

# THE WETTER THE BETTER

How Hadedas Ibis rely on water in soil to sense their prey and the impact this has had on their expansion across southern Africa.

**L**ove it or hate it, one of the most characteristic sounds in South Africa is the loud 'ha-ha-ha' of the Hadedas Ibis.

This species has experienced a dramatic range expansion over the past five decades. Historically, it was restricted to eastern regions of southern Africa, but today it is considered a common garden bird across much of the country and occurs in major cities from the jacaranda-lined suburbs of Pretoria to Cape Town. Previous work has shown that this range expansion is geographically linked to increased irrigation in suburban and agricultural areas. But why this is so was not well understood. A recent study from the FitzPatrick Institute has shed some light on this conundrum.

Ibises (like our Hadedas, Sacred and Glossy ibises) and some other probe-foraging birds (such as sandpipers and other shorebirds) are able to use a remarkable 'sixth sense' to locate buried prey while probing the soil with their long, thin bills. They can sense vibrations produced by worms and other invertebrates wriggling around in mud and water and they use these vibrations to pinpoint the location of their prey when they aren't able to see, smell or hear it. This sense is probably best understood as something between touch, hearing and echolocation (the sense used by bats to locate flying insects in pitch darkness).

By testing Hadedas' ability to sense vibrations in soils with varying levels of water, the new study shows that the birds were unable to use their sixth sense



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to locate prey when the soil was too dry. This is understandable because vibrations travel better in wetter substrates and, along with other factors, it may well have driven the range expansion of Hadedas. It is easier to find prey in soils irrigated by humans than in the drier soils that were historically found in the central and western parts of the country.

This study highlights the importance of understanding birds' sensory requirements from their habitats. Although Hadedas are ubiquitous in South African gardens, several other birds that rely on tactile vibrations while probing the mud for prey are Critically Endangered (such as Spoon-billed Sandpipers, which migrate along Asia's eastern coasts). Many of these species are known to rely on fragile and fragmented habitats, particularly when they are migrating. It is probable that one factor limiting where they can forage and survive is their ability to find prey. Using this vibrational sense does mean that birds are less reliant on patches of high prey density to locate sufficient prey. However, if they can't sense vibrations in the first place, they may be forced to congregate in restricted areas where prey numbers are higher. So if the soil is too dry, as it

Wet soil will give this Hadedas Ibis a much better chance of finding prey by sensing the vibrations made by invertebrates underground.

may be in disturbed wetlands and during droughts, probe-foraging birds may lose their critical advantage.

For this reason, studies such as this on common, easy-to-access (and albeit sometimes annoyingly loud) birds such as Hadedas can act as indicators of greater ecological patterns. So perhaps our African alarm clocks will act as a wake-up call and help us to better understand patterns in wetland and shorebirds around the world.

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## Reference

Du Toit CJ, Chinsamy A, Cunningham SJ. 2024. Good vibrations: Remote-tactile foraging success of wading birds is positively affected by the water content of substrates they forage in. *Journal of Avian Biology*, doi.org/10.1111/jav.03243.

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