

Lions making fewer zebra kills due to ‘chain reaction’ involving invasive ants

Hunting by Kenyan lions impeded in ‘ecological chain reaction’ as big-headed ants fail to stop elephants stripping acacia trees – the cats’ ambush cover

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- A study shows lions in Kenya becoming more visible to their prey as elephants browse upon and break acacia trees undeterred by a species of invasive ant Photograph: Janina Delissen/Alamy

When a lion decides to chase down a zebra it seems as though nothing can stop it. But now researchers have discovered these enormous predators are being thwarted by a tiny foe: ants.

Scientists have found the spread of big-headed ants in east Africa sets off a situation leading to lions making fewer zebra kills.

Prof Todd Palmer of the University of Florida, a co-author of the research, said the findings were a surprise. “I was stunned,” he said. The fewer kills appear to be due to the upending of a crucial relationship – between native ants and the trees in which they live, causing a loss of cover for lions.

Palmer said the discovery highlighted the importance of interactions between species. “We often talk about conservation in the context of species,” he said.

“But it’s the interactions which are the glue that holds the entire system together.”

Acacia ants protect whistling-thorn trees by biting and stinging elephants looking for a snack. In return, they get nectar and shelter. But big-headed ants – an invasive ant species that can take over whistling-thorn trees by killing adult acacia ants and eating their eggs and larvae – offer no such protection.

“In invaded areas, elephants browse and break trees at five to seven times the rate of that in uninvaded areas,” Palmer and colleagues write in the journal Science.

To unpick the wider ecological impacts Palmer and colleagues first studied a number of plots in Laikipia, Kenya, some where elephants were present, some where they were excluded.

The team found that when big-headed ants and elephants were present there was a drop in tree cover and a dramatic increase in visibility.

The researchers then built a computer model based on observations in the wild to explore whether big-headed ant presence and increased visibility affected zebra movements, zebra kill sites and the movements of lions.

The team found zebra kills were almost three times more likely in low-visibility areas where big-headed ants were absent, than in high-visibility areas where the big-headed ants were present. But the analysis ruled out a link to zebra density, or lion activity, suggesting the drop in kills is likely because the lions are more visible to their prey.

“Because lions need cover to successfully stalk and ambush their prey they are more exposed when there are fewer trees to hunker down behind, which seems to make it harder for them to successfully take down the zebra,” said Palmer.

While the researchers say lion populations currently appear to be stable – apparently a consequence of lions switching from primarily killing zebras to hunting buffalo – Palmer said one concern was that there was no way to stop the spread of the big-headed ants.

“What that means is that if the invasion continues, more and more acacia trees will be lost,” he said. “And because acacia trees are important food for many species, including rhinos and giraffes, these landscape-level changes could pretty drastically change the ecology of the area.”