Birds of a feather flock together?

NOT WHEN THE FURNACE IS ON

As climate change causes temperatures to rise in desert regions, birds are finding it harder to cope successfully.

Our desert birds are in trouble. Climate change is severely threatening the ability of desert-adapted birds to persist in these harsh environments by influencing their reproductive and social behaviours. As it stands, we could lose much of our arid-zone avian diversity in the coming decades.

Research conducted by the Hot Birds Research Project, involving the DST-NRF Centre of Excellence in Birds (hosted at the FitzPatrick Institute of African Ornithology at the University of Cape Town), the University of Pretoria and the National Zoological Gardens, is revealing the extent to which global warming is affecting the ability of arid-zone birds to endure and reproduce.

How do birds stay cool?

When the going gets hot, most desert birds engage in a trio of behaviours, although different species engage more readily in some than in others as each behaviour carries its own cost.

Firstly, they will retreat to the shadiest spot they can find, be it on the ground under the sparse shrubbery or in a tree. Next, they cease activity, reducing the heat from their bodies. Finally, they will gape periodically to trade precious water from moist surfaces for the dissipation of heat and avoidance of lethal hyperthermia.

The problem with these thermoregulatory behaviours? When birds reduce or cease their normal activities, they also cease or limit their foraging, and thus their food intake. In addition, their efforts to keep cool can also turn them into selfish parents and bad neighbours. Not surprisingly, these affected behaviours threaten their social and reproductive success and thus the survival of their species.

Selfish parents

Many Kalahari bird species breed during summer when rain falls and the invertebrates they need to feed their chicks become abundant. However, abundant prey doesn’t necessarily translate to readily available prey.

During hot weather, hornbill, fiscal, babbler and drongo parents all keep more of their diminished catches for themselves – panting requires water and the only way to replenish this resource in a waterless landscape is to obtain it from food. This parental “selfishness” obviously results in chicks fledging smaller and lighter or later – or even not at all.

Research revealed that the probability of a hornbill breeding pair managing to raise any chicks at all drops below 50% when maximum temperatures during the nesting attempt average above 35°C.

Bad neighbours

Arid-zone birds, especially in the southern hemisphere, are remarkably sociable. Several of the Kalahari’s iconic birds engage in cooperative breeding where the mated pair is assisted by several other non-breeding helper individuals in their efforts to raise chicks. The social bonds formed are hugely beneficial as it also dictates the flow of important information, such as where to find food and how to avoid predators.

When the mercury rises, social networks come under pressure. In an outdoor aviary, the researchers observed sociable weavers forming ‘cliques’. Birds occupying higher hierarchical positions took control of the best shady spots, forcing their subordinate neighbours out and thereby increasing their vulnerability to the elements.

The future: deserted deserts?

Parts of the southern Kalahari, where most of the research was conducted, have warmed by nearly 3°C since the mid-1990s.

The nesting success of a long-term study population of southern yellow-billed hornbills near Vanzylsrus in the Northern Cape has dwindled over the past 15 years, suggesting that this population will be in real trouble as soon as the 2030s.

By the end of this century, the hornbills, babblers and fiscals studied could possibly even disappear in their entirety from the Kalahari. By 2100, the number of bird species inhabiting the Kalahari is likely to be a fraction of what it is today.