Mega-Translocations: The Kenya Wildlife Service at its Best

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Introduction

The capture and translocation of 220 elephants in just two weeks, the rare translocation of 18 hippos in three weeks, the mass capture and translocation of over 1,000 impalas and 800 zebra in a single month—these are some of the most exciting and unparalleled feats of the Kenya Wildlife Service (KWS). These few examples do not only show the magnitude, but also the efficiency in carrying out such exercises. The capture of a wild animal is an intricate process, requiring great caution to ensure safety of both personnel and the animal.

Translocation, which refers to the physical transfer of an animal from one habitat to another, requires inputs from both science and art. With our current records in wildlife capture and translocation, we believe that we are the best in the region. Today, KWS can capture and translocate any land mammal species in Africa. However, these skills were not attained overnight. The Veterinary and Capture Services Department, which is responsible for these exercises, has undergone major changes. Initially, capture and translocation of wildlife was based on rudimentary methods, mostly relying on instinct, brute strength, and (supposedly) luck. Those were the days of "chase and rope" methods where animals were chased and noosed using a rope, just like in the cowboy movies. Pitfall methods, in which holes were dug along animal trails, were used for some of the mega-herbivores like the rhinos. It is clear that these methods were not only unethical but most likely injurious, with little regard to post-translocation survival.

Therefore, KWS established the Veterinary and Capture Services Department in 1993, which constituted a professional team of veterinarians, animal health technicians, and capture rangers. Since then, the department has progressively improved in efficiency and reduced capture-related mortalities. There were times when it would take a whole day to capture and load an elephant into a transportation crate, let alone translocate it. However, with increased mechanization and veterinary skills, a whole elephant family of 12 individuals can now be captured and loaded in transportation crates in less than 30 minutes!

These improvements came at a great cost with a massive investment from the government of Kenya. Currently, KWS uses both air darting on a helicopter or ground darting either on foot or using a vehicle. The choice depends on several factors, among them habitat condition (e.g., accessibility) or animal behavior (e.g., aggressiveness) or escape flight speed. The capture rangers have paramilitary training and serve two roles: they provide security and also assist in physical restraint of the animals. However, members of the capture team

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have, through experience, acquired knowledge on behavioral responses of different animals after capture. Such experience is quite important in ensuring survival of sedated and recumbent animals.

At KWS, we consider a capture and translocation successful when the animal is captured under acceptable veterinary procedures, ethical considerations, and animal welfare standards, and when the animal is released in a suitable habitat and is fit to feed and protect itself. On this basis, KWS has developed protocols for capture and translocations.

Protocols for animal translocation

Before translocation is carried out, a pre-translocation assessment is conducted. The assessment focuses on both ecological surveys of the habitat (e.g., presence of competitor species, population density), security, and epidemiological data. This is because it is important to ensure that there is adequate feed and water, as well as security, for the highly poached species. An environmental impact assessment (EIA) prior to any animal translocation operation is also undertaken to account for possible effects of the exercise and, in cases where such are anticipated, to institute mitigations. We have so far managed to develop at least seven species-specific immobilization and translocation protocols for our flagship animal species. These have been time tested and must be adhered to during translocation exercises. The significant ones include the black and white rhino, elephant, giraffe, Grevy's zebra, and cheetah.

Further, we have also developed a veterinary manual to be used during capture and translocation. The manual provides guidelines on wildlife immobilizations, with details on recommended types of anaesthesia and revival (antagonist) drugs and dosages for various species, physiological monitoring of anaesthetized animals, suitable positions of recumbence, animal loading and lifting procedures, route surveys, composition of various teams, and feasibility studies, among others.

It is also a requirement that post-release monitoring is done to give information on how the animals have adjusted in their new habitat. This is particularly important for highly territorial and aggressive species, such as the black rhino. Home range acquisition by black rhinos may lead to violent contests among animals, resulting in territorial displacement or severe injuries to individuals. Species that range widely, such as the elephant, may need to be monitored in the new habitat because they may range into human settlements and cause damage to property. Since translocated animals are usually ear-tagged, ear-notched, or fitted with tracking devices such as transponders or radio transmitters, it is easy to locate them in their new habitat.

Capture beyond borders

The expertise of KWS capture and translocation is now well recognized in many parts of Africa. As such, we have been invited, in partnership with the African Union (AU-IBAR) and Food and Agriculture Organization of the United Nations (FAO), to conduct training for wildlife practitioners in West, Central, and East African countries. These trainings involved actual capture and translocation exercises. We have also provided services to Uganda and Burkina Faso for translocation of elephants, giraffes, and a variety of ungulate species. Dur -

ing the Global Eradication of Rinderpest Campaign, we provided successful capture of wildlife for biosampling in war-torn Somalia. Following the collapse of the Somali government, many services, including veterinary health services, disappeared. As such, the country was the remaining global foci where rinderpest survived for many years. However, due to our contribution to sampling wildlife in the country, the disease was finally eradicated worldwide.

Why capture and translocate wild animals?

