

Size matters: preventing large mammal extinction

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Saving large mammals such as elephants and rhino from extinction could be made more effective by focusing efforts on individual species as well as their habitats.

Scientists at the Zoological Society of London's Institute of Zoology (IoZ) and Imperial College London have identified fundamental new approaches to improve the success of large mammal conservation. Published today in the journal *Science*, the largest study of its kind analyses key factors linked to the extinction of mammals.

“Conservation biologists have always known that large bodied mammals are at greater risk of extinction,” comments Professor Georgina Mace of the IoZ, “Now we understand the mechanisms, we are able to tailor conservation programmes dependant on size, to ensure they're more effective.”

The study showed that extinction risk in smaller mammals, below approximately 3kg (about the weight of a small domestic cat), is determined primarily by the size and locations of their distributions, and the human impact to which they are exposed. Larger mammals have the additional pressure of biological disadvantages such as long gestation period and late weaning age to contend with, significantly increasing their susceptibility to extinction.

“In a world dominated by people, being big is substantially more of a disadvantage than we realised, which implies that the conservation of large mammals should assume a particular urgency,” said Dr Marcel

Cardillo of Imperial College London.

“From a conservation policy angle, the message would be: small may be conservable but it is a little trickier for the larger mammals,” commented Dr Andy Purvis of Imperial College London.

The research findings suggest smaller species, of around less than 3kg, would benefit from conservation of their habitat area, whereas, larger bodied animals require a different approach, focusing upon the specific species, their biology and their habitat.

“This understanding enables us to predict what species are most at risk in the future,” said Dr Purvis. “That provides a way for conservationists to go on the front foot rather than wait for accidents to happen. We can try to work out which species are the ones we can do something for, and do some pre-emptive conservation planning. Of course, prevention is always cheaper than cure.”

The research means large bodied mammals such as ungulates (which include rhino and zebra) and many primates are more likely to be predisposed to decline and extinction.

Biological traits such as low population density, slow life history, late weaning age and extended gestation in mammals above a certain size means they are evolutionarily disadvantaged in the face of human impact, compared to species of smaller size. Large mammals may therefore need a more complex conservation strategy, which takes into account their biology in combination with the external threats they face.

Source: Zoological Society of London (ZSL)

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