

FIELD NOTE

Less room for a small population of elephants in severely encroached Mikeno massif, southern Virunga National Park, Democratic Republic of Congo

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Introduction

Expanding human activity and incursions in the Mikeno forest zone in Virunga National Park (VNP) need to be addressed with an elephant conservation strategy in mind, even though poaching is the most urgent short-term threat. The park recently experienced changes to its natural habitat that have been unprecedented in historic times. Habitat fragmentation is widespread and profound and has taken a heavy toll on wildlife, including a small population of elephants there. In a series of anti-poaching operations, 128 weapons were seized, 522 snares dismantled, 4 people arrested, 2 locally made arms recovered, and found was a mound of small mammal carcasses too numerous to count (ICCN 2004). The region remains at high risk, and Mikeno's extraordinary biodiversity will be lost if uncontrolled hunting, deforestation and habitat degradation continue. War has indeed opened up the Mikeno sector to unprecedented exploitation of natural resources. Even when the conflict ends and security recovers, these threats will continue to grow. This paper recommends mechanisms to protect the critically endangered habitat and wildlife of Mikeno massif.

The rape of Mikeno

Reports of extensive habitat destruction and land conversion by pastoralists were received in Goma (fig. 1)

in June 2004 when approximately 6000 people accompanied by Rwandan military personnel were said to have moved into the Mikeno sector of VNP, cutting down and rapidly destroying large expanses of bamboo and alpine forests (FZS et al. 2004). Large herds of livestock were reportedly introduced into the park. Sources pointed to the presence of large numbers of armed, uniformed personnel, apparently protecting livestock, and of people chopping down trees (FZS et al. 2004).

In response to these reports, an aerial reconnaissance was undertaken on 12 June 2004, through the European Commission's Development Office (ECDO) in Goma, Democratic Republic of Congo (DR Congo). The area was flown over twice at an altitude of about 1000 m above ground level. The damage to the natural vegetation was extensive, all woody vegetation having been cut and burned. The situation was desperate; habitat destruction occurred at times at a rate of up to 2 km² per day (the whole of the gorilla sector is less than 250 km²). Approximately 15 km² of the park's habitat was destroyed between 28 May and 12 June 2004 (ECDO 2004).

The former local chief of Kibumba area (fig. 1) benefited directly from this illegal land use, receiving Rwanda francs 5000 (USD 8) per hectare of park land cleared while workers employed to carry out this large-scale clearing received Rwanda francs 500 (USD 0.80) per person per day from the Rwandan side (FZS et al. 2004).

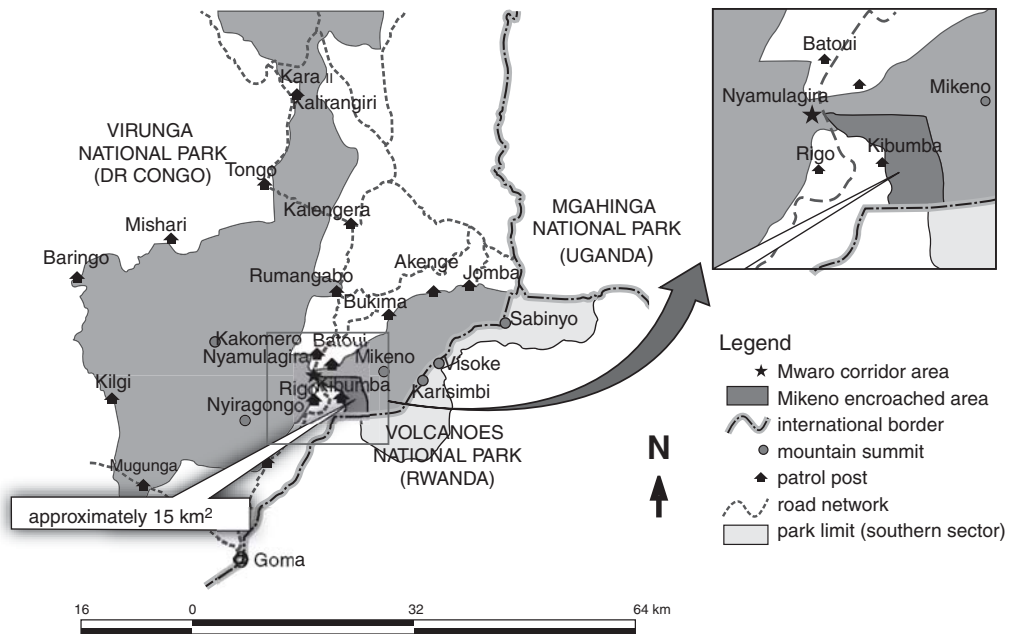


Figure 1. The Mikeno encroached area.

