

THE MKOMAZI PROJECT

PLAN FOR RE-INTRODUCTION OF THE AFRICAN WILD DOG (*Lycaon pictus*)

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AN ENDANGERED SPECIES PROGRAMME UNDERTAKEN BY

**THE WILDLIFE PRESERVATION TRUST FUND (TANZANIA) and
THE GEORGE ADAMSON WILDLIFE PRESERVATION TRUSTS
(UK, USA, THE NETHERLANDS).**

PLAN FOR RE-INTRODUCTION OF

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Introduction

Today it is recognized that the African Wild Dog (*Lycaon pictus*), endemic only to Africa, is a highly endangered species with currently probably less than 5000 free-living adults. Reasons for their decline are given in various publications and in our Veterinary Reports 1996, 1997 and 1998. In 1995, in an attempt to reverse the decline, the George Adamson Wildlife Preservation Trusts (USA, UK and Holland), and the Wildlife Preservation Trust Fund (Tanzania), on the invitation of the Tanzanian Government, began a captive breeding programme in the Mkomazi Game Reserve, with the ultimate goal of re-introducing the offspring back into areas where the dogs formerly lived and had now seemingly disappeared.



The breeding programme is run as a practical management programme. During this captive-breeding programme, problems were encountered in protecting the dogs for diseases. Where necessary, research was undertaken to find simple solutions to these problems, solutions that might also be applicable in the wild, where necessary. Our approach for the re-introduction will also be practical and managerial. The welfare of the dogs and their preparation for a free-living existence is the priority. Research will only be undertaken when problems arise that threatens the welfare of the dogs. If such a situation does arise, it will be undertaken with minimal intervention, with the least possible disruption of the dog's social behavior.

The re-introduction of African Wild Dogs is a highly complex operation due to their unique and complicated social structure; their requirement of a large home range within which they roam nomadically, sometimes moving up to 30 or more kilometers per day. The programme is likely to encounter problems and possible initial failure, as experience in wild dog re-introduction is very limited. Unfortunately no attempts in Africa so far undertaken have lead to long-term success. However, with the co-operation of all concerned, and given time and more experience, we are confident of ultimate success with the approach proposed.

As time goes by it is expected that results will improve. The ideal goal will be to build a viable population of 100 – 150 adult dogs (>12 months old) in an area. Such a population should be able to survive an infectious disease outbreak. For example, if there is an outbreak of rabies or distemper, half of the population might die, but enough packs and groups will survive and via emigration of yearlings quickly rebuild the population without further human assistance or intervention.

This plan outlines the basic planning of and requirements for the initial stages of an African Wild Dog re-introduction programme. The needs of the African Wild Dogs are emphasized.

The plan consists of the following parts:

1. Suitable areas for re-introduction.
2. Composition of re-introduction group.
3. Preparation of re-introduction group.
4. Preparation of re-introduction site.
5. Transportation of dogs to re-introduction site.
6. Preparation of dogs at re-introduction site.
7. Following up dogs post release.
 - a. Monitoring.
 - b. Food and protection.
 - c. Medical care.
8. Second and following re-introduction packs.
9. Research.

1. Suitable areas for re-introduction

Most existing African Wild Dog packs throughout Africa hunt and den in woodland/bush habitats. Hence, it is suggested that the initial re-introduction should be in the habitat apparently favored by most wild dogs through Africa i.e. woodland.



However lion density is often high in protected wooded habitats and predation by lions is the greatest threat to wild dog's survival, apart from man. Captive born dogs appear to be particularly vulnerable to being killed by lions. Spotted hyaena, like lions, do steal prey from wild dogs. However there is no confirmation that prey stealing by hyaena has any significant adverse effects on the survival of wild dogs packs. Confirmed cases of hyaena directly killing wild dogs are extremely rare.

The area chosen should have a human and domestic stock density as low as possible. This will reduce the potential for cases of stock raiding by wild dogs and therefore lessening the chances of human persecution of the wild dogs.

