by Dr. Hamish Currie (Africa Geographic)

Conservation Challenges for the Roan Antelope

The roan, Africa's second-largest antelope, is patchily distributed—the northern cluster stretches from Guinea in West Africa to South Sudan into Ethiopia; the southern cluster occurs in South-Central Africa. Sub-populations face conservation, natural and anthropogenic threats ranging from climate change, predation, genetic contamination, tick-borne and other diseases, and habitat loss due to short-sighted management decisions.

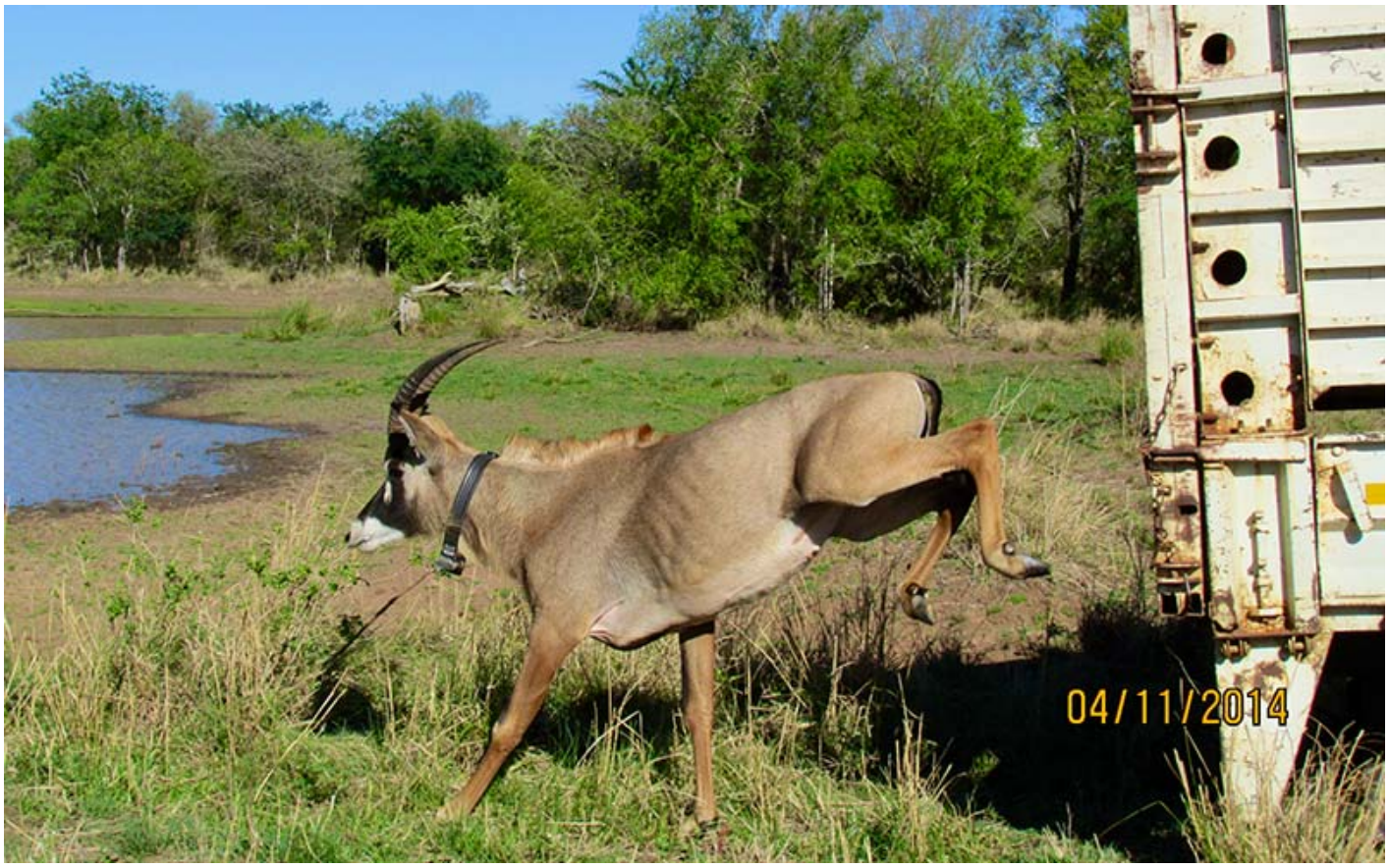
The roan antelope, *Hippotragus equinus*, is currently classified as a "Species of Least Concern" on the IUCN Red List. How accurate is this classification, and how should it influence how situations are managed where numbers are dwindling? In many African countries, roan antelope populations have dropped to perilously low levels, and there is every chance they could disappear from the wild altogether. Some argue that some of these examples are animals on the limit of their geographical range and could be regarded as "refugee sub-populations." This poses the question: is it important to intervene to save these "refugee" populations?

