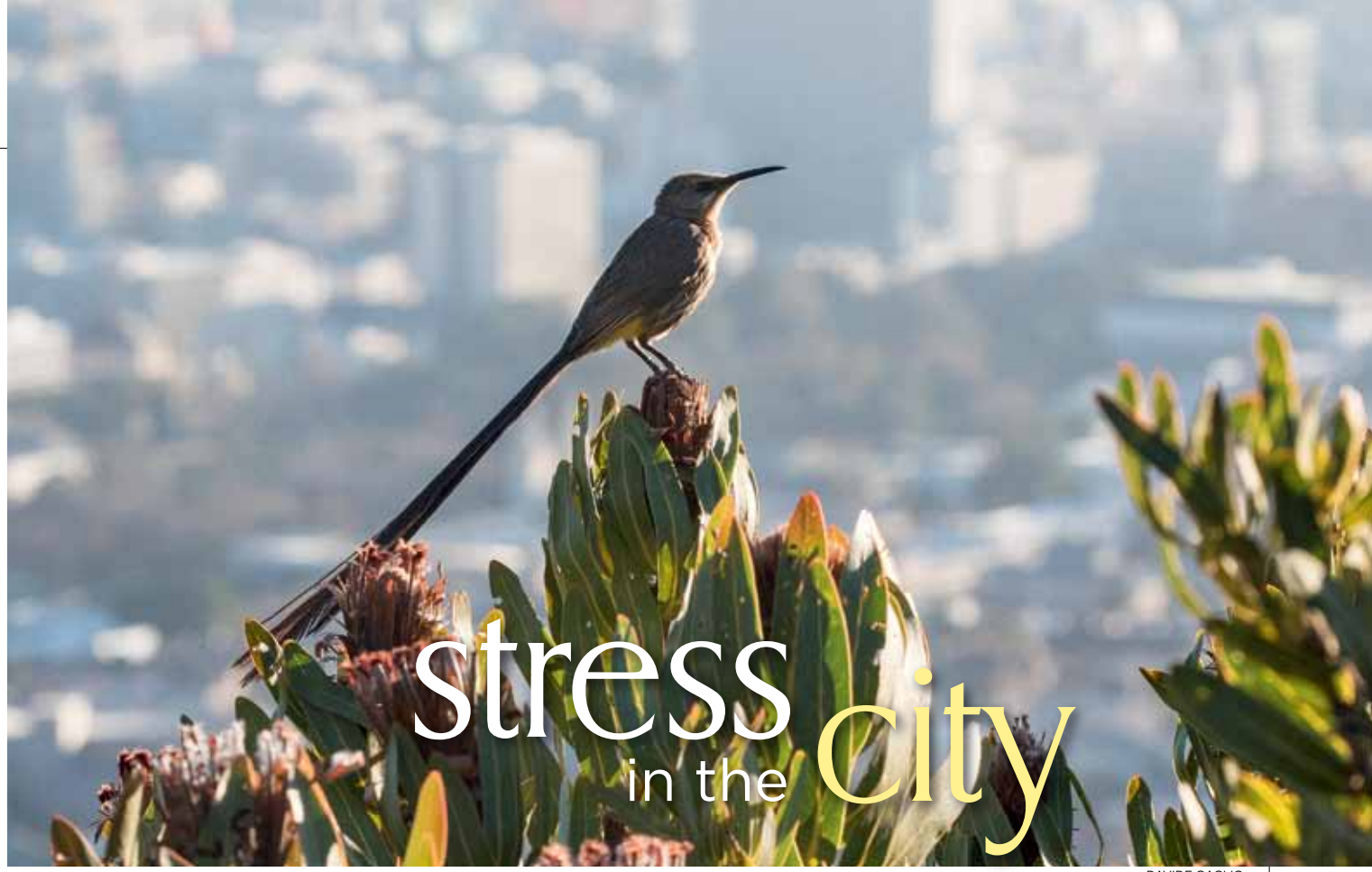

stress in the city

DAVIDE GAGLIO

Remember the last time you were really stressed? You may have ended up falling ill, perhaps losing weight or fighting with your loved ones. Even if your life is pretty Zen, the odds are – if you're living in Cape Town – that there will be a degree of stress simply in terms of managing your daily water budget.

Stress, as a temporary defence mechanism against specific stimuli, can place humans and birds in a state in which growth rates and resistance to diseases are diminished. Ecological stress due to urbanisation and climate may result in disease and morphological abnormalities in birds. Like the human residents of Cape Town, Cape Sugarbirds *Promerops cafer* are subject to multiple stressors.

A recent study by Beth Mackay examined four stress indicators in Cape Sugarbirds: body condition (change in body mass from normal); growth abnormalities, known as stress bars, in tail feathers; incidence of tarsal disease caused by mites; and fluctuating asymmetry (differences in the lengths between the two longest tail feathers).

Interestingly, the study found that there were no clear connections between the stress indicators, but rather that each indicator was best explained by a different environmental stressor. Sugarbirds at sites with warmer climates (generally those locations away from the higher mountains) had a greater incidence of mites and stress bars, while birds closer to urban settlements had higher levels of tail feather asymmetry, as well as more stress bars in their feathers. These various indicators reveal that life is proving challenging for sugarbirds, but it is still unknown if this stress translates into lower survival rates.

The world's human population is burgeoning, resulting in a nearly exponential increase in urbanisation and with concomitant pressures on biodiversity. African countries are experiencing unprecedented urbanisation, with Cape Town showing the highest per capita population growth in South Africa. Unsurprisingly, the fynbos biome in which Cape Town is nestled is severely threatened by land transformation: by the turn of the century approximately 30 per cent had been transformed by agriculture, although less so by urbanisation. Climate change is a significant environmental driver of biodiversity change: drought and decreased rainfall mean more frequent fires and if your home and food supply go up in smoke – as is the case for sugarbirds – it is undoubtedly a stressful experience.

Research by UCT student Campbell Fleming, however, shows that Cape Sugarbirds seem to have a fairly homogenous genetic profile, indicating a good dispersal of genes across their range. When there are large stands of mature, flowering proteas the birds can breed prolifically, so it is unlikely that they will go extinct in our lifetime. Still, if you have the opportunity to make their lives easier by planting a protea or two, they will appreciate it… And watching sugarbirds feeding in your garden is very likely to reduce your stress levels too.

ALAN LEE

above *Although Cape Sugarbirds show signs of stress in urban areas, they still breed well around large stands of proteas.*

Reference

Mackay, B. et al. 2017. 'Urbanisation, climate and ecological stress indicators in an endemic nectarivore, the Cape Sugarbird.' *Journal of Ornithology* 158(4): 1013–1024.