It is well known that capture and translocation of wildlife is inherently technical, marked with significant risks to personnel and the animal. However, it is still a very important conservation tool when all caution is taken to minimize the known risks. Reasons for wildlife translocations in Kenya are mainly guided by the IUCN (International Union for Conservation of Nature) guidelines which have been modified to achieve our objectives. The main reasons for translocation include:

- Management of populations and the environment. This is usually done to reduce habitat destruction and allow restoration of damaged ones.
- To introduce or reintroduce species into new and former habitats, with the aim of either augmenting endangered wildlife animal populations or increasing species diversity in a locality and hence improving the survival rate.
- Research and species monitoring activities that involve active intervention while investigating important wildlife diseases. Proactive studies are especially carried out on threatened wildlife species to better understand their ecology and biology. These involve the mounting of GPS satellite collars (to try and resolve human–wildlife conflicts by studying animal movement patterns in an area), implantation of transmitters and transponders (microchips), and ear-notching exercises for positive individual body identification of animals for security purposes.
- Passive and active clinical monitoring of the general health of wildlife populations, for both infectious and non-infectious diseases, as well as collection of samples for screening to establish the presence or absence of endemic diseases in an area before a translocation exercise is carried out.
- Habituation of orphaned or disadvantaged animals to captive facilities for education and ecotourism.

Methods of capture used in Kenya

The choice of which particular method to employ is determined on the basis of animal species, reason for restraint, number of individuals to be captured, availability of appropriate drugs and equipment, and personnel. Our experiences over the years have taught us to select the most ideal methods that suit specific situations with an aim of maximizing efficiency and minimizing mortality. Therefore, the economics of the capture options available cannot be ignored, and the adoption of a particular method is done only after a thorough analysis of the available options.

Darting. At the KWS Veterinary Department, we use various drug combinations, such as anaesthetics (opioids) for herbivores such as zebras, elephants, rhinos and a host of

antelopes; alpha-2-agonists (sedatives) in combination with cyclohexylamines (dissociative anaesthetics) for carnivores, primates, suids, reptiles, and some birds; and tranquilizers. The drugs are remotely delivered through darts propelled by use of such projectiles as blowpipes and dart-guns. Others include baiting (primates) and hand-held injections (jab sticks) on extended or projectile syringes.

To achieve a desirable pharmacological response, the correct dose of the drug is administered. This tends to vary between species and is influenced by size, sex, age, state of health, and concomitant use of other drugs. The appropriate drug cocktails have been developed to achieve the primary effect of sedation.

The darting is done either from the air or on the ground. Darting has been adopted as our *modus operandi* for large species such as the elephant, rhino, buffalo, giraffe, and certain antelopes. Helicopter darting, on the other hand, is our method of choice when dealing with large numbers of elephants, rhinos, and buffaloes because it is both efficacious and safe for both the animal and the operators. The method is also commonly employed in tough terrains such as when capturing wild animals near water bodies, thick bushes, cliffs, and rocky or gullied landscapes to minimize mortalities related to drowning or animals straying away to risky unrecoverable locations. We normally reserve ground darting for species with low risk values and especially when immobilizing wildlife for clinical interventions, such as de-snaring and treatment for injuries, examination, and sample collection for diagnosis in disease surveillance.

Plastic corrals/bomas; funnel capture system. This is our method of choice for the mass capture of species such as zebras and impalas. The advantage is that human–animal contact is minimized and a large number of animals (even entire herds) can be captured and transported as a single entity. Developed in South Africa, the system is basically a properly designed large funnel whose mouth is conveniently erected next to a slightly raised ground followed immediately by a gentle descent with a bushy area referred to as "dead ground." This serves to conceal and camouflage it from the animals' view path as they are driven by a helicopter. The plastic walls are made from hessian material that the animals perceive as solid, impenetrable barriers once inside it. In their attempt to escape, they run farther and farther down the funnel into a crush and finally up a ramp into a communal transport crate. Plastic curtains are drawn behind the animals at strategic places down the length of the boma (here, a generic name for a livestock enclosure) to encourage forward movement and to prevent animals from turning around.

Net corrals/bomas; drop nets. These comprise standing linear hessian material made from nylon, cotton, and manila green-dyed material that can withstand a high degree of stretch and wear. We normally inspect them for flaws that may allow animals to escape before erection. The method has been effectively used to capture small groups of impala, hartebeest, Thomson's and Grant's gazelles, reedbuck, and oribi at KWS. The design incorporates drop nets to prevent animal "pile ups," which often results in broken limbs. The net corral is usually erected along animal's trails and in bush land to conceal and camouflage it. The nets are supported by cables, metallic poles, or natural vegetation. Prevailing winds need to be considered and capture should be coordinated by handheld radios to improve on efficiency and minimize escapes. Efficiency is achieved more at night than during day time

and much more so during dark moonless nights, especially for animals that are good jumpers like impalas and nocturnal animals like the bush pig.

