Global Re-introduction Perspectives: 2010

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IUCN/SSC Re-introduction Specialist Group (RSG)

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Conservation reinforcement of an introduced population of hirola antelope into Tsavo East National Park, Kenya

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Introduction

Hirola antelope (*Beatragus hunteri*), formerly known as Hunter's hartebeest (*Damaliscus hunteri*). True phylogeny determined recently, changing status from sub-species to a monospecific genus. Hirola now occupy a small part of the original range in north-eastern Kenya, within Ijara and Garissa Districts. Current southern boundary is the coastal forest zone and likely also the tsetse fly zone. Western boundary is the Tana River. North-eastern edge is heavily occupied by livestock, has a large refugee camp, and considerable insecurity. Eastern edge lies on the Kenya-Somali border. Hirola probably extirpated from Somalia but individuals from Kenya might stray across the border occasionally. World population of hirola has declined from ~14,000 in the mid 1980s to ~1,000 individuals currently. A second (introduced) population of ~100 individuals survives in the southern part of Tsavo East National Park. This population is the result of translocations in 1963 and 1996. The IUCN Red List currently lists the hirola as 'Critically Endangered (A1a). As a monospecific genus, *Beatragus* must, therefore, also be considered a Critically Endangered genus are protected under Kenyan law (since 1971) and in Somalia (since 1977).

Goals

- Goal 1: To reinforce the small population of ~76 individuals in Tsavo East National Park (the result of the 30 founders, all immature animals 9-12 months of age, released in 1963).
- Goal 2: To improve the genetic composition of the Tsavo population (due to the small founder numbers).

Richard Kock with immobilized hirola

- Goal 3: To develop an improved capture and translocation methodology after the high mortalities experienced in 1963.
- Goal 4: To improve basic scientific information including: the molecular phylogeny, anatomy and morphology, anesthetics, biochemistry, hematology, serology and other health parameters.
- Goal 5: To raise awareness about the serious situation for the species both within the Somali community in Ijara and Garissa Districts, more widely in Kenya and in the international conservation community.

Success Indicators

- Indicator 1: Minimum of 30% of captured hirola surviving to five months post translocation (an improvement over an estimate maximum of 20% in 1963).
- Indicator 2: Evidence for integration of translocates into the Tsavo herds and contribution to breeding.
- Indicator 3: Reduced mortality associated with capture and translocation to release estimated at 33% to 46% in 1963 to <25%.
- Indicator 4: The number of scientific publications.
- Indicator 5: A raised political and conservation profile of the species in north-eastern Kenya and the wider community based on reports, newspaper articles and meetings.

Project Summary

Feasibility: The translocation was justified based on a number of arguments: Scientific evidence of a minimum population of 302 hirola: aerial total count by the Kenya Wildlife Service (KWS, 1995) and an estimated population of 1725 (+/-482) hirola in 1993 based on 5 km transect aerial survey by the Department of Remote Sensing and Resource Surveys (DRSRS), Kenya. The cause of the population collapse from >10,000 to ~1,500 between 1983 and 1985 is thought to be a severe rinderpest epidemic. The apparent decline from an estimated 1,725 in 1993 to the total count of 302 in 1995 is thought due to recurrent rinderpest epidemics, which started in the range in 1993-1994. The only *ex situ* population is in Tsavo East National Park. This population had grown at a modest rate of ~5% per annum since introduction in 1963 but the low founder base (estimated at 11-19 animals at five months post-release) was a potential problem in the longer-term. The KWS had sufficient resources to undertake a translocation exercise.

The methodologies for capture of antelope had improved significantly since 1963. Chemical capture proved feasible during rinderpest surveys in 2004 but the survival rate was unknown. Soft-release was preferred to increase survival chances post-release but a suitable fenced predator proof release zone was objected to by a locally active NGO. The local community were consulted and agreed to the action. A Hirola Task Force (HTF), comprising all conservation agencies in Kenya and the Government, officially constituted by KWS, was established and agreed that translocation was justified.

Implementation: HTF mandated a translocation coordination committee. A team was built including; fund raisers, KWS staff (biologists, HQ and divisional

managers and wardens, veterinarians, laboratory technicians, wildlife capture technicians, airwing, security, legal advisers and communicators), scientific colleagues from NGOs, and community representatives. It was decided to translocate a minimum of 35 hirola. Funds were raised. KWS provided some transport, including aircraft, and logistical support. The British Army provided trucks and catering support for the field team. The South African (Southern Parks) authority provided two experienced field technicians to assist in establishing new physical capture protocols for the hirola. The operation was coordinated by the Chief Veterinary Officer of the KWS, security by the operations division, and political aspects were covered by the KWS senior staff. The KWS Airwing provided reconnaissance aircraft, a helicopter for capture, and an aircraft for transfer of hirola to Tsavo. The team was deployed at the Tana River Primate National Reserve and at Ijara town. Animals were located, a fixed net capture system was built at several sites, and staff trained in its use. The helicopter was used to drive small hirola herds into the capture system. Seventy-five percent of the target hirola were caught, tranquilized and translocated by air to holding pens in Tsavo, held for three days, and free-released. This was continued until a political storm brew up; a high court injunction lodged by a politically motivated sector of the Somali community from Ijara delayed the translocation.

1994 view of the source habitat of the hirola, now part of the Ishaqbini Community Protected Area, specifically for hirola - a single hirola can be seen in the centre of the picture

After KWS authority was upheld in court, the final stages of the operation were concluded using helicopter capture. This change in capture procedure was necessary as the security of the majority of the team's personnel working in the area was compromised and they had been withdrawn. A total of 35 hirola were caught of which seven were immobilized from the helicopter. Of the 35 hirola captured, a total of six died; five from chemical capture stress and one from net injury.

