Nectar-lapping lizards pollinate hidden flowers

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Almost 90% of flowering plants are pollinated by animals, rather than wind or (very rarely) water. Most of this biotic pollination is by flying insects, although the other types of flying animals – birds and bats – are important pollinators of certain species. Plants that rely on insect pollinators typically attract them with brightly coloured and strongly scented flowers. By contrast, those that depend on birds have brightly coloured but odourless flowers, while those that seek to attract bats have strong odours and large, pale-coloured flowers that stand out from their dark surroundings at night.

The flowers of *Guthriea capensis*, which grows at high elevation and in rocky terrain along the Drakensberg and Karoo escarpments, are strongly scented and produce copious nectar. But they are inconspicuous because they are green, like the leaves, plus they are borne at ground level, tucked away beneath the leaves – hence the plant's common name, 'hidden flower'.

Researchers from the University of KwaZulu-Natal's School of Life Sciences and the University of the Free State's Afromontane Research Unit set out to identify the plant's pollinator. They suspected that the 'secret agent' was a mouse, because a number of other plant species with flowers borne near ground level have been found to be pollinated by mice, rats, gerbils or elephant shrews. But they were proved wrong when footage from their motion-activated cameras – set up among a population of the plants below Sentinel Peak in the northern Drakensberg – revealed that mice displayed no interest in the flowers. Instead, the videos showed that Drakensberg crag lizards, *Pseudocordylus subviridis,* were the main

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visitors, lapping nectar for up to 40 seconds per flower. In the process, pollen stuck to their snouts, with some inevitably transferred to other flowers. Experimentally excluding lizards by caging the plants resulted in a 95% decline in the number of seeds produced.

Internationally, the first records of lizards visiting flowers date back to the 1970s, from Madeira Island, and more than 40 reptile species have since been shown to engage in the practice, mainly on other oceanic islands. Most lizards are primarily insectivorous, but energy-rich nectar would be a valuable 'dietary supplement' in harsh environments. The Drakensberg crag lizard is likely attracted to the hidden flowers by their strong scent, found through chemical analysis to contain compounds that are highly unusual in the plant kingdom. These may account for the nectar's bitter taste, which is probably why mice show no interest in the flowers.

- *Cozien RJ, Van der Niet T, Johnson SD, Steenhuisen S-L. Saurian surprise: lizards pollinate South Africa's enigmatic Hidden Flower. Ecology. Doi: 10.1002/ecy.2670*

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