

# **RESPONSE TO ANTHRAX CRISIS IN GREVY'S ZEBRA, NORTHERN KENYA**

**3 February 2006**

## **STATEMENT OF NEED**

Grevy's zebra is an endangered species and a near-endemic to northern Kenya with less than 2,200 animals remaining globally. An outbreak of anthrax in northern Kenya that began in December 2005 appears to be disproportionately affecting equines and in particular Grevy's zebra. To date, 41 Grevy's zebra have been confirmed dead and it is estimated that at least 50% of all cases are reported therefore a relatively accurate guess-estimate of total deaths would be 80-100 animals.

Although the situation is being closely monitored and livestock vaccination programmes are being undertaken in the affected areas, consensus among wildlife and anthrax epidemiology experts is that a broader vaccination programme is recommended whereby the most important Grevy's zebra populations are vaccinated against the disease.

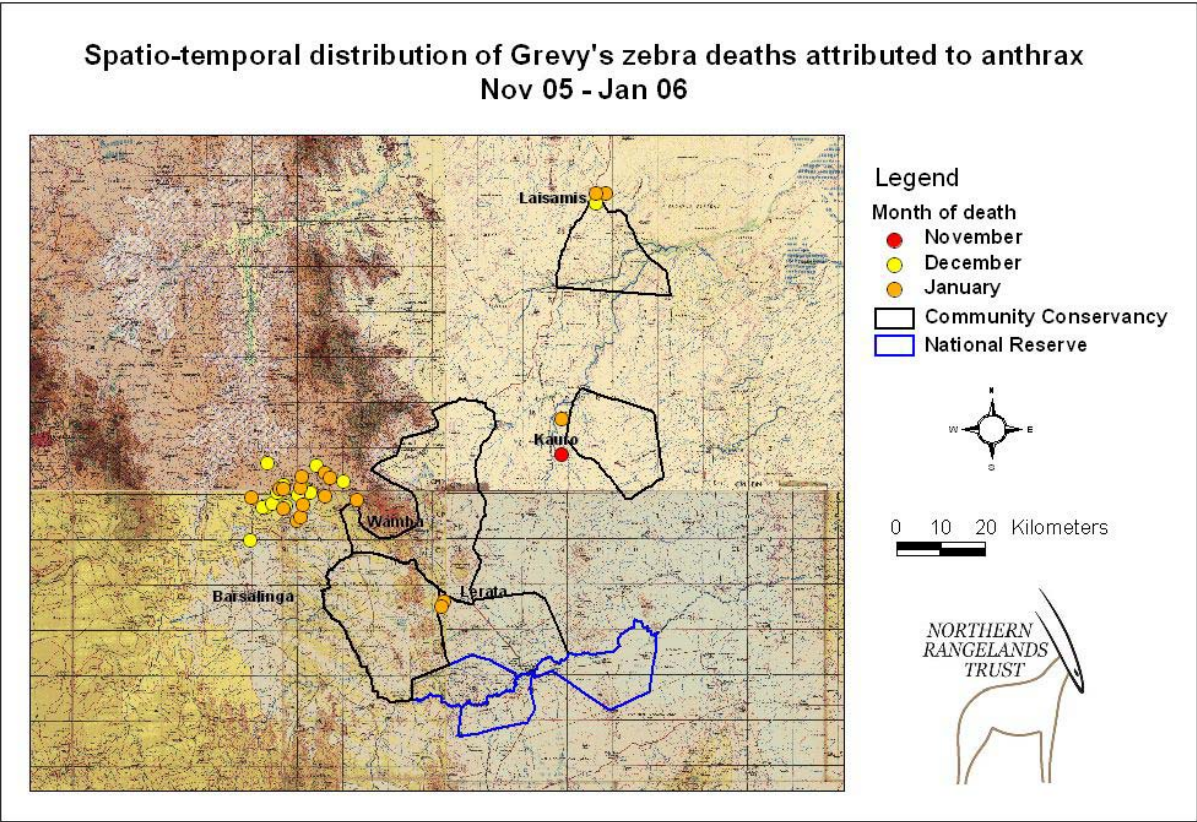
This outbreak is unlikely to stop until the onset of the April rains, however, preliminary reports from the meteorological office state that the rains may not be significant, therefore the need to vaccinate these animals is even more urgent as this outbreak has the potential to last until November 2006. This proposal requests funds for US \$118,012 to carry out the operation and give protection to approximately 1,100 Grevy's zebra.

