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Responses of Asian elephants (*Elephas maximus*) to an electronic training collar

S.J. Cabral de Mel[1,2], R.K. de Mel[2], M.H. Senanayake[2], R. Bandaranayake[3], S. Seneweera[1,2], A. Dangolla[4], D.K. Weerakoon[5], T. Maraseni[1], B.L. Allen[1,6*]

[1]*University of Southern Queensland, Toowoomba, Australia*
[2]*National Institute of Fundamental Studies, Kandy, Sri Lanka*
[3]*Department of National Zoological Gardens, Sri Lanka*
[4]*Department of Veterinary Clinical Sciences, University of Peradeniya, Peradeniya, Sri Lanka*
[5]*Department of Zoology and Environmental Sciences, University of Colombo, Colombo 03, Sri Lanka*
[6]*Centre for African Conservation Ecology, Nelson Mandela University, Port Elizabeth, South Africa.*

[*]*Benjamin.Allen@usq.edu.au*

Asian elephants (*Elephas maximus*) play a major role in human-wildlife conflict across its range in countries. Fixed electric fencing is widely used to manage human-elephant conflict by constraining the movements of elephants**.** However, fixed fences have number of shortcomings such as regular fence breaching, high costs of maintenance and lack of flexibility in changing the location of fenced area. Advances in aversive geofencing technology, such as satellite linked animal-borne warning collars, has the potential to revolutionise the management of elephants as these can be used as virtual fences. However, knowledge of how captive elephants respond to such animal-borne aversive stimuli is required before efficacy testing of these devices can occur. A preliminary study was conducted on captive Asian elephants in Sri Lanka to determine their responses to an electronic training collar typically used for dogs. This collar, which is capable of delivering mild electric stimuli at various strengths, was tested on three captive elephants at a confined location. Elephants wore a dummy collar for three consecutive days prior to the experiment. Each experimental session comprised of 2 x 10 min testing periods (one for two different locations around the neck) with a five min break between sessions. During each testing session, 10 stimuli (one stimulus per minute) were delivered and elephants' responses were recorded. Subsequently the collar was removed and the elephant's wellbeing was monitoredfor three consecutive days. Responses shown by elephants varied but all showed more pronounced reactions at higher stimuli strengths. Elephants responded by touching the collar (27.08%), showing an involuntary muscle twitch (23.96%), turning away (8.33%), moving backwards (7.29%) and trunk lifting (5.21%). Our results show that electric stimuli from the collar were able to generate aversive responses from elephants, suggesting that aversive geofencing devices have the potential to constrain elephant movement.

Keywords: Asian elephants, human-elephant conflict, aversive conditioning, elephant behaviour

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