birds ON THE edge

The cost of conserving species

It is widely accepted that there is a looming extinction crisis linked to human modification of the environment. And given our unwillingness to address threats such as climate change, which threaten our own future, it is not surprising that we are not devoting enough resources to prevent the loss of other species. Biologists have repeatedly argued for the need to optimise the use of scarce resources to maximise conservation benefits, spawning a whole industry in spatial planning and reserve design. But there is also debate about which species are most worthy of conserving.

BOTHA'S LARK WARWICK TARBOTON

At the species level, the playing field is far from even. 'Keystone species' are deemed to be more important to conserve because of their crucial ecological roles. Charismatic species have greater appeal to people and can be used as 'umbrellas' to ensure habitat protection for a host of other species. And still other species are important to protect because they are evolutionarily distinct. Losing one-of-a-kind birds like the Secretarybird or Shoebill would be worse than losing a species from a much larger lineage such as the parrots or sunbirds. With the advent of increasingly robust phylogenetic trees, the evolutionary and functional 'value' of each species can be estimated as its so-called phylogenetic diversity, and this measure used to assess the benefits arising from competing conservation plans.

The Zoological Society of London has combined phylogenetic diversity and threat measures in their Evolutionarily Distinct and Globally Endangered (EDGE) list, which is designed to highlight the plight of unique species on the edge of existence (*www.edgeofexistence.org*).

This is a top 100 list you don't want to be on, and as a region southern Africa is not faring too badly. Apart from a few wide-ranging vultures (Egyptian at number 30, Hooded at number 129) and vagrant seabirds, the top southern African species is Ludwig's Bustard, which comes in at number 132. The Grey Crowned Crane comes in next, at 168, just pipping the much more threatened but less evolutionarily distinct White-winged Flufftail (169).

The EDGE list gives some idea of which birds should be prioritised for conservation action, but it doesn't look at the efficiency of those actions – how much benefit you get for each conservation dollar spent.

A recent study by Laura Nunes and colleagues (Philosophical Transactions of the Royal Society B 370: 20140004) does just that. It uses estimates of the cost to improve the conservation status of 206 birds by at least one Red-List category over 10 years, and combines this with the conservation benefit in terms of phylogenetic diversity.

They found that the localised South African endemic, Botha's Lark, gave the most bang for your buck, despite coming in at a distant 486th on the EDGE list. This is because it is estimated that it would cost only US$71 000 to change its status from Endangered to Vulnerable. The range of efficiencies is enormous, with investing in Botha's Lark 65 000 times more cost-effective than investing in the lowest ranked species.

The actual expenditure on the conservation of the 206 species in the study – which includes many charismatic species – is some US$810-million, barely one-fifth of the amount deemed necessary to improve their conservation status. To make matters worse, current conservation actions are not optimal. We could conserve almost four times more phylogenetic diversity than we do currently by changing conservation priorities among the 206 species.

However, I was surprised that this value wasn't even greater, given the vagaries of national priorities, the concentration of funds in species-poor north temperate regions, and the focus on charismatic species.

Spending US$4-billion to conserve 200 threatened birds might seem excessive, but they all act as umbrella species. Conserving these birds will inevitably improve the lot of countless other species that share their habitats. And it's encouraging to know that southern Africa offers some great conservation bargains. If anyone has R1-million lying around, they could make a real difference to help save Botha's Lark.

PETER RYAN