## **BACKGROUND**

The reported Grevy's zebra deaths have occurred in one of the most important wild populations within the global context (Figure 1). This population ranges from the community areas adjoining Wamba down to the National Reserves (NRs) of Samburu, Buffalo Springs and Shaba. In total, over 800 animals migrate between these areas. Due to the drought conditions in the north, there is a concentration of over 300 animals within the National Reserves. Although the disease has not reached this far south, more animals are being reported in that direction.

The Lewa Wildlife Conservancy (LWC) holds the most critical population for Grevy's zebra. It is a successful breeding population that does not face threats such as competition with domestic livestock or poaching, which those animals outside the Conservancy are at risk from. It is therefore imperative to protect this population from the anthrax outbreak to ensure it remains healthy for the future, particularly as the loss incurred in the north may require translocation and re-stocking of the affected areas. In order to protect its population of Grevy's zebra, LWC has taken the precaution of closing off its northern access gap to prevent potentially infected animals from entering the Conservancy. LWC has also been advised to vaccinate its buffalo and kudu populations as these species are highly susceptible to anthrax and if they become infected, could increase the exposure of Grevy's zebra to the disease.

A team on the ground consisting of Rikapo Lentiwoo, coordinator of the Grevy's zebra Scout Programme and staff from the Namunyak Wildlife Conservation Trust. They are responsible for recording GPS location, sex, age, clinical signs of death, photos, taking blood samples where possible, and identifying potential vectors and sources. All this information is then passed on to the Kenya Wildlife Service veterinary department.



**Figure 1: Anthrax deaths in Grevy's zebra**

In anticipation of carrying out a vaccination programme on the wild populations at risk, a vaccination trial was carried out by KWS on eight Grevy's zebra captured in the Lewa Wildlife Conservancy (see attached report). No adverse reactions have taken place and only minor reactions were observed at the injection site, which are common with many vaccinations and do not pose a threat to the animal.

As of today, KWS has formally authorised a vaccination programme targeted at the populations of Wamba, Samburu NR, Buffalo Springs NR, Shaba NR, and Lewa Wildlife Conservancy to alleviate this crisis (Appendix I). The government has responded by mobilising its District Veterinary Services in order to vaccinate domestic livestock against the disease and dispose of any potentially infected carcasses. Public health awareness is high as the outbreak has received considerable local publicity and livestock vaccination programmes that have already been carried out have attempted to ensure that people are made aware of the risks of consuming infected meat.

## METHODS

### Grevy's zebra vaccinations

A combined approach of vehicles and helicopter will be required in order to deliver the vaccine to the populations targeted. The operation will be split into three phases: 1) Buffalo Springs and Samburu National Reserves; 2) Wamba and Shaba National Reserve; and 3) Lewa Wildlife Conservancy (Figure 2).

Phase	Target population	No. Animals	Logistics	Personnel	Timing
1	Buffalo Springs & Samburu National Reserves	350	3 vehicles 1 spotter plane	2 NR wardens 4 NR rangers 2 KWS vets 2 KWS technicians 6 LWC staff	4 days  13-16 Feb
2	Wamba & Shaba National Reserve	350	Helicopter 1 vehicle 1 spotter plane	1 NR warden 2 KWS vets 2 KWS technicians 6 LWC staff	5 days  18-23 Feb
3	Lewa Wildlife Conservancy*	450	2 vehicles 1 spotter plane	2 KWS vets 2 KWS technicians 6 LWC staff	5 days  24-29 Feb

\*Buffalo and kudu will also be vaccinated once the Grevy's zebra have been protected