For a re-introduction to have the best chance of success ideally lion, hyaena, human and domestic stock densities should be as low as possible in the release area.

Any woodland area selected must have sufficient game throughout the year to provide an adequate supply of wild dog prey.

The best time for release in woodland areas would be in the dry season, when prey species tend to concentrate along watercourses and other permanent sources of water.



However, if the Serengeti-Mara ecosystem is chosen as site for re-introduction, other considerations have to be taken in account. Up to their demise in 1991 the Serengeti wild dog study packs, some of the best-known packs in Africa, deliberately avoided woodland and dens area of bush. These packs hunted and denned exclusively on the open grassland plains. Any woodland packs in the Serengeti National Park have never been confirmed despite the abundance of acacia woodland. Apparently the Serengeti study packs were, perhaps uniquely, plains, not woodland, adapted packs.

The criteria, as stated for woodland, for lion, hyaena, human and domestic stock apply to the plains as well. However the best time of release should

coincide with the rains and not the dry season. During the rains (the wild dog denning season in such habitat) migrants will supplement the resident prey. Potential prey loss, due to lion and hyaena, will be extremely low.

To form resident packs on open plains, with only a seasonal abundance of game, is likely to be more difficult than in woodland areas.

African Wild Dogs need plenty of space. In woodland the dogs have a home range of approximately 500km² and on open plains 1500km². To build a viable population of 100-150 adult dogs, the area needed would be between 5.000 and 10.000 km², depending on habitat.

Single sex groups of wild dogs emigrate over large distances, often visiting areas where wild dog packs have not been known to breed for many years. Therefore re-established packs should not be genetically isolated but should exchange genetic material. This happens usually via immigrant groups of young females, not only from packs in adjacent area, but also from other more widely dispersed existing populations. It has been confirmed from research in the Serengeti-Mara ecosystem that dispersing groups of young females are vital to the long-term continuity of a wild dog population, in what may otherwise appear to be an isolated area.

2. Composition of re-introduction group

The initial group of captive bred dogs released should be a minimum of 2 dogs of the same sex. The dogs for release should be between 18 months and 3 years old. The dogs in each group should be from the same natal pack. These dogs will already have assisted their parents in raising a new litter of pups. This knowledge will be important when the newly formed pack produces their first litter in the wild.

Studies, carried out by James Malcolm, Roger Burrows and others in the Serengeti, have shown that yearling wild dogs of both sexes usually leave their natal pack at the age of 16-24 months in single sex groups. They search for a single sex group of the opposite sex, often at considerable distances (up to 250 km) from their natal pack home ranges. The alpha dog in each single sex group is determined before the group emigrates. When two such unrelated groups of the opposite sex meet, the alpha pair is immediately formed. The other dogs accept the alpha pair and a new pack is formed. The non-alpha dogs of both sexes act as helpers to the alpha pairs first litter.

A different situation arises after the death of one of the alpha pair of a pack. The yearling male group (12-24 months old) may not emigrate. From this group a

young male takes over as alpha. The adult females in the pack have no opportunity of breeding, as confirmed cases of very close inbreeding are unknown in free-living wild dog packs. The females, therefore, invariably emigrate, leaving an all male group on the former packs' home range. The former alpha male is often included in this all male group, now as a very subordinate male. The former alpha male and the other males look after any pups from the last litter. The all male group stays in the former pack home range and awaits the arrival of an immigrant group of young females from another pack. The two single sex groups merge and a new pack is immediately formed. Any females from the last litter, born in the 'old' pack, will emigrate as soon as they reach the age of approximately 16 months.

Therefore new packs can be formed by two dispersing groups of the opposite sex, meeting on 'neutral ground' well outside the home ranges of either of their former packs or when an all female sex group joins an all male group, still resident on the males home range.

