Australia's giant lizards help save sheep from being eaten alive

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Jameson compared the scavenging activity of different animals by leaving dead rats at feeding stations, with camera traps, across the landscape. Credit: Tom Jameson

Giant lizards called heath goannas could save Australian sheep farmers millions of dollars a year by keeping blowfly numbers down—and must be prioritized in conservation schemes to boost native wildlife, say researchers.

A study led by the University of Cambridge has found that heath goannas—a species of giant, scavenging lizard—act as natural cleanup crews by clearing maggot-ridden animal carcasses from the landscape.

This reduces the emergence of blowflies, which attack sheep by laying eggs on their backsides that hatch into flesh-eating maggots. The disease, known as "fly strike," costs the Australian sheep farming industry an estimated $280 million a year.

This study was carried out at 18 sites across the Marna Banggara Rewilding Project area on Australia's southern Yorke Peninsula, where over 90% of the native mammals are now extinct. The work is published in the journal *Ecology and Evolution*.

The study found that heath goannas perform a superior blowfly control service to introduced European mammals, including red foxes and cats, which are displacing them.

The researchers say that boosting populations of native large reptiles like heath goannas is vital in restoring Australia's ecosystem and the services it supports.

"We found that Australia's native scavengers like heath goannas are much more effective in removing blowflies from the landscape than invasive scavengers like European foxes and cats," said Tom Jameson, a Ph.D. researcher in the University of Cambridge's Department of Zoology and first author of the report.

Camera trap footage revealed which scavenging animal had found the dead rat, and how quickly. Eighteenth century European settlers to Australia brought with them red foxes for hunting, and cats as pets. Australia's native wildlife has since been decimated by them. Credit: Tom Jameson

High densities of blow flies put sheep at risk of fly strike, a disease where blowfly maggots burrow into the sheep's flesh and start to eat it alive, causing painful wounds. This affects the market value of the sheep, reduces breeding success and often results in death.

"Blowflies are a massive problem for the Australian sheep farming industry. They cause a horrible disease that is expensive for farmers to

manage and a real animal welfare problem for sheep," said Jameson.

This is the first study to show the importance of large reptiles as scavengers.

To get these results, Jameson compared the scavenging activity of different animals in a region of southern Australia. He left hundreds of dead rats at feeding stations, with camera traps, across the landscape. He returned after five days to see whether the rats had been eaten, and to count the number of blowfly maggots left on any remaining carcasses. Camera trap footage revealed which scavenging animal had found the rat, and how quickly.

Native Australian scavengers ate more of the dead rats, and with them the flesh-eating maggots, than scavengers introduced from Europe.

Reptiles like the heath goanna are the largest remaining native land scavengers in much of Australia today. Native Australian scavengers were seen to eat more of the dead rats, and with them the flesh-eating maggots, than scavengers introduced from Europe. Credit: Tom Jameson

"It was disgusting—we were counting maggots. After five days, we'd find over 1,000 maggots in one rat if a scavenger hadn't found it. Those maggots produce blowflies that can spread up to 20 kilometers in a week, putting local sheep flocks at risk of fly strike," said Jameson.

In natural situations, any dead animal in the landscape will fill with blowfly maggots very quickly.

"The results suggest that conservation work in southern Australia to remove invasive species should also focus on boosting the population of heath goannas and other native species because they're really important for the wider ecosystem," said Jameson. "As well as benefiting native wildlife, this will have knock-on benefits for local agricultural industry, and also attract more wildlife tourism."

The study was carried out at the Marna Banggara Rewilding Project area on Australia's southern Yorke Peninsula, where over 90% of the native mammals are now extinct. Credit: Tom Jameson

Jameson spent a total of six months living remotely in Australia, mostly alone, to conduct the research. He says it was "an absolute privilege to work in this utterly stunning landscape with such wonderful wildlife." Credit: Tom Jameson

Marna Banggara, supported by Narungga traditional owners, is an ambitious rewilding project that aims to restore ecosystem health in the region by reintroducing missing native Australian species.

Eighteenth-century European settlers to Australia brought with them red foxes for hunting, and cats as pets. Australia's native wildlife—including many scavengers—has since been decimated by them.

The heath goanna is an endangered species of giant lizard native to the heathlands of southern Australia that can grow up to a meter and a half in length. It feeds on the dead carcasses of other animals, as well as catching live animals.

Reptiles like the heath goanna are the largest remaining native land scavengers in much of Australia today.

More information: Squamate Scavenging Services: Heath goannas (Varanus rosenbergi) support carcass removal and may suppress agriculturally damaging blowflies, *Ecology and Evolution* (2024).

Provided by University of Cambridge

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