Vaccine could help save endangered Ethiopian wolves

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Vaccine could ensure a future for the endangered wolves. Credit:Claudio Sillero

Researchers have produced the strongest evidence yet to suggest that a targeted reactive vaccination programme, rather than blanket vaccination, can control infectious diseases like rabies in threatened wild canid populations (dogs, wolves and foxes).

The research team from Oxford University, Glasgow University and Edinburgh University demonstrated that by vaccinating just thirty per cent of the Ethiopian wolf population, they could reduce the spread of rabies during an outbreak and consequently, the number of animals that die from this disease. Their study, published in the journal *Nature*, suggests that by vaccinating wolf packs living in the connecting mountain valleys close to the outbreak, they can contain disease outbreaks with unexpectedly low overall levels of vaccine coverage.

For nearly twenty years Oxford University's Wildlife Conservation Research Unit (WildCRU) has been studying these animals and in 1995 established the Ethiopian Wolf Conservation Programme (EWCP) to address the most urgent threat to wolf survival. The population of just 500 can only be found in remote mountain enclaves in the Ethiopian Highlands. There are six subpopulations of between 10 and 50, with the largest group of 350 living in the Bale Mountains in the southeast. Canid diseases, such as rabies and distemper, are the major killers with domestic dogs being the main disease-carriers. The EWCP continues to vaccinate domestic dogs around wolf habitat to protect the wolves.

After rabies outbreaks in the Bale Mountains in the early 1990s, which wiped out three quarters of the Ethiopian wolf population in this area, an emergency vaccination programme was introduced in 2003 in response to yet another outbreak that year.

The study, an analysis of data collected by the EWCP, suggests that a preventative strategy to capture and vaccinate the whole population is impractical as the wolves live in remote, inaccessible mountain enclaves. Their alternative strategy adopted by the EWCP is an effective reactive response to outbreaks, whereby Ethiopian wolves living in the mountain valleys close to infected packs are targeted. The researchers have shown through modelling that even if outbreaks became far more frequent, fewer wolves would need to be vaccinated than under a wholesale vaccine programme in order to virtually eliminate the extinction threat posed by such outbreaks.

The researchers suggest that routine monitoring of the population enables the early detection of disease and a rapid response to deal with it. In the event of a single suspected case, they suggest that monitoring should be intensified and once two rabid carcasses are found, vaccination teams should be dispatched to target the subpopulations living in connecting valleys. Additional measures, such as vaccinating

between 10 and 40 per cent of wolves in affected packs, if targeting the particularly large and highly connected packs, can substantially reduce overall mortality due to these outbreaks.

Dr Claudio Sillero-Zubiri, from Oxford's WildCRU, said: 'Ethiopian wolves are the rarest carnivores in the world, restricted to a few montane enclaves in the Ethiopian Highlands. Canid diseases, such as rabies and distemper, transmitted from domestic dogs pose the most immediate threat to their persistence, and targeted vaccination intervention presents a useful tool to protect the remaining small wolf populations from extinction.'

Professor David Macdonald, Director of the WildCRU, said: 'The WildCRU's aim is to put innovative science to practical use. These discoveries would have been impossible without long-term field studies, and they show how cutting-edge science can have down-to-earth practical significance both for the protection of a very rare, and spectacular, wild species, and also for human well-being.'

Source: University of Oxford

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