For re-introduction purposes it would be ideally, if such an all male group on their home range could be located. An all female captive bred release group could be introduced into the home range of the males; the two groups could meet and form a new pack. If the objective is to re-introduce dogs only in areas where a resident population no longer exist, this option is not available. However, in case supplementation of a small existing population is considered to be practicable and desirable then that option is available.

Supplementation of a small existing population: The captive bred single sex groups will already have an effective alpha dog. It will be necessary to locate a free-living single sex group of the opposite sex for the captive single sex group to join. The newly formed pack will therefore be a mixture of captive bred dogs and wild born dogs with good hunting experience. The captive bred dogs will quickly learn how to hunt effectively and a potential major problem, lack of hunting experience, will be solved. So, in the area chosen for reintroduction, an all male group has to be located. Next an already isolated captive bred all female group should be transported quickly to join the all male group. Before joining the all male group the all female group will be kept isolated in a pre-prepared boma in the chosen release site or at Mkomazi breeding center. Likewise, if a wild-bred group of females is located, a captive bred group of males should be stand by to join them. In this way natural pack formation is stimulated and the alpha pair will immediately become aparent.

Re-introduction in areas with no resident African Wild Dog population.

The same principles as described in "Supplementation of a small existing population" have to be applied. Because of lack of a wild bred

single sex group, a captive bred single sex group will have to be released and make for themselves a home range. The moment they have established a home range a captive bred single sex group from the opposite sex will be released in their home range. The two groups join and form a new pack in the most natural way and the alpha pair will immediately become apparent. The disadvantage will be the lack of hunting experience.



3. Preparation of groups for re-introduction

The preparation will take place in the Mkomazi Game Reserve. The most suitable groups for release, to join free-living groups of the opposite sex, will be full brothers or full sisters, in each case from the same natal pack. To make sure the status of alpha dog is firmly established, it will only be necessary to separate the dogs from the natal pack, approximately 4 weeks prior to removal to the reintroduction site. In case the release group consists of brothers from two different packs, it will be necessary to bring them together up to 3 months prior to relocation, to give the dogs plenty of opportunity to establish a new, firm hierarchy. The last scenario should be avoided as much as possible, being a non-natural group structure. However, it would be possible to mix dogs from different litters of a single pack. The same principles apply to an all female release group.

In order to remove the dogs from their natal pack(s), they will be sedated. This will be an opportune time for the dogs to be fitted with a radio-collar. Preferably every dog will have a collar, although some might have a dummy collar. The dogs can get used to their collars now and the collars can be checked to see if they are in good working order and if they fit well. The collars should not bother the dogs. If necessary, the collars can be adjusted during that period of confinement. Another possibility is to fit the dogs with a collar a couple of months prior to their removal from the natal pack. This would be in accordance with experiences in the Serengeti. The radio collaring of dogs (usually yearlings of 12-24 months), still in their natal pack was found to have no significant effect on their longevity.

Once the collaring of the dogs took place after they had left their natal pack, the collaring appeared to have a significant adverse effect on longevity.



For translocation to the re-introduction site, the dogs have to be sedated in order for them to be put into solid crates. Each crate will contain one dog only. This will be an excellent opportunity to give the dogs a last medical examination and to administer the last vaccinations. These last vaccinations will protect them for at least for a year against canine distemper, rabies, parvovirus infection and leptospirosis. (See Veterinary report 1998 – GAWPT and WPTF).

4. Preparation of re-introduction site

The carefully chosen place of reintroduction should include a boma to accommodate the dogs for the time period between their arrival from Mkomazi and their release. This boma can accommodate diseased or injured dogs for treatment post-release as well, if necessary. The boma will be of similar size and design to the Mkomazi bomas, but an artificially formed den will not be included. The boma might even be slightly smaller, with a minimum size of 40 x 30 meters. Within these bomas, two small and connected enclosures, size 15 x 5 meters, will be made. These small enclosures are to be used for feeding, and separation if required. Connected to one of the small enclosures will be a wired passageway, size 1 meter width x 1 meter high. This passageway has to be able to be divided into sections with wired slides. This will make it possible to dart dogs with a blowpipe easily, should the necessity arise.