According to the IUCN Red List, there are an estimated 60,000 mature roan in Africa, with the largest populations in Burkina Faso, Cameroon, Zambia and Tanzania. In some areas, these populations are believed to be stable, but in others, the numbers have declined. In Ruma National Park, in western Kenya, the roan population has declined dramatically to about 13 animals, making it genetically unviable. Likewise, in Kruger National Park, numbers have dwindled to just over 50 individuals. Roan

are a charismatic species, and it could be argued that their presence in these parks is important both from a biodiversity and national pride perspective and, while purist conservationists may regard this as irrelevant, in attracting tourists, which stimulate the economy of the region.

Numerous studies have been conducted to establish the reason for the decline in Kruger Park and Ruma. In the Kruger, the consensus of opinion suggests it is all to do with water provision. The northern part of the park had lower animal densities than the southern, so managers sank boreholes to provision animals in the hopes this would enhance the game viewing. Indeed, the water-sensitive bulk grazers such as buffalo made it their home and changed the habitat. With them came predators. Roan, being selective grazers, did not compete well. Roan also have an unusual approach to calf-rearing, often hiding their calves and leaving them for hours at a time. With the increased predator load, these calves did not survive.

It just goes to show that humans with good intent can make management decisions that have catastrophic outcomes! Recently, a Kruger National Park section ranger was fired for “gross negligence” after 20 roan placed in a secure breeding camp in the park died of dehydration.



Releasing a collared roan into the wild. Dr Hamish Currie photo

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In Ruma, it appears predation is also the problem, and plans are afoot to enclose the roan in a camp free of predators. Unfortunately, with only 13 individuals, the population has reached a genetic bottleneck and there is no other option but to bring in new animals to remedy the problem.

Interventions would involve the infusion of new genes, but the challenge is where to source animals for this genetic refreshment. The very existence of subspecies is controversial, with some eminent scientist being “lumpers” and others “splitters.” Some argue that “splitting” can impede conservation outcomes, while others would say ignoring subspecies issues is irresponsible. As is so often the case with a species on the brink, decision-makers are faced with a myriad of different considerations that need to be weighed up in a race against time, not least of which involves reconciling the science with the conservation realities. As it is, the subspeciation of roan antelope is a genetic quagmire.

Roan in Savute, Chobe National Park, Botswana. Fred von Winckelmann photo

Using mitochondrial DNA analysis of roan antelope, researchers split the roan species into six

subspecies. *Hippotragus equinus equinus* in South Africa Botswana and Namibia; *H.e. cottoni* in Angola, Zambia and Malawi; *H.e. langheldi* from Tanzania and Kenya; *H.e. bakeri* from South Sudan and Central African Republic; *H.e. charicus* from Chad and Nigeria; and *H.e. koba* from Benin, Senegal and Ghana. There are morphological differences between these "subspecies," but in many cases, it is impossible to tell the difference.

More recent genetic studies using nuclear DNA analysis would suggest that the *Hippotragus equinus koba* from Northwest Africa is a distinct and evolutionarily significant unit and all the rest should be lumped together. In other words, there are only two subspecies of roan antelopes. This is about more than scientific disagreement—the outcomes of studies such as these will invariably influence conservation decisions.

Southern roan bull. Charles J. Sharp photo

In 2013, the IUCN has published a document titled "Guidelines for Reintroductions and Other

Conservation Translocations." This deals with the genetic considerations regarding sourcing animals for reintroductions or translocations and, naturally, it advises sourcing populations physically closer to, or from, habitats that are similar to the destination. However, the document also recognizes that there will be situations where this is not possible, and here it defines a "taxon substitution," where a similar, related species or sub-species can be substituted as an ecological replacement in dire conservation situations.

There are inevitably going to be differences in opinion when interpreting scientific publications and conclusions. When these issues are controversial, as is the case with the roan subspeciation, decision-makers are forced to tread carefully to avoid action that, in hindsight, could do immense damage to their conservation reputation. This is where the appropriate IUCN specialist groups should be involved. This panel of experts is best placed to make appropriate decisions and responsible conservationists would be wise the follow their sound advice. Likewise, responsible government conservation bodies would abide by the advice given. It goes without saying that care must be taken to make decisions based on sound science and not emotion.

