altogether now!

Living in groups makes you clever

PETER RYAN

The demands of incubating eggs and feeding a brood of chicks results in most birds forming partnerships to breed. In most cases, these are simple male–female pairings, which explains why most birds are at least socially monogamous. By comparison, most mammals are polygynous, with one sex – usually the female – left to rear the offspring alone. But some birds take group living a step further, involving more than two birds in raising the offspring. Such species are termed cooperative breeders and the phenomenon is particularly common among birds breeding in southern Africa and Australia.

Living in groups brings its own challenges, including the need to develop and maintain social bonds. It has long been argued that social interactions are a key driver of the evolution of 'intelligence'. Correlative studies suggest that social birds and mammals have better cognitive abilities and increased brain capacity compared to solitary species and experimental studies show that brain structure is related to group size in captive monkeys and even fish, but only recently has this been demonstrated in free-living animals.

Ben Ashton and colleagues worked with habituated groups of Australian Magpies *Gymnorhina tibicen* in Western Australia (*Nature* 554: 364–367). The 14 groups studied ranged in size from three to 12 birds. Individuals were presented with four challenges in the field to assess their cognitive ability to obtain a small cheese reward.

The first task presented food items behind a transparent barrier and measured how long it took a bird to learn to circumvent the barrier without first pecking directly at the food. The next two tests hid the reward behind a coloured lid. In the first trial, the birds had to learn to associate the reward with either a pale or dark lid. Once this task in associative learning was achieved, the following day the pattern was reversed, to see how long it took for a bird to learn the new pattern. And finally, spatial memory was tested by hiding the reward behind one of eight identical lids and presenting this to the birds over a series of days to measure how well they remembered the correct lid.

The study found that performance in each test was strongly correlated among individuals. That is, birds that scored highly for one test tended to do well at all tests, allowing the researchers to compile an index of cognitive performance. As expected, the best predictor of cognitive ability was group size; magpies from larger groups solved the puzzles faster and remembered the lessons learned for longer than birds from smaller groups.

Ashton and colleagues also assessed the development of cognitive skills by presenting the same challenges to juvenile magpies. The young birds initially all fared poorly at solving the tasks, irrespective of group size. However, those from larger groups learned more quickly. This was not simply a consequence of better condition among the juveniles from larger groups, because group size had no effect on provisioning rates or body size of offspring.

The study also found that intelligent females were better parents. Unlike many cooperative breeders where there is a single breeding pair in each group, all adult female magpies breed, with offspring usually being sired by males from outside the group. Among the study population, the best predictor of fledging success and the number of young surviving to independence was the mother's cognitive ability. This suggests that there are direct fitness benefits to being 'clever'.

The magpie study reinforces one of the key lessons from Larry Spear and Nadav Nur's classic study on Western Gulls *Larus occidentalis* (1994; *Journal of Animal Ecology* 63: 283–298), which showed that gulls from one-chick broods had a lower survival rate than those from larger broods, despite fledging with higher average body weights (usually a strong predictor of survival rate).

The message for parents of one-child families is clear: send your child to a crèche from an early age. Exposing them to social stimulation and perhaps equally importantly, peer competition, fosters the development of crucial life skills that help them to succeed.