The sector of the forest cleared is important habitat that harbours a large variety of species. The loss of 15 km² in this part of the park was accompanied by the loss of many valuable services that forests provide such as regulating hydrological flows and sequestering carbon, and by loss of the biodiversity they contain including the mountain gorilla (*Gorilla beringei beringei*), the endemic golden monkey (*Cercopithecus mitis kandti*), l'Hoest's monkey (*Cercopithecus l'hoesti*), buffalo (*Syncerus caffer*), duiker (*Cephalophus* spp.) and elephant (*Loxodonta africana* ssp.).

Habitat destruction

On small open fires under the cooking pots of peasant families, thousands of tonnes of wood—a product of park encroachment—go up in smoke every day. This encroachment marks the significant changes that have occurred in the surrounding area of the recently deforested wildlife conservation habitat.

Five factors are catalysing the destruction in Mikeno sector: 1) clearing for cultivation; 2) grazing and dry-season burning stimulating new growth of grasses for grazing cattle at a time when other fodder is scarce; 3) attempting to destroy the refuge of the undesirable *interahamwe* and to improve visibility in

tall grass areas suspected to be their hide-out; 4) collecting firewood; and 5) increasing the supply of tall thatching grass. Over the years, conservation in the Mikeno sector has faced problems, most if not all of which hinge on high population pressure and demand for livelihood needs (Sikubwabo and Mushenzi 1996). The loss of any amount of forest land to agricultural encroachment, the illegal use of forest products, and poachers and habitat destruction have left just a small percentage of the originally abundant resources, which must now be actively controlled to ensure their continued existence.

Elephants and gorillas are dependent on forest habitat, and once the forest is converted to agriculture it rarely reverts to natural vegetation, unless it is left for hundreds of years. Deforestation means less room for elephants (Barnes 1990), and degradation of the forest is ongoing in an area where the carrying capacity is estimated to be 120 elephants, calculating an average of 0.5 elephant per km² (based on Pfeffer 1989). Even where the forest is not destroyed, it may be effectively lost as wildlife habitat if disturbance is severe. The further spread of villages and agriculture will inevitably increase competition between humans and elephants for land in the Mikeno forest zone, now well known as a hideout for heavily armed Rwandan soldiers.

Elephant corridor, genetic diversity

The sensitive forest corridor at Mwaro that joins Mikeno's vulnerable habitat with the rest of the park has also been partially affected (fig. 1) by providing spare land with water and wood in one of the most densely populated regions in the country. The Mikeno sector contains about 75 elephants (Blanc et al. 2003). Evidence suggests that isolated and small populations are less genetically diverse than contiguous large ones (Sheppard 1975; Berry 1977). Although Mikeno habitat does not yet appear to be in such dire straits and no factual basis for this statement is so far provided, the question should be: 'Is the lack of variation a danger to a small, isolated population?' The answer among conservationists seems to be 'yes'.

Elephants and buffaloes in particular use this 800-m corridor along their migration route, and its potential rapid disappearance presents a real threat to the genetic diversity of local fauna by preventing gene flow from the Mikeno sector to the other areas of the park such as the Nyamulagira sector, and indeed to other countries (fig. 1).

Recommendations

Genetic diversity

Conservationists should certainly be aware and make others aware of the possible genetic dangers of small population sizes in such isolated contexts. However, considering the lack of evidence on the subject, some have been, perhaps, too emphatic about these hazards. Environmental and demographic factors, not genetic ones, are, we suggest, the danger to such small and declining populations. Their conservation is necessary to ensure that the genetic and behavioural diversity of species is preserved. Therefore, there is critical need to carry out a further study on the pool of genetic diversity of the remaining elephant population in Mikeno to find out whether it can survive large-scale habitat destruction exceeding the limits of development plasticity.

Human population and encroachment

In the long term, human population growth and the expansion of settlement and agriculture will result in the loss of habitat (Mubalama 1995). The human population around the Virunga volcanoes region is increasing

at 3% per annum (Nsabimana 1978), which means it will double in just 24 years. Population distribution is uneven, with peak densities found on the rich volcanic soils around the Virunga volcanoes. With 95% of the population living on agriculture (Nsabimana 1978) immense demands are obviously placed on the land, demands that will become ever more pressing as time goes on. Somehow we must find a way between total appropriation and total protection so that, to the benefit of all, we can achieve some balance between humans and wildlife instead of open conflict. If not well monitored and protected, this small population may soon be engulfed by the ever-growing human population.

Poaching, law enforcement and political will

The park area, lying on the border between Rwanda and DR Congo, is considered a high-security zone used by poachers and militias. Although certain areas of the park are extremely dangerous, guards from the Institut Congolais pour la Conservation de la Nature are patrolling the international borders to ensure around-the-clock protection of key species. The guards generally have much less sophisticated weapons than the well-equipped militias. In addition, ammunition is limited. If the donor community is rallied to provide the guards with better equipment and to top up their salaries, we hope they will be encouraged to control ivory poaching. However, to deter poaching in the field, prevent the illicit transport of ivory within concerned countries, and stop the smuggling of ivory within and outside the Virunga volcanoes region requires determined government action.

