

# HEALTH SURVEILLANCE OF TRANSLOCATED WILD ANIMALS

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## Summary

It is well known that there are disease risks in the translocation of wild animals for conservation or welfare purposes. Significant infectious disease epidemics have arisen as a result of translocation, for example avian malaria in birds. The risk is probably increased by translocating captive-bred animals, or species which have been present in a different geographic range or ecosystem. When a translocation is at the planning stage, risks should be assessed and measures adopted to ameliorate them. Knowledge of the infectious agents harboured by the animals to be translocated and present in the recipient population is required and this can present some difficulties. There may be no reliable tests for the detection of affected or carrier animals, and, given the continuing discovery of new infectious diseases, it is likely that many species of wild animals carry infectious agents of which we are, as yet, unaware. Epidemiological formula may be needed to determine the numbers of each population that should be sampled which depends on the estimated prevalence of infection and other factors. Screening using bacteriological, parasitological, virological and haematological methods may be needed before translocation takes place, and the elimination of pathogenic agents which are known to be alien in the recipient population or ecosystem may be necessary. Translocated animals must be monitored after release and examinations performed on sick or dead animals. Investigations to determine the causes of morbidity and mortality will provide information on the populations' health status and give an early warning of infectious diseases which may compromise the translocation's objectives.

## Introduction

The increasing human population places great pressures on wild animals and plants through direct exploitation, damage to the environment and competition for space, food and other resources. The result has been an unprecedented wave of extinctions (Magin *et al.*, 1994) and damage to the welfare of very large numbers of free-living wild animals (Sainsbury *et al.*, 1995).

The human response to this situation has been a burgeoning of conservation programmes during the last fifty years, particularly through habitat protection but also through active interventions such as captive breeding for re-introduction and other translocations. In this paper I shall use "translocations" as an all encompassing term to include re-introductions, restocking, introductions and translocations, as defined by the IUCN (1987). Translocations are taking place on a very large scale (Griffith *et al.*, 1993) and have often been undertaken with complete lack of awareness or little regard for disease risks. The greatest danger is the accidental introduction of serious infectious disease into recipient free-living populations.

Because there has been little interest in diseases of free-living wildlife until recently the chances that introduced diseases would have been observed or diagnosed have been slight. Nevertheless, several such cases in which accidental introduction of infectious disease has caused major mortality incidents have been recognised and documented (Woodford, 1993; Woodford and Rossiter, 1993; Cunningham, 1996; Daszak *et al.*, 2000;). Examples include the introduction with imported domestic cattle of rinderpest to Africa which caused spectacular mortality in indigenous hoofstock (Plowright 1988), the mass mortalities associated with amphibian chytridiomycosis in Australia, Central and North America (Daszak *et al.*, 2000) and the suspected extinction of Hawaiian bird species following spread of infections, particularly avian pox and malaria, by introduced mosquitoes (Van Riper *et al.*, 1986).

Other examples of accidental disease introduction into free-living populations include the spread of an upper respiratory tract disease, thought to have been carried by released captive individuals, into desert tortoises (*Gopherus agassizii*) in the Mojave Desert (Jacobsen *et al.*, 1991), the spread of the giant liver fluke *Fascioloides magna* from wapiti *Cervus elaphus*, introduced into Italy from the USA, into other European ungulates (Haigh, 1988), and the introduction of rabies into the racoon population in parts of the Eastern United States following the release of an infected animal (Anthony *et al.*, 1990). As mentioned above it is likely that many such events have occurred but have not yet been recognised because of lack of monitoring.

There is a need for caution in the translocation of wild animals (Woodford, 2001) and here I describe some methods to assess and reduce the risks of the potentially harmful consequences of these procedures.

## Health Surveillance Can Reduce the Conservation and Welfare Risks of Translocation

The key to minimising the risk of translocation is knowledge of the infectious agent status of the population into and out of which any translocations are to be made. Infectious agent screening presents some difficulties for two reasons. Firstly, there may not be reliable tests available for the detection of affected or carrier animals and, secondly, given the continuing discovery of emerging infectious diseases (Daszak *et al.*, 2000) it is likely that many species of wild animals carry infectious agents of which we are, as yet, unaware. For these, and the reasons outlined above, translocations out of an animal's normal range and ecosystem should be avoided.

For all translocations, a protocol should be devised for health monitoring of the resident population and the animals to be introduced, both before and after introduction. Detailed consideration should be given to the possible infectious agents that an animal or group might carry in light of knowledge about the species and the areas from which (and, if relevant, through which) it is to be translocated.

It is important to be aware that although many countries have extensive animal health legislation regulating the importation of wild animals, in most cases, this has been developed to protect human and domestic animal health and may not give adequate protection against the risk of introducing infections to captive or free-living wild animals. Wildlife translocations are often undertaken with no veterinary input and there has been a tendency to assume that if there are no legal constraints on translocation, it must be safe for it to proceed. The decision to proceed with a translocation, particularly if for release into the wild, should depend upon assessment of the potential benefits and risks. In many cases this is likely to be difficult and to some extent a subjective process. The working group on risk assessment and population dynamics considered this decision making process and the approach that they suggested is described by Ballou and Lyles (1993).

## Conclusion

There are very serious risks associated with ill-considered translocation of wild animals. It is important that veterinarians are involved in planning and undertaking these and that any associated risks to population viability and the welfare of individuals are carefully assessed.

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