SCIENCE

Elephant drives lead to spikes in stress levels

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Calves had more than 100% stress-level increase

Despite adapting to stressful human-dominated landscapes, elephant stress levels increase drastically after 'elephant drives' – where people actively chase away elephants – find scientists.

Like humans, elephants also experience stress. Humans are also one of the causes of this stress: as their habitats are encroached, elephants have no option but to use human-dominated landscapes, which brings them in contact with people regularly. People react by driving elephants away using crackers, loud noises and even vehicles. The resulting stress signatures, including specific hormones such as glucocorticoids, are evident in

elephant poop.

To find out how stressed wild elephants in human landscapes are, a team of scientists from institutes including the National Institute of Advanced Studies (NIAS) followed 69 elephants in Tamil Nadu's Valparai – a place of intense man-elephant conflict – and picked up fresh elephant dung deposited right after elephant drives. Similarly, they also studied elephants in the evergreen forests of Vazhachal nearby, where there is no prolonged exposure to human presence. At the Laboratory for the Conservation of **Endangered Species,** CCMB, Hyderabad, they quantified faecal glucocorticoid metabolite (fGCM) levels, higher levels of which imply more stress.

Contrary to their expectations, elephants in human-dominated regions had similar baseline stress levels as those dwelling in the fairly undisturbed forests of Vazhachal.

"This tells us that despite facing more stressful incidents in human landscapes, the stress levels of elephants there are comparable to those in undisturbed regions," says Sreedhar Vijayakrishnan (NIAS), lead author of the study. "So elephants in human-dominated regions seem to have adapted to the stress."

But interestingly, they have not been able to adapt to the stress that elephant drives cause, adds Vijayakrishnan.

After drives, the stress levels of adults and sub-adults increased by 24% and 54% respectively. Calves showed the highest stress: more than 100% higher than normal. Males too showed almost 40% higher stress.

"Such negative interactions that cause consistently high levels of stress can affect elephant survival and reproduction," says Vijayakrishnan.

Elephant immune systems starts shutting down and even the estrus cycle in females can cease due to stress. Hence, elephant drives should be discouraged and the free movement of elephants facilitated, to reduce stress, write Vijayakrishnan and his colleagues in their study published in General and Comparative Endocrinology.

"The study provides good insight into how driving operations could influence elephants' physiological health," commented Sanjeeta Sharma Pokharel, who was not part of the research and has studied faecal glucocorticoid metabolites in elephants in the **Nilgiris.**

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