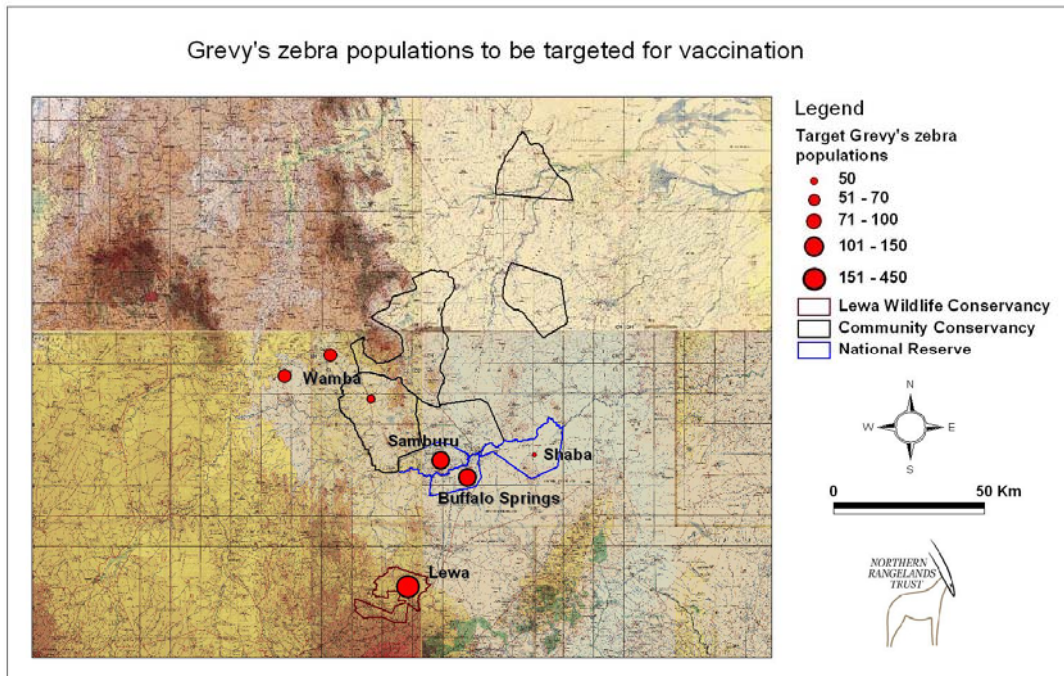


Figure 2: Populations to be covered by the vaccination programme

The vaccine will be delivered intramuscularly by injection dart containing 2 ml of the Blanthrax® vaccine which is locally sold by Wellcome Coopers, and has proved to be safe for administration to Grevy's zebra. Two ground teams will carry out the darting on Phases 1 and 2 with a third vehicle being used to collect darts, drop off rangers to monitor the animals on foot and ferry fuel for the light aircraft. Personnel will be strategically placed at high points in the terrain to keep track of herds and assist in coordinating the operation.

On Phase 3 for the Wamba and Shaba NR animals, helicopter will be used as the terrain will be inaccessible by vehicle, animals will be less habituated and herds will be scattered. The helicopter will carry one vet and an assistant to load the darts with the light aircraft locating herds and tracking animals during the vaccination process.

The possibility of using marking/injection darts was investigated, however, after lengthy consultations with experienced users of these darts, it was agreed that it would be impractical and expensive in this situation. Within the Conservancy and National Reserves, the areas will be divided up into sections with natural boundaries such as rivers that are likely to separate the different herds. In the unlikely event of re-vaccinating the same animals, it is known that the vaccine can be safely administered up to three times in the same animal (A. Dobson, *pers. comm.*). A photographer will also accompany each darting team to take pictures of all the right-hand rumps of the animals where feasible and enter them into an identification database so that percent coverage of the populations can be estimated after the exercise.

All vaccinated animals will be closely monitored by conservancy and reserve staff for four days after the vaccination, which is the time frame when any adverse reactions to the vaccine may take place.

### **Livestock vaccinations**

As part of the on-going response to this anthrax, the District Veterinary Officer of Samburu has to date vaccinated 12,230 head of livestock in the Wamba area (9,767 sheep, 1,229 camels, 1,167 donkeys, 67 cattle). LWC has also supported the District Veterinary Officer of Meru to vaccinate the livestock in its neighbouring communities in order to create a protective buffer around the Conservancy. On completion of the exercise, 9,500 head of livestock will have been vaccinated.

## **CONSERVATION IMPACT**

A number of Grevy's zebra conservation programmes have made excellent progress in ameliorating the human-induced threats to the species and the local communities within this region have joined hands in a coordinated effort with the government, non-government and private organisations to help reverse the trend that Grevy's zebras are facing.

The populations of Grevy's zebra threatened by the current anthrax outbreak in northern Kenya make up 60% of the global population. In 2004, during the anthrax outbreak in Malilangwe Wildlife Reserve, Zimbabwe, 97% of the kudu population was lost to the disease. Past outbreaks have shown that the impact on wildlife populations can be severe and that particular care should be taken where endangered species are concerned. Without intervention before any significant rains alleviate the epidemic, the risk of losing significant numbers of Grevy's zebra is extremely high. The protection afforded by the vaccine will allow these numbers to withstand the outbreak in the coming months and save further animals from dying.

## BUDGET

In the attached budget, 45% is payment of helicopter time which is focussing on a relatively small part of the Grevy's zebra population. However it remains the key part of the population as this where the outbreak has worst hit and due to the terrain and levels of the habituation of the animals it is only possible to vaccinate them with the use of a helicopter. The budget has been prepared based on estimates of flying hours against the number of animals darted. Once the programme is complete any unused funds can be returned on a pro rata basis to those organisations supporting the programme.