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Distribution of roan antelope in Africa. Africa Geographic

In Kenya, it would be ideal to source wild *langheldi* from neighboring East African countries. Every

effort is being made to achieve this, but this is complicated and could take years to achieve. Another option is to source *langheldi* from zoological institutions that breed the subspecies. This has been done before, in Eswatini, by the Back to Africa organization, of which the writer is a director—where there is now a thriving population in the Mlilwane Wildlife Sanctuary. These immunologically naïve zoo animals are susceptible to tick-borne protozoal diseases, including theileria, and it took years to habituate them.

Another option would be to source animals from South Africa, where the wildlife industry evolved to support hunting and eco-tourism. In the past, game traders imported animals from a variety of African countries. This was done for financial gain, with wealthy men paying African countries or individuals for their biological treasures. Their argument was that they were saving these animals from an inevitable demise by bringing them back to South Africa, where they would be saved and protected. Their motives in this may well have been fiscally motivated, but that is a topic for another article!

This industry in South Africa has all but collapsed, and prices have diminished significantly to the point that farmers are sitting with large numbers of animals and don't know what to do with them. Imports came primarily from a few African countries, with *equinus* subspecies imported mostly from the dry arid Waterberg area of Namibia. A well-known South African veterinarian, Dr. Johan Kriek, imported *cottoni* on two occasions from Malawi, and South African National Parks cooperated with Botswana in trading roan for rhinos, with *equinus* animals going from Punda-Ma-Tenka in Botswana to Graspan. These animals now exist in the Mokala National Park, near Kimberley.

Some *koba* were also imported from Benin's Pendjari biosphere reserve by game trader Riccardo Giazza and, in 2000, Mr. Fred Keeley of Sable Ranch caught wild roan from Niokolo-Koba National Park in Senegal. Some of these ended up on Mr. John Hume's Mauricedale farm, near the southern Kruger Park. At the time, genetic issues were not considered, but retrospectively this was an irresponsible activity as *koba* have subsequently become recognized as a genetically inappropriate subspecies for Southern Africa. This did nothing for South Africa's conservation reputation, but the issue was recognized, and genetic testing became the order of the day as conservation authorities took steps to prevent the sale and movement of *koba* within South Africa.

So, as it stands, there are numerous farms in South Africa holding roan antelope that originate from Namibia, Malawi and Botswana (there are tests available to confirm their genetic origin), which could be used to repopulate other areas.

There are, essentially, two questions here: The first is, how many subspecies of roan antelope should be recognized? The latest genetic publication by Alpers, van Vuuren & Arctander suggests these animals would be appropriate for reinforcement of dwindling populations such as those in Kenya, as there are only two subspecies: West African and the rest.

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Female roan. Charles J. Sharp photo

The second question is more complicated. At what point does the subspecies distinction no longer matter if it comes at the cost of the local extinction of a species? If one were distrustful of the validity of the aforementioned study and the division of roan into two subspecies rather than six, and if no other options existed for sourcing pure *langheldi,* what would be the risk in exercising a “taxon substitution” as defined by the IUCN? In that way, some of the roan bred in South Africa could be used for the overall conservation of the species, regardless of subspecies.

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Immature roan antelope. Engin Akis photo

At what point does this decision move from being an IUCN recommendation to a sovereign decision accepted by all parties as being in the best interests of the species? Government authorities and conservation entities have the tricky job of striking a balance between good science and timely intervention to save a species. It would, however, be such a pity if this intervention came too late for these desperate roan populations. Would it not be an excellent outcome if these animals in South Africa could now play a role in species conservation in other parts of Africa? It would be sad to think these animals now have no conservation value because they are of mixed genetic origin.

Dr. Hamish Currie is a director of Back to Africa and a veterinarian involved in wildlife management projects across Africa. He is a pioneer of the introduction of zoo animals back into Africa, including the translocation of the last northern white rhinoceros from the Czech Republic to Kenya. This article first appeared in **Africa Geographic** *and is republished here with permission.*

Banner image: Roan bull in Tswalu Kalahari Reserve in the Northern Cape, South Africa. Covering an

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area of more than 111,000 hectares, 275,000 acres, Tswalu is South Africa's largest private game reserve. Richard Flack photo
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