birds hope the rainmakers will be successful at the end of August. When the mound is sufficiently damp the birds will cover the debris with the sand they excavated in winter. The mound will become high and the rotting vegetation will become an incubator for the eggs.

The mound is covered for four or five weeks before the egg-chamber is hot enough to incubate. The male bird will, almost daily, uncover the topmost sand layers and test the mound temperature with his probing beak. It is fairly certain that he uses his tongue as a thermometer. He continues checking until he is satisfied the egg-chamber temperature is right. This will usually be by the first week in October when the female will start laying.

The egg-chamber needs to be between 90 and 95 degrees for incubation. Temperatures up to 110 degrees have often been recorded.

After his winter of architecture and building the male bird faces a spring and summer of laboring as he opens the mound to control temperature and allow egg-laying and adjusting sand-depth according to the heat of the day.

The lowan has lagged in studies of Australia's unusual birds. Lyrebirds, for example, were studied fairly early in Australian history because their homes were close to a big centre of population.

Continuous study of the lowan is difficult. January and February, the most-interesting months for watching birds' at work on mounds and the arrival of new chicks, are also the most-unpleasant months to make observations in the harsh heat of light scrub.

Our knowledge is, therefore, still incomplete and we have much to learn about these fascinating earth-moving contractors of our bush.

FURTHER READING: The Mallee Fowl, by H. Frith