A base camp will have to be arranged close to the boma, to suit the needs of the people looking after the dogs.

A good relationship will have to be established with local people, not only to get support for the programme, but also to buy cattle to serve as food for the dogs in the initial phase. The fresh meat will supplement the basic dried food normally provided. In some areas where hunting blocks exist in adjacent areas, local game meat from such a source may be available.

Dispelling misconceptions about the wild dogs will form part of the discussion with the local people (for example prey preference, experiences with the dogs on the Masai Steppe of pastoralist stockowners and herdsmen, etc).

Also a continuous supply of fresh water has to be established, preferably not too far away.

5. Transportation of dogs to re-introduction site

Aircraft will do this preferably. Depending on the size of the aircraft and the number of dogs, one or two flights will have to be made. The dogs will be sedated and put in solid crates the moment they are sedated. One dog per crate only, to prevent the dogs injuring one another. As soon as they are crated, the dogs will be transported onto the aircraft. Sedation will work for approximately two hours. Ideally the dogs should have arrived at their new destination before the sedation wears off. However, animals tend to settle down and be calm when airborne. A blowpipe and sedatives will be at hand for emergencies. It is important to have an airstrip as close as possible to the release site, to make the car journey from the airstrip to the boma as short as possible. The moment they arrive the dogs will immediately be released into the boma.

6. Preparation of dogs at re-introduction site

After the dogs have arrived at the re-introduction site, they need a certain period of time to settle down and get familiar with their new surroundings.

It is difficult to estimate how long this period will be, but probably between 1 and 3 months, depending on the behavior of the group, availability of game in the area, sightings of other wild dogs etc.

There will be no need for further medical check ups and vaccinations; all this will have been done in Mkomazi prior to departure.

7. Following up dogs post-release

The moment of release will be a most exciting one for the people involved, but a most insecure one for the dogs. The dogs will more or less lose their protection and food supply. They will have to defend themselves and look for their own food. A mixture of wild bred and captive bred dogs would be ideal. In view of the small chances to acquire that mixture, it is better to take the view that only captive-bred dogs might be used.

Protection will have to be given to the dogs and food will also have to be supplied for an initial period.

To protect and supply the dogs with food, if necessary, satellite tracking and/or radio tracking will be essential.

Despite modern equipment, it will still be an operation that will consume time and money.

a. Monitoring

To keep a good eye on the dogs, it is essential to watch them as closely as possible, without interfering too much in their natural behavior.

Satellite and radio tracking are considered essential. The African Wild Dog can cover large distances in a relatively short period of time. It is very easy for them to move out of the range of the ground radio transmitters in their collars overnight. In a case such as this it will take a considerable amount of effort to find them, if they are found at all. Ideally aerial tracking should be available when required; an aircraft has to be used to fly in ever-increasing circles to pick up their signals.

Satellite tracking will provide essential information about the movements of the dogs and will give vital information about their position, in case it is not possible to locate them with ground based radio tracking. A weekly report will be given about their movements. In case of an emergency the satellite provider can give the last reading within 8 hours. In order to use satellite tracking, a digital map of the re-introduction area will be needed.

Ground radio tracking is needed to locate the dogs on a daily basis. Depending on the position of the dogs and the position of the receiver, it should be possible to locate the dogs under favorable conditions over a range of 20 kilometers or more. In this way the dogs can be checked and if necessary can receive food on a regular basis. By means of such a supply of food, it might even be possible to move the dogs to a more favorable location in case of threats, such as lions.

b. Food and protection

As already stated, it is likely that only captive bred dogs will be available for release. Based on this presumption, we have to deal with dogs without hunting experience and no experience in dealing with lions, hyenas and man.



