Being a dominant breeder is costly for female banded mongooses

July 18 2011, By Tamera Jones

The banded mongoose.

There's a subtle hierarchy among the women in banded mongoose societies: only older females get to breed, while younger ones have to wait their turn. If a young female mongoose decides to buck this trend, she risks the wrath of her older female relatives, who will throw her out of the group.

Lack of food and the stress involved almost always causes the younger mongoose to lose her unborn pups.

Scientists have now found that there are also considerable costs for female banded mongooses who try to prevent younger females from having pups.

After studying groups of banded mongooses in Uganda, researchers

from the universities of Cambridge, Exeter, Edinburgh and Napier found that: pups born to females that evict younger females are lighter; pups that receive less attention because their mothers are so busy competing with younger females weigh less once they reach independence; and evicting mothers have fewer pups that survive into adulthood.

This is the first time researchers have shown that trying to prevent younger females from breeding is not necessarily without its costs for despotic females.

'The fact that dominant females endure these costs suggests that letting subordinate females breed must be even more costly for them,' says Dr. Matt Bell from the University of Edinburgh, lead author of the study.

Banded mongooses live in groups of around 20 individuals on average, but some groups can contain as many as 70. Finding food to fill the bellies of every member of a group can be challenging. But – as every parent knows – raising kids requires a lot of energy. This means there's often not enough to go round for every female to get the opportunity to breed.

Within a group of banded mongooses, the number of females that breed at any one time varies from one individual to 10.

"There's a lot of competition over who gets to breed, which results in very vicious conflict," says Bell.

Disagreements between females are so violent and disruptive that they can go on for days. Fights mean the animals waste a lot of energy, and stress levels go through the roof for all involved.

"It's a dramatic spectacle. You hear them screaming and see them

ripping each other apart. It's not surprising that this has a detrimental affect on older mothers and their pups," Bell says.

Smaller females can be evicted for weeks at a time, which can be dangerous. They hang around in the bushes waiting for an opportunity to attempt to re-join the group, but will only be allowed back in once they've lost their unborn pups, or they're no longer receptive to males.

Limiting the number of individuals that breed is typical for creatures that live in social groups. Ant societies limit reproduction to one or just a handful of queens, while in naked mole rat and meerkat societies, breeding is monopolised by either just one individual or a pair.

While this may sound like a good solution, until now, no-one had looked to see if there are any costs to dominant breeders.

"We realised dominant females would probably only invest in stopping younger females if the benefits outweighed the costs," says Bell.

To test this idea, Bell and his colleagues studied 11 groups of banded mongooses in Queen Elizabeth National Park in Uganda over a 22-month period and a 30-month period. During that time, they monitored 99 breeding attempts in the group.

They found that dominant females are more likely to get injured, they spend less time foraging and eating, and rowing with younger members of the group means investing less time with their own pups.

"Our results show that dominant females have to balance how much they invest in suppressing subordinates," says Bell.

companion website to the award-winning magazine Planet Earth published and funded by the Natural Environment Research Council (NERC).

More information: M. B. V. Bell, et al., The cost of dominance: suppressing subordinate reproduction affects the reproductive success of dominant female banded mongooses, *Proceedings of the Royal Society B*, Published online before print July 13, 2011, doi: 10.1098/rspb.2011.1093

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