Equipment. At least two vehicles, preferably four-wheel drives, are used for capture and one for escort during transportation to the release site. All are mounted with a protective bull bar on the front as the vehicles travel through thick bush at night while driving animals into the corral system. Each capture vehicle normally carries two spotlight operators and a few capture personnel (rangers). The target animals are located by driving along roads in their preferred habitats with the spotlight beam of light being placed on both sides of the vehicle. When the reflecting eyes of the animals are located, the spotlights and the vehicles are used to herd the animals towards the mouth of the corral system and animals pushed into it. Once entrapped within the nets, the assistants (rangers) lying in wait close in on the animals, capture them manually, and take them to a waiting transportation crate.

Cage traps. These are constructed by building a sturdy metal framework and then covering it with suitable wire mesh. Since cage traps are primarily used for the capture of carnivores and primates either for disease surveillance or problem animal control (stock and farm raiders), the mesh should be such that the animals cannot hook their canines onto it and break either the mesh or their teeth. The inside must be free of any protruding parts that could hurt the animals. It is normally designed in such a way that its size is at least twice the size of the animal. The safety catch is very important (guillotine doors preferred) because the great cats and primates are capable of lifting doors and escaping.

Below are some examples of species and reasons for their translocation.

Elephant translocations

These have been conducted to achieve various objectives over the years in Kenya with the main ones being reducing human–elephant conflicts, habitat preservation, and establishing conservation areas.

Elephant translocations were first conducted in Kenya in 1995 with the introduction of a fairly mechanized system. A Volvo Hannibal truck was modified to lift and load an elephant container using a hydraulic system. In this case, only one elephant could be loaded at a time in a time-consuming process that sometimes ended up taking several hours.

The system was improved in 2006 when we acquired some lifting crane trucks and a recovery container for ease of transferring the elephants onto the transportation crate. This process is almost fully mechanized as the elephants are lifted using a hydraulic-propelled lifting crane (Figure 1) and later transferred from the flat bed truck to the recovery container by use of an electric-propelled winch.

In 2001, KWS translocated 57 elephants from Ol Pejeta Conservancy to Meru National Park in one month. In 2005, about 150 elephants were translocated from Shimba Hills National Reserve (Mwaluganje Conservancy) to Tsavo East National Park within a month. In another exercise where the elephants were being translocated over a short distance in Tsavo West National Park (Ngulia Rhino Sanctuary) in 2006, over 220 elephants were moved in a period of about two weeks. The exercise conducted in Shimba Hills and Ngulia were mainly to address the issue of overstocking, mitigate habitat loss in a water reservoir, and promote rhino conservation.

Figure 1. An elephant translocation in progress.

Rhino translocations

In the 1970s, crude methods, such as digging pits on the footpaths of rhinos, were employed in their capture with a success rate that purely depended on luck. The use of helicopter darting has greatly improved this with a success rate of about 10 animals captured in a day for minor procedures like ear notching and 4 to 5 per day for translocation.

With the introduction of immobilization drugs, capture of rhinos has been greatly improved, with success rates of close to 100%. In 2007, a new sanctuary was created with the introduction of 20 black rhinos in Mugie conservancy. In 2010, 10 black rhinos were reintroduced to the Rhino Valley in Tsavo West National Park after a hiatus of 25 years due to poaching and insecurity. Most of these rhinos were captured and then translocated a distance of over 500 km without any mortality. In the last seven years, we have managed to capture over 100 black and 40 white rhinos for various procedures such as translocation, treatment, or ear notching.

Hippo translocations

Capture of hippopotamus requires a lot of patience and determination (Figure 2), as the animals do not respond well to immobilization drugs. In 2010, we managed to capture 18 hippos from a sewage plant by constructing a holding boma over a period of about a month adjacent to one of the ponds and habituating the hippos while enticing them with lucern during the dry period as bait in the area where the boma was being constructed. Once the hippos were comfortable using the boma, a sliding door was used to close them in and another entrance leading into the transportation container was left open. The hippos were then coerced to enter.

Figure 2. A hippo being loaded onto a truck near Nairobi.

Giraffe translocations

This is another very challenging exercise as the anatomy of the giraffe poses significant logistical difficulties due to the long neck and the position of the heart with respect to the brain. In almost all instances, the giraffe requires use of ropes to bring them down after immobilization. In 2006, we managed to rescue about 20 Rothschild giraffes in Soy area and another 15 at Endebes after the land was converted to agricultural use.

Ungulates

In the 1970s and early 1980s, Meru National Park lost most of its wildlife population to poaching; hence, a massive reintroduction of various species was necessary once security improved in the area.

In 2004, we managed to capture and translocate over 1,000 impalas, 800 common zebras, 20 Grevy's zebras, and 50 reticulated giraffes. The zebras and impalas were captured using the funnel system with the help of a helicopter and loaded directly into translocation crates.

In 2010, we translocated over 200 zebras to Amboseli National Park in a capture exercise that involved the use of a helicopter and the funnel system. The main reason was to save the animals that had been affected by the severe drought that hit the area in 2009.

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