However, it is interesting to note that in the breeding facility in Mkomazi, the dogs behave in a totally different manner towards lions than towards hyenas or leopards who come close to the bomas. The dogs also display different behavior towards people they know and people they are not familiar with. They are much more on guard with people they do not know. The behavior of the dogs in Mkomazi gives reasonable reassurance for their future in the wild.

The question is - how much inherited knowledge has the African Wild Dog regarding hunting (communication skills during the hunt and making a kill) and behavior (in meeting natural enemies, such as lion and man). We believe that there is a certain amount of inherited knowledge in the African Wild Dog. The dogs in Mkomazi have already shown that they have not lost their normal social behavior. The dogs behave in the breeding pack in the same way as the dogs do in the wild, given the opportunity. Why should not the same be applicable to the hunting behavior and the behavior towards natural enemies? The dogs will have to learn by trial and error. The knowledge is there, but their timing skills have to be developed. In time we will be able to tell how many errors they can afford. The more closely the dogs are watched and fed (when necessary), the more opportunities they will get for their trials and errors, and therefore the greater are their chances for survival.

c. Medical care

Prior to relocation from Mkomazi to the reintroduction site, the dogs will receive their last, inactivated, vaccinations: canine distemper, rabies, parvovirus and leptospirosis. The dogs should be protected for at least one year against these diseases. After the first year, it will be very difficult to continue the annual vaccination programme.

The vaccines have to be administered by injection (blow pipe or capture gun). The administering of the vaccines in the field will cause considerable harassment for the dogs. It will take days to give all the dogs all the vaccinations, if this were possible at all. The harassment and negative influence on the social behavior of the dogs overshadow the beneficial effects of the vaccinations. As a consequence the vaccination programme will only be continued if it is possible to administer the vaccines in an easier way, which is highly unlikely.

Presently, possibilities are being investigated to continue the rabies vaccinations following release by using an oral vaccine. It should be possible to administer such a vaccine in pieces of meat. We are in contact with veterinarians and researchers in South Africa and Zimbabwe who are using such an oral (modified live) vaccine. However, it is known that modified live vaccines can cause rabies in some

species for which the vaccine is not intended. It will be essential therefore to adopt an extremely cautious approach to the use of such vaccines in the wild. If a modified live oral vaccine is applicable and is proved to provide protection against rabies, we will consider continuing rabies vaccinations post release. This would only take place following further research and extensive consultations with those experienced in the use of such vaccines on free living species. If the slightest risk is involved in using such vaccines, not only for the dogs but for other species as well, modified live vaccines should not, and will not, be used.

Wounded or diseased dogs will show up sooner or later. If possible, we will give these dogs medical attention, but we have to keep in mind that the interest of the pack is greater than the interest of the individual. There is no point in separating a dog from the pack and then not being able to return the dog to the pack, unless the dog can be fitted into another pack, which still has to be released.

It is imperative however, that only the Trust will provide medical care when necessary.

8. Second and following re-introduction groups

The time of release of the second re-introduction group will depend on the success of the first. If the first re-introduction is a success, the second release can soon follow. In case the release of the first all-male group is a failure, we have to re-evaluate the situation quickly, find solutions for what went wrong and start a new release as quickly as possible.

The ideal situation would be as follows: The 4 breeding packs in Mkomazi could and might raise 20 pups per year. This makes it possible to have 20 dogs per year for potential re-introduction. These 20 dogs can be divided in 2 or 3 re-introduction groups, which means 2 or 3 releases per year. Based on the behavior of the already released dogs we will determine if the new releases can take place on the same re-introduction site or if a new re-introduction site has to be established for each release. If the re-introduced dogs move to other areas, it will be possible to use the same re-introduction site more than once.

The figures above-mentioned are estimates. The figures look realistic, but we have to bear in mind that we will have to adjust them as eventualities occur. There are no hard and fast rules in nature, or certainly in a programme such as this.



