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Additional case-studies from around the globe

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The re-introduction of African wild dogs in South Africa

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Introduction

The African wild dog (*Lycaon pictus*) is classified as 'endangered' according to the 2009 IUCN Red List of Threatened Species. Major threats to wild dogs include human-induced mortality, habitat transformation, prey depletion and exposure to infectious diseases (Woodroffe *et al.*, 2004). Therefore, the traditional focus of wild dog conservation efforts has been mainly on mitigating these negative factors in the few remaining viable populations in large protected areas (Woodroffe *et al.*, 2004). However, considering increasingly fragmented landscapes, the absence of sufficiently large protected areas containing suitable wild dog habitat aside from Kruger National Park is exactly the problem in the context of South Africa. After a population and habitat viability assessment for wild dogs in southern Africa was conducted in 1997, a complementary conservation strategy was proposed (Mills *et al.*, 1998) and subsequently implemented (Davies-Mostert *et al.*, 2009) in South Africa: separate subpopulations of wild dogs in several small (<1000 km²), geographically isolated and predator-fenced conservation areas are managed as a single metapopulation. This innovative but intensive management approach involves the re-introduction of wild dogs into suitable conservation areas, and periodic translocations among them to mimic natural dispersal and maintain gene flow.

Goal

- The predetermined goal was to create a second viable population of wild dogs in South Africa to supplement the one occurring in Kruger National Park (Mills *et al.*, 1998).

Success indicator

- The predetermined indicator of success was to establish a so-called 'managed metapopulation' with a minimum total of nine packs of wild dogs over a 10 year period (Mills *et al.*, 1998).

Project Summary

Ideally, species should be protected in areas large enough to allow for natural demographic and genetic processes. However, in reality, species often occur in small and isolated patches of suitable habitat embedded in human-dominated landscapes. In the context of South Africa, numerous such conservation areas have been created after political transformation that has led to increased legislative and socio-economic incentives for conservation, with financial considerations being the main driver. Following on the proposal of Mills *et al.*

Radio-collared wild dog destined for re-introduction in South Africa © Markus Gusset

(1998), the Wild Dog Advisory Group of South Africa (WAG-SA) was formed to guide and implement the metapopulation management plan (Davies-Mostert *et al.*, 2009). Membership of WAG-SA is broad and includes conservation scientists, managers and policy makers. WAG-SA members meet quarterly to discuss issues pertaining to, for example, the translocation of wild dogs among existing sites and re-introduction into new sites. Wild dogs have been re-introduced into nine state protected or privately owned areas that together form the official metapopulation (Davies-Mostert *et al.*, 2009), with additional re-introductions into four private game reserves whose owners are not WAG–SA members (Gusset *et al.*, 2008). Through these re-introductions, the geographic range of wild dogs in South Africa was expanded by about 4,600 km². The number of wild dogs in the official metapopulation peaked at 264 animals in 17 packs (Davies-Mostert *et al.*, 2009), and thus exceeded the size and density of the naturally viable wild dog population in Kruger National Park. The inherent vulnerability of small subpopulations, however, has entailed increased management requirements and thus limited the animals' behavioural decision to disperse and form a new pack.

Many early attempts to re-introduce wild dogs met with limited success due to various, often unknown causes, and re-introduction is not considered a high priority in wild dog conservation (Woodroffe *et al.*, 2004). Nevertheless, particularly with the implementation of the metapopulation management plan, wild dogs have been successfully re-introduced into various sites in South Africa, with high survival rates of the released animals and their offspring, and with offspring produced in all release areas (Gusset *et al.*, 2008). Wild dogs clearly do well in these small areas, as manifested in favourable demographic parameters (Davies-Mostert *et al.*, 2009). Wild dog re-introductions and translocations are considerably expensive, logistically complex and labour intensive (Lindsey *et al.*, 2005). However, these challenges seem not to have deterred those in charge from re-introducing wild dogs in South Africa. (The willingness to harbour wild dogs was an overwhelmingly important aspect in re-introduction site selection.) It is unlikely that the money spent on the managed meta-population in South Africa would have been made available to wild dog conservation elsewhere. Furthermore, re-introduced wild dogs can at least partly offset financial expenditures, as they can be used profitably and sustainably for ecotourism (Lindsey *et al.*, 2005). Besides financial benefits attributed to the wild dogs'