At the time of submitting this field note, we heard from staff in Goma that 300 kg of ivory were going in to business through the black market around the park. To curb such trafficking, we urge cooperation and coordination between national CITES authorities and wildlife law-enforcement agencies including customs. Lack of political support to improve coordination of wildlife enforcement remains a persistent problem. It is a problem that can be dealt with through the Lusaka Agreement Task Force (LATF), yet only Uganda among the three concerned countries has so far ratified it. Therefore, we recommend that DR Congo and Rwanda also ratify the LATF to improve coordination of law enforcement.

Everybody's problem

The effects of the recent encroachment upon conservation in the area are still fresh and continue to be a great loss. The cost of the recovery programme will be enormous, and even so, not everything lost will be recovered. If the relevant authorities are made aware of the capital based on natural resources that is being lost in terms of individual wildlife species and related revenue, it should be an eye-opener to them, and to prosper, they should protect the region zealously. According to MacKinnon et al. (1986), there is no foolproof management prescription to protect parks during war. However, public support is crucial and an international link invaluable. If elephants and their habitat are to be protected, efforts must also aim at bringing all surrounding Mikeno local people into a clear-cut sensitization programme. Even so, the international demand for illegal ivory traffic to Japan will still result in more forest elephants being poached (Nishihara 2003). Wardens and park guards alone cannot stop it. Other government departments must be involved, such as the general police force, the criminal investigations department, the judiciary, customs and excise, the intelligence services and the general public (Mubalama and Mushenzi 2004).

The International Gorilla Conservation Programme (IGCP) has given us a valuable message. Its programme straddles the three countries in which Mikeno falls—DR Congo, Rwanda and Uganda—and it works closely with all the surrounding people. IGCP raised the alarm when Rwandan military and pastoralists invaded Mikeno, pointing out the detrimental effect they were having on the habitat and the elephants. And with help from EU and others action was taken to remove the invaders.

International efforts must be made to protect this relict and isolated population. To promote its long-term viability, and by implication its habitat, remote sensing can be used to monitor changes in the ecosystem and the degree of fragmentation, from which to track the changing extent and intensity of key threats. The degree of human disturbance should be monitored across all areas of the forest, with a continual check on the human effect on wildlife, to inform protection programmes as efficiently as possible.

References

- Barnes RFW. 1990. Deforestation trends in tropical Africa. *African Journal of Ecology* 28:161–173.
- Berry RJ. 1977. *Inheritance and natural selection*. Collins, London.
- Blanc JJ, Thouless, CR, Hart JA, Dublin HT, Douglas-Hamilton I, Craig CG, Barnes RFW. 2003. *African elephants status report 2002: an update from the African Elephant Database*. IUCN/SSC African Elephant Specialist Group, Gland, Switzerland.
- [ECDO] European Commission's Development Office. 2004. Report of an aerial reconnaissance flight revealing the catastrophic destruction of Virunga National Park's Mikeno gorilla sector. Site report, 13 June 2004.
- FZS, IGCP, WWF, WCS, ZSL. 2004. A preliminary report following a meeting between Frankfurt Zoological Society, International Gorilla Conservation Programme, World Wide Fund for Nature, Wildlife Conservation Society and Zoological Society of London concerning deforestation in the Mikeno sector. 3 p.
- [ICCN] Institut Congolais pour la Conservation de la Nature. 2004. Rapport technique. UNF/UNESCO, Goma, DR Congo.
- MacKinnon J, MacKinnon K, Child G, Thorsell J. 1986. *Managing protected areas in the tropics*. IUCN, Gland, Switzerland.
- Mubalama LK. 1995. The Virunga National Park grappling with the problem of population pressure: a case study of human ecology. *Wildlife and Nature* 11(2):52–56.
- Mubalama L, Mushenzi N. 2004. Monitoring law enforcement and illegal activities in the northern sector of the Parc National des Virunga, Democratic Republic of Congo. *Pachyderm* 36:16–29.
- Nishihara T. 2003. Elephant poaching and ivory trafficking in African tropical forests with special reference to the Republic of Congo. *Pachyderm* 34:66–74.
- Nsabimana D. 1978. *La conservation de la nature au Rwanda*. Address to the IUCN General Assembly, Ashkhabad, September 1978.
- Pfeffer P. 1989. *Vie et mort d'un géant : l'éléphant d'Afrique*. L'Odyssee/Flammarion, France.
- Sheppard PM. 1975. *Natural selection and heredity*. Hutchinson University Library, London.
- Sikubwabo C, Mushenzi N. 1996. Mountain gorillas of Mikeno, Zaïre: an explosive situation. Unpublished report.