9. Research

The project will be a practical endeavor for the management of a re-introduction programme, to aid the survival of an endangered species and to establish a viable African Wild Dog population in an area where they have disappeared or almost disappeared. Research is not our aim. If we meet problems, we will do our best to solve these problems and perform the necessary research to solve these problems practically. We will go as far as the interest of the released dogs, or the already free-living dogs, will permit. It is of the utmost importance that the dogs are left alone and are not bothered under any circumstances by invasive researchers, or other people (such as tourists, film crews etc). This point cannot be emphasized enough. Behavioral and other studies can be performed elsewhere, in places where there are still viable populations. Therefore, we will not interfere with existing free-living wild dogs, including (for example) no sedations, no radio collars etc.

As stated in 7 c (medical care) above, veterinary work will be carried out by the Trust only and when necessary.

Conclusion

The plan, as outlined above, will have a good chance to succeed so long as the requirements outlined are fulfilled. We are aware that there are many unknowns in this plan, but much *is* unknown and up until now the re-introduction efforts have been unsuccessful. It will be a difficult task, and one that will require a lot of flexibility from the people in the field, who will have to provide quick solutions for any problems the dogs will encounter once released. Strong support from the Tanzanian Government and the local wildlife and village authorities will be paramount.

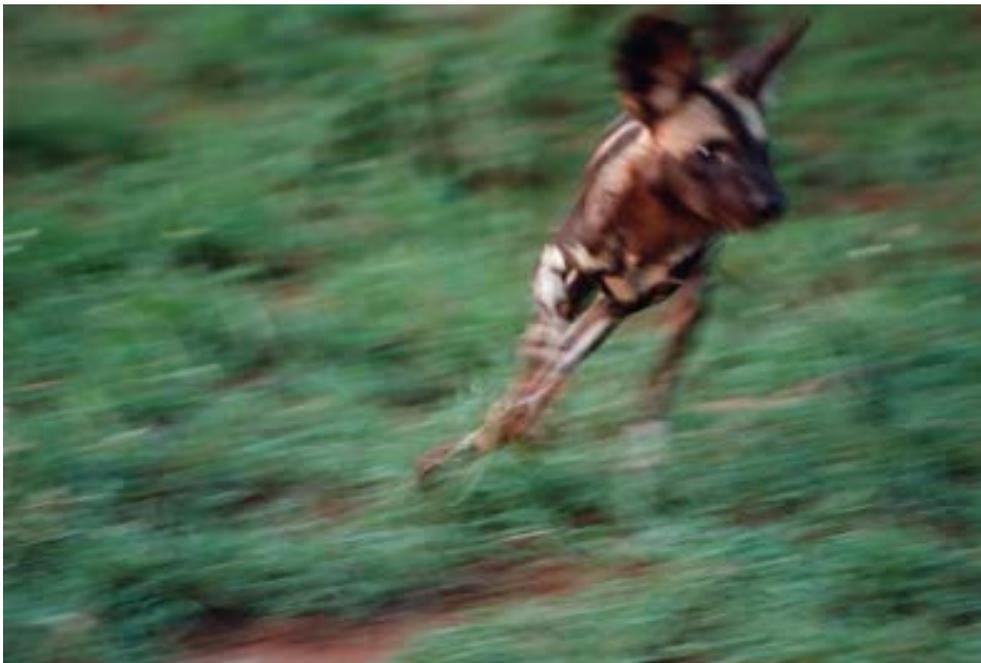
The George Adamson Wildlife Preservation Trusts (USA, UK and The Netherlands) and Wildlife Preservation Trust Fund (Tanzania), through their field director Tony Fitzjohn, have a good deal of experience in re-introducing lions and leopards to the wild, as well as the management of the successful captive breeding programme for the African Wild Dog at Kisima Camp. The Trusts are looking forward to accomplish the challenging and difficult task of the re-introduction of the African Wild Dog, a most endangered predator, back into its natural and previous range.

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