Release of wild dog in South Africa
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improved profile from the mid-1990s, there is evidence for re-introduced wild dogs to have beneficial consequences as an umbrella, flagship and keystone species. Collectively, this will hopefully provide incentives for owners of small conservation areas to form larger conservancies by removing internal fences.

Another achievement is a better understanding of what makes wild dog re-introductions successful thanks to continuous pre- and post-release monitoring and evaluation (Gusset, 2009), although data recording has at times been insufficient. Perimeter fences can at least partly prevent wild dogs from straying onto neighbouring land and thus coming into potentially fatal contact with humans. Nevertheless, deliberate and accidental killing by people still accounts for the majority of fatalities in the metapopulation. Canine distemper and rabies transmitted from black-backed jackals (*Canis mesomelas*) were the only natural causes wiping out two entire re-introduced subpopulations, while timely vaccination attenuated a further rabies outbreak. Wild dogs bred or raised in captivity can be used for re-introduction, if necessary, when first bonded with wild-caught animals to facilitate the transfer of socially learned survival skills. Keeping wild dogs in a pre-release enclosure to ensure social integration in artificially composed packs before release is the most important factor in promoting re-introduction success (Gusset *et al.*, 2008), as wild dogs rely on a cohesive social group for survival and successful reproduction. This can be particularly important for wild dogs captured as 'problem animals' that do not constitute natural disperser groups. However, problems in finding suitable mates prevented natural pack formations after release. Continuous translocations of wild dogs among the small, geographically isolated release areas will be an unfortunate necessity, unless levels of natural dispersal can be sufficiently enhanced by increasing human tolerance of wild dogs to ideally render a self-regulating metapopulation possible.

Major difficulties faced

- The collective impact of wild dogs on game species affects predator - prey relationships, necessitates costly restocking of the prey base or leads to the removal of wild dogs.
- Problems with wild dogs breaking out of release areas and coming into conflict with human interests lead to retaliatory killing, laborious recapture or removal of wild dogs.

- The placement of wild dogs relies on demand and supply, which leads to the conundrum of intermittently having to manage 'surplus' animals of an endangered species.
- The uncoordinated re-introduction of (unidentified) wild dogs into private game reserves whose owners are not willing to participate in the official metapopulation.

Wild dog snared on a farm in South Africa
© Craig Jackson

Major lessons learned

- Metapopulation management is likely to become increasingly important for a wide range of species due to intensifying habitat fragmentation that prevents natural immigration.
- Applying an evidence-based approach to complement the experience of conservation practitioners improves the efficiency and effectiveness of re-introduction attempts.
- Promoting re-introduction success in social species like wild dogs depends on behavioural considerations that need to be incorporated in management decisions.
- Implementing a national conservation strategy involving multiple stakeholders (government, community and private participants) with different objectives is possible.

Success of project

Highly Successful	**Successful**	Partially Successful	Failure
	√		

Reasons for success/failure:

- The predetermined goal of creating a second viable population of wild dogs in South Africa was achieved, but there are difficulties (see above) that limit this conservation strategy.
- The predetermined success indicator of establishing nine packs of wild dogs in the managed metapopulation was reached in half of the allotted 10 years.
- The project was successful owing to a strong collaborative approach under the leadership of WAG–SA, paired with the willingness to try and learn from new approaches.

- Despite initial doubts, wild dogs have proved to be a species behaviourally amenable to re-introduction, which is encouraging for metapopulation management elsewhere.

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