Translocation risks revealed: Scientists develop techniques to avoid repeat of red squirrel catastrophe

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Disastrous disease outbreaks like the one which led to the decimation of the red squirrel in Britain can now be avoided through the implementation of new preventive measures developed by UK scientists.

Researchers at the Zoological Society of London (ZSL) looked at the disease risks associated with moving wild animals (translocation), and worked out the key baseline data required to predict the outcome of wild animals being moved around.

Translocations are being increasingly used to conserve species whose numbers have plummeted as a result of habitat degradation and other human factors. Climate change is likely to lead to the need for many more translocations to ensure animals are located in favourable habitat.

There are numerous historical examples of translocations introducing disease to native populations. Following the accidental introduction of the rinderpest virus to Africa with translocated cattle in the 1890s the number of wildebeest in the Serengeti fell dramatically, leading to a subsequent fall in two important predator species - lion and hyena.

In the UK the introduction of the squirrelpox virus with the North American grey squirrel in the late 19th century caused fatal disease in red squirrels, contributing to their mass decline.

At the planning stages of the proposed translocation of Eurasian cranes (*Grus grus*) from Germany to the UK, called The Great Crane Project, the researchers used their new analytical method to assess the risk of disease.

The research team investigated the parasites harboured by the source population of cranes in Germany, captive cranes held in the UK, and the existing small population of cranes present in the UK. From those investigations they identified 24 potential translocation hazards. The threat of these disease hazards, which included nematode worms and avian influenza, was ranked.

By applying the kind of risk analysis already used to estimate risks to humans from sources as diverse as car accidents, radioactivity and cancer, the team investigated the probability and magnitude of effects from the 24 disease hazards at all stages of the translocation route including those triggered by stressors such as capture, those induced by parasites brought into the UK and those by parasites harboured by native species at the destination. This analysis has guided careful disease risk planning and implementation throughout the Great Crane Project and contributed to its current success.

Lead author Tony Sainsbury said: "This project has demonstrated that we have a feasible method to assess the risks of disease to translocations before they take place, which is very important if we are to avoid a catastrophe like that which has virtually wiped out the red squirrel in the UK."

This new method of risk analysis is now used on all reintroduction programmes in Natural England's Species Recovery Programme. This approach is necessary whether the origin of the species are ex-situ populations destined for re-introductions, re-introduced populations or wild populations. This risk analysis process allows Natural England to

adequately assess the impact of species recovery programmes on wild animal health and disease and to manage re-introduction programmes appropriately now and for any future re-introductions.

Tony Sainsbury said "The fundamental difficulties in analysing the risk of disease associated with translocation of wild animals are that knowledge of the number, identity and distribution of parasites and their ability to induce disease is limited and requires further research. In the meantime post-release health monitoring remains very important.

More information: Their research is published online today (26.4.12) in the journal *Conservation Biology*.

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