Post-release monitoring: In 1996, 29 hirola were released and monitored (10 with radio collars and all with individual ear tags), using aerial, foot and vehicle patrols, and a dedicated KWS scientist, rangers and pilots. Seven of the females released were pregnant. Seventeen hirola survived >5 months, with higher survival amongst adult females and sub-adults than among adult males. Five of 29 are known to have died while the remainder of those missing had an uncertain

fate. At least 16 (55%) of the 29 hirola from the 1996 translocation were alive two years later. None of the observed four births out of seven visibly pregnant translocated hirola resulted in surviving calves. Subsequent births did produce surviving calves and the surviving males are thought to have contribute to breeding. *Indicator 1* was satisfied (capture and translocation mortality to release was 17% and ~49% of the 35 'captured' hirola survived to five months post-release and ~59% of the 29 'released' hirola survived to five months post-release) but this could have been better if the political situation had not forced chemical dart capture from helicopter (five of the six hirola that died during capture/ translocation prior to release were darted from helicopter). *Indicator 2* was satisfied as the population was reinforced and introduced animals contributed to breeding. *Indicator 3* showed improvement but not to the extent planned reaching mortality of ~49% of the captured animals from the time of capture to five months post-release. If the net method had been used all through and a soft-slow release method (from a proposed fenced sanctuary in Tsavo East) used, the mortality would likely be considerably lower.

Despite the 1996 translocation, the hirola population in Tsavo remains relatively static at ~100 individuals. Factors thought to be depressing growth are predators, poaching and food competition with livestock. From samples obtained, the molecular phylogeny was published, confirming hirola to be the only surviving species in a resurrected genus. Considerable scientific and health information was obtained. Awareness, partly due to politics, was improved and this has resulted in a community conservancy; the community at Ishaqbini, Ijara District, is protecting >120 hirola.

Major difficulties faced

- Remote, logistically challenging and insecure zone.
- Historical animosity against the Kenya Government and the KWS (partly due to a number of Somali deaths from KWS anti-poaching operations) resulting in political interference.
- Technically difficult environment and species to work with - fragile antelope with susceptibility to capture stress complicated by high ambient temperatures ~50^{0}C during the day.
- Release site holds high predator populations: lion, leopard, cheetah, spotted hyena and occasionally African wild dog. Translocates

Hirola blindfold after capture in a game net

and calves are believed to have been lost to predators during the post-release 'adaptation period'.

KWS Hirola translocation team in 1996 with the last captured, tranquilized and blindfolded hirola antelope

Major lessons learned

- Political heat was a major constraint but the resulting publicity led to significant improvement in knowledge and awareness amongst local people and leaders. This, in turn, resulted in major advances in local conservation measures and tolerance by pastoral livestock keepers to the hirola and increased *in situ* protection efforts. International awareness also resulted in more external financial and technical support for both populations.
- The opportunity to handle hirola during translocation led to major advances in scientific knowledge about the species.
- Improved and safe (physical) capture techniques for all ages and sex of hirola were confirmed and the high risk of chemical dart capture using helicopters was established.
- Post-release monitoring was essential to understand the degree and causes of success or failure of the operation. In this case, the high post-release mortality could probably have been reduced if the planned slow soft-release option had been implemented. After five months, hirola survival greatly improved suggesting that a period of predator-free adaptation would be ideal.
- A multi-disciplinary, experienced, scientific, technical and paramilitary team provided ideal staff for the translocation.
- The hirola is not easily translocated. Translocation requires a high degree of professionalism. and should only be done where the sub-population has potential for rapid growth. The hirola is a grazing ruminant with anatomical and morphological characteristics of an obligate grazer. This puts hirola in direct competition with other wild grazing antelope, cattle and buffalo, but they may benefit from management of the habitat for grazing species. Besides this specificity in diet, the hirola's vulnerability to predation, disease and most probably parasites make the options for establishment of sub-populations outside of its known former distributional range limited. The small captive populations of hirola in Europe and the United States were never sustained even though longevity reached >22 years. Disease was one cause of the loss of these captive populations. Improved management might improve the chance of success of captive populations of hirola, but the long-term maintenance of this species in captivity is likely to remain a challenge.

- Greater emphasis on monitoring to understand population drivers, improving habitat conditions, security, reducing livestock competition and controlling disease is needed to ensure recovery of the *in situ* and *ex situ* populations of hirola.
- Although establishment of founder populations is recommended using equal sex ratios for reasons of genetic representation, the high mortality amongst adult males experienced suggests this is not necessarily appropriate and translocating a higher proportion of females and juvenile males might be optimal.

Success of project

Highly Successful	**Successful**	Partially Successful	Failure
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Reason(s) for success/failure:

- Improved local, national and international commitment to conservation of hirola as a result of the project.
- Established the taxonomic status of hirola and confirmed it as one the highest conservation priorities amongst African mammals due to its phylogenetic uniqueness and current circumstances.
- Improved technical know-how on physical manipulation of the species which will reduce risks associated with future translocations.
- Provided the opportunity for the first detailed scientific study of the hirola (including a PhD on the behavioral ecology of hirola during the post-monitoring period). Confirmed susceptibilities to stress, predation and other important aspects. Obtained new information on social organization, feeding ecology, reproduction and other parameters.
- Probably increased the genetic diversity within the introduced Tsavo population.