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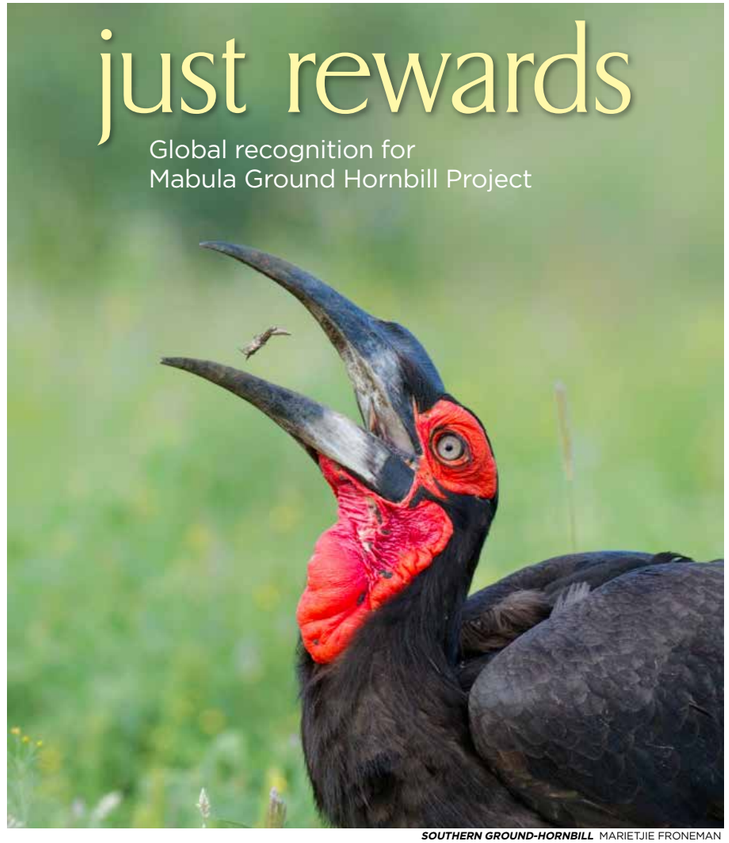
above *A recent study assessing the development of cognitive skills showed that Australian Magpies living in large groups are more intelligent.*

just rewards

Global recognition for Mabula Ground Hornbill Project



SOUTHERN GROUND-HORNBILL MARIETJIE FRONEMAN

left *The Mabula Ground Hornbill Project's Lucy Kemp loves linking conservation science to community-led conservation.*

In May 2021 a spotlight was shone on the Southern Ground-Hornbill and the conservation of work of the BirdLife Species Guardian, the Mabula Ground Hornbill Project when Dr Lucy Kemp was honoured as one of six recipients of the prestigious 'green Oscar' Whitley Fund for Nature (WFN) Awards for 2021. The award was granted by the WFN Patron, the Princess Royal, and was accompanied by a documentary of the project's work narrated by Sir David Attenborough (one of the WFN Trustees).

The WFN is a fundraising and grant-giving nature conservation charity that supports conservationists working with and leading grassroots projects that benefit wildlife, habitats and people. Whitley Award winners receive funding, training and profile to support the growth of their conservation work. In future years they can apply for WFN Continuation Funding to further expand successful projects. To date, WFN has given £18-million to more than 200 grassroots conservationists in over 80 countries.

The award of £40 000 will enable the Mabula Ground Hornbill Project to achieve four major goals within a year:

- The construction and installation of 40 artificial nests where they are needed within the range;
- The instigation of a further 40 custodianships, in which landowners (communal or freehold) with nests on their properties are supported to be able to protect their resident group into the future, and contribute to their monitoring;
- To document and utilise cultural perceptions and values to plan bespoke conservation initiatives across six language groups in South Africa; and
- To support Namibia and Botswana in initiating their own conservation plans for the species.

Lucy is thrilled with this award as it recognises the massive conservation and research gains the project and its collaborators have made for the species over the past two decades. In addition, it is a valuable validation for the sponsors who have supported the project's work for so long and so loyally, and it is a win for her team, whose daily commitment to the understanding and conservation of the Southern Ground-Hornbill has now been recognised on the global stage.

Not only that, but the funding is critical in a conservation world struggling to find the resources to sustain its work in a global Covid-crippled economy. The stringent selection process by the WFN also gives potential new sponsors peace of mind that the project meets the highest governance, scientific, strategic and ethical standards.

The award is of immense personal value to Lucy. Her parents started the earliest research into the species in 1969 and what was then considered just an interesting and complex species to study is now the fastest declining bird species in South Africa. It has been a fascinating journey for Lucy to work side by side with her parents for the past decade and together see gains slowly being made for the Southern Ground-Hornbill.