	Item	Unit Cost (USD)	No. Units	Total (USD)
<b>Lewa Grevy's zebra vaccination trial</b>	KWS team costs (accommodation, per diems, transport Nbi-Lewa-Nbi)	208.00	8	1,664
	Immobilisation per zebra (includes drugs, transport, feeding)	400.00	16	6,400
	Mobile phone communications to overseas field experts	250.00	1	250
	<b>Sub-total</b>			<b>8,314</b>
<b>Lewa Wildlife Vaccinations</b>	Anthrax vaccine	0.14	800	112
450 Grevy's zebra (5 days)	Dan Inject darts	15.50	800	12,400
200 buffalo & 50 kudu (3 days)	KWS team costs (accommodation, per diems, transport Nbi-Lewa-Nbi)	457.00	5	2,285
	LWC vehicles x 3 @ \$100 each	300.00	8	2,400
	LWC light aircraft @ \$150/hr, 1 hr/day	150.00	8	1,200
	LWC team costs	223.00	8	1,784
	<b>Sub-total</b>			<b>20,181</b>
<b>Shaba &amp; Wamba Grevy's zebra Vaccinations</b>	Anthrax vaccine	0.14	400	56
350 Grevy's zebra (5 days)	Dan Inject darts	15.50	400	6,200
	Helicopter costs	758.60	60	45,516
	LWC light aircraft @ \$150/hr, 5 hrs/day	150.00	25	3,750
	Transport and security of fuel	1,550.00	1	1,550
	LWC vehicles x 2 @ \$100 each (1 car for 5 days; 1 car for 9 days)	100.00	14	1,400
	KWS team costs (accommodation & per diems)	210.00	5	1,050
	County council team costs (per diems)	60.00	5	300
	LWC team costs (accommodation & per diems)	373.00	5	1,865
	Post-vaccination monitoring	103.00	9	927
	<b>Sub-total</b>			<b>62,614</b>
<b>Buffalo Springs &amp; Samburu Grevy's zebra Vaccinations</b>	Anthrax vaccine	0.14	400	56
350 Grevy's zebra (4 days)	Dan Inject darts	15.50	400	6,200
	LWC light aircraft @ \$150/hr, 2 hrs/day	300.00	4	1,200
	LWC vehicles x 3 @ \$100 each (2 cars for 4 days; 1 car for 8 days)	100.00	16	1,600
	KWS team costs (accommodation & per diems)	110.00	4	440
	County council team costs (per diems)	225.00	4	900
	LWC team costs per diems	223.00	4	892
	Accommodation @ \$25/night	250.00	4	1,000
	<b>Sub-total</b>			<b>12,288</b>
<b>Lewa Livestock Vaccinations</b>	Vaccine (Anthrax, blackquarter, lumpy skin disease)	0.41	9,500	3,895
(10 days)	DVO team costs	78.00	10	780
	LWC vehicle	100.00	10	1,000
	<b>Sub-total</b>			<b>5,675</b>
<b>Northern Kenya Livestock Vaccinations</b>	Anthrax vaccine	0.14	7,000	980
(14 days)	DVO team costs	91.00	4	364
	Vehicle running costs	164.00	8	1,312
	<b>Sub-total</b>			<b>2,656</b>
<b>Outbreak Monitoring</b>	Coordinator running costs (motorbike, accommodation, communications)	332.00	2	664
	<b>Sub-total</b>			<b>664</b>
	<b>SUB-TOTAL</b>			<b>112,392</b>
	<b>5% contingency</b>			<b>5,620</b>
	<b>TOTAL</b>			<b>118,012</b>



## Appendix I



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Ref. KWS/5700

3<sup>rd</sup> February 2006

Belinda Low,  
Northern Rangelands Trust,  
Private Bag,  
Isiolo, Kenya

Dear Belinda,

RE: BROAD VACCINATION PROGRAMME TO GREVY ZEBRA'S  
POPULATION IN NORTHERN KENYA

Reference is made to the minutes of the extra ordinary meeting of the Grevy's Zebra Task Force and the action on the minute on the above subject. We have no objection to a broader vaccination to the known grevy's population in the North. I request that you liaise directly with Patrick Omondi; Dr. Francis Gakuya and Thomas Manyibe on planning on the logistic for this vaccination programme. A post vaccination monitoring of individual population should be a prerequisite during your planning .

Yours sincerely,

**DR. RICHARD BAGINE**  
**DEPUTY DIRECTOR BIODIVERSITY, RESEARCH AND MONITORING**

c.c. Director  
HSC&M  
HVS  
FVO