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FZS Press Release

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A wolf at bay – targeted vaccinations protect endangered species during rabies epidemic

In tomorrow's edition of the scientific journal *Nature* (12. October) British scientists, amongst them the FZS Veterinarian Dr. Karen Laurenson, report that they were able to control an outbreak of rabies amongst the endangered Ethiopian wolf through a targeted reactive vaccination programme.

Frankfurt (11.10.2006). Should we intervene or better let nature take its course? This is the question conservationists and veterinarians keep asking themselves when animal populations are threatened by epidemics such as rabies or distemper that can have a devastating impact. The question becomes even more pertinent when the species involved is rare or threatened by extinction.

At the end of 2003, a rabies epidemic spread amongst the Ethiopian wolves (*Canis simensis*) of the Bale mountains in the highlands of Ethiopia. This elegant redbrown wolf is the rarest canid in the world – only about 500 individuals survive in total, half of which live in the Bale Mountains. The risk of losing a substantial number of animals to the rabies epidemic and therefore jeopardizing the survival of the species was high in 2003. However, vaccinating the wolves against rabies is not easy and also somewhat controversial, as the animals need to be caught and immobilized, as no oral vaccines are available. Besides the logistical challenge in the Alpine habitat, an immobilization is stressful for any animal. After debating the risks, a decision was made to vaccinate the wolves after all – but only very selectively and not using a broad-scale campaign. In the study now published in *Nature* scientists from the Universities of Glasgow, Edinburgh and Oxford as well as the Frankfurt Zoological Society

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The new edition of the scientific journal *Nature*, which appears tomorrow (12. October), reports about research on the endangered Ethiopian Wolf, which was supported by Frankfurt Zoological Society amongst others.

(FZS) present their findings based on the data collected during this alternative vaccination strategy.

Theory and Practice

„Theoreticians have devoted a lot of effort to working out how to vaccinate populations in ways that prevent epidemics getting started”, stated lead author Dr. Dan Haydon from the University of Glasgow. “But this requires coverage that is impractical in wild populations.” They therefore looked at vaccination strategies, says Haydon, that do not necessarily prevent all outbreaks, but do reduce the chances of really big outbreaks – ones that could push an endangered population over the extinction threshold. These strategies turn out to be effective and a lot more practical.

Haydon and his colleagues suggest that a preventative strategy to capture and vaccinate the whole wolf population is not only impractical as the wolves live in remote, inaccessible mountain enclaves, but also unnecessary. The alternative strategy adopted during the 2003/04 outbreak was an effective reactive response, whereby only wolves living in the mountain valleys close to infected packs were targeted. In this way a barrier of vaccinated animals was formed between sick and healthy packs and was sufficient to prevent a further spread of the disease. The researchers have shown through modelling that even if outbreaks became more frequent, fewer wolves would need to be vaccinated under this targeted scenario, than under a wholesale vaccination programme, in order to virtually eliminate the extinction threat posed by such outbreaks. In 2004 vaccination of only 30% of the population effectively controlled the epidemic.

The authors suggest that routine monitoring of the population enables the early detection of disease and thus enables a rapid response to mitigate any outbreak. Once a rabid carcass is found, vaccination teams should be prepared to target the subpopulations living in connecting valleys. Additional measures, such as vaccinating between 10 - 40 per cent of wolves in affected packs, if targeting the particularly large and highly connected packs, can further reduce overall mortality due to these outbreaks.

Dr Karen Laurenson of Frankfurt Zoological Society and the University of Edinburgh, who has led the disease work with Ethiopian wolves adds: “Ethiopian wolves are the rarest carnivore 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 survival. We have shown that the vaccination of Ethiopian wolves, when appropriately and strategically used, is a safe, direct and effective method of reducing extinction threats. With the advent of new generations of oral vaccines, such methods are becoming ever more feasible and cost-effective. Our priority now is to work out

whether wolves could be vaccinated using an oral vaccine, such as those that have been used so successfully used to eliminate rabies from foxes in Western Europe.”

Support from Frankfurt for the Ethiopian Wolves

Frankfurt Zoological Society has been supporting and collaborating with the Ethiopian Wolf Conservation Programme (EWCP) for over 5 years to address the most urgent threats to wolf survival. FZS is now focussing on securing the habitat for this species. With two programmes aimed at supporting and developing protected areas (Bale Mountains National Park and also Afroalpine ecosystems in northern Ethiopia), FZS is supporting the long-term protection of the key areas, in which the majority of Ethiopian wolves live.

Low-coverage vaccination strategies for the conservation of endangered species

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Digital Pictures in print resolution are available on request.