

Status of elephant populations in Garamba National Park, Democratic Republic of Congo, late 2005

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Abstract

An aerial reconnaissance of the southern sector of Garamba National Park was undertaken between 14 and 24 August 2005 at the request of the Institut Congolais pour la Conservation de la Nature. Almost all of the park's wildlife is reported to be limited to the southern sector. In total, 32.4 hours of transects were flown between the Dungu and the Garamba Rivers (1610 km²). A small proportion of the Gangala na Bodio Hunting Reserve was also covered (130 km²). Atmospheric conditions were excellent, with stable air and clear visibility, but observations were hindered by long grass. A minimum estimate of 1202 elephants was made based on a total count of all individuals encountered. Twenty-eight elephant carcasses were sighted—1 was recent (< 1 month) with ivory removed and 27 were old (> 1 month)—and 13 poaching camps were seen.

Résumé

A la demande de l'Institut Congolais pour la Conservation de la Nature, on a procédé à une reconnaissance aérienne du secteur sud du Parc National de la Garamba entre le 14 et le 24 août 2005. Les rapports indiquent en effet que presque toute la faune du parc se limite au seul secteur sud. Au total, on a volé pendant 32,4 heures en traçant des transects entre les rivières Dungu et Garamba (1610 km²). On a aussi couvert une petite partie de la Réserve de chasse de Gangala na Bodio (130 km²). Les conditions atmosphériques étaient excellentes, l'air était stable et la visibilité parfaite mais les observations étaient compromises à cause des hautes herbes. On a pu faire une estimation minimum de 1202 éléphants en se basant sur le comptage total des animaux rencontrés. On a repéré 28 carcasses d'éléphants, une était récente (moins d'un mois) dont l'ivoire était enlevé, et 27 étaient plus anciennes (plus d'un mois) et on a aussi vu 13 camps de braconniers.

Introduction

Garamba National Park (GNP) is an immense (ca 5000 km²) relatively unencroached savanna of grassland and woodland, interspersed with gallery forests (essentially of *Chlorophora excelsa*, *Khaya* sp. and *Irvingia smithii*) along the riverbanks and swampy depressions (UNESCO 2005). The park lies in the north-eastern corner of the Democratic Republic of Congo (3–4°N and 29–30°W, fig. 1). Its northern border is the watershed of the Nile and Congo Rivers. The elevation ranges from 740 to 1060 m with a gently undulating *Loudetia* and *Hyparrhenia* grassland, with a few granite outcrops or inselbergs towards the

north. *Kigelia africana* (sausage trees), and *Vitex doniana* occur occasionally in the savanna regions but deciduous woodlands occur towards the southern and northern edges of the park and in the hunting reserves surrounding it (de Merode et al. 2000).

Established in 1938, GNP is one of the oldest parks in Africa (Kabala 1975; Kalpers 1990) and was declared a World Heritage Site in 1980 in recognition of its unique natural value (UNESCO 2005) whose epitomes are the elephant (*Loxodonta africana*), giraffe (*Giraffa camelopardalis congoensis*), hippopotamus (*Hippopotamus amphibius*) and above all the white rhinoceros, *Ceratotherium simum cottoni* (Kabala 1975). These charismatic species and other wildlife



Figure 1. Garamba National Park and adjacent reserves in the Democratic Republic of Congo.

were slaughtered in the years that immediately followed the independence of the country (IRF 2005) and again from 1978 to 1984 in the wave of elephant and rhino poaching that swept through Africa at the time (Hillman Smith et al. 1985, 1995). Since the early 1980s, the park received considerable national and international attention, which initiated the Garamba National Park Project, funded by a consortium of conservation donors (Frankfurt Zoological Society, World Wide Fund for Nature, UNESCO under the auspices of the World Conservation Union, and the International Rhino Foundation) with the aim of protecting a large variety of wildlife species under the umbrella of the remnant population of the wild northern white rhinoceros (Kalpers 1990; IRF 2005). This support boosted the morale of the national personnel, and for

more than a decade populations of wildlife recovered. The situation however changed with the anarchy instilled by the new political unrest in the country, which began in 1996 (Inogwabini et al. 2005). Since 1991 Garamba has also been increasingly affected by poaching driven by the civil war in neighbouring Sudan. A dramatic, but not a hopeless, change occurred in mid-2003 when formerly bushmeat-focused poaching shifted to exclusively elephant ivory and rhino horn (Hillman Smith 2005; IRF 2005).

Since then, when the Garamba Project had to pull out, numerous rumours have been spread across the media about the conservation status of large mammalian taxa in GNP. This report, the first field scientific expedition since the project closed, describes the current elephant situation in the park.

Material and methods

A high-wing light aircraft was used to fly low-level transects at an altitude of between 90 and 110 m systematically at 500-m intervals at an average of 182 km/hr. Flight lines were flown using a GPS and a radar altimeter was used to maintain a consistent altitude. Two quadrants of 200 km² each were flown over 10 days (fig. 2). The team comprised a pilot and two observers, the principal observer seated at the front and the other at the rear of the aircraft. The principal observer covered the right side of the aircraft and took notes and photographed all key observations (large herds of elephants and other major wildlife species) while the second observer made observations at the left of the aircraft. After flying over each 200-km² quadrant observers compared their notes and adjusted numbers of counts. The *minimum* total count number of elephants was a simple sum of adjusted counts. Aerial surveys have been widely used to estimate mammalian populations across Africa (for example,

Western 1976; Norton-Griffiths 1978; Hillman Smith 1989, 1997, 2005; Mbugua 1996; Douglas-Hamilton 1996).

For comparison of methods, another estimate was calculated using a data set collected from a test flight flown over two quadrants of 400 km² combined. At this first flight, an adjusted count of 300 elephants was made, which yielded a density of 0.75 elephants/km². This density was then multiplied by the total area of 1740 km² of the southern sector covered by the survey including 130 km² of the Gangala na Bodio Hunting Reserve.

Sample quadrants were randomly selected but the selection of the survey area itself was based on information provided by field-monitoring personnel, who suggested that most of the large mammals in GNP were concentrated in the southern part of the park.

This concentration of large mammals, particularly elephants, in the southern sector of GNP has been previously documented in systematic surveys in the recent past (Hillman Smith et al. 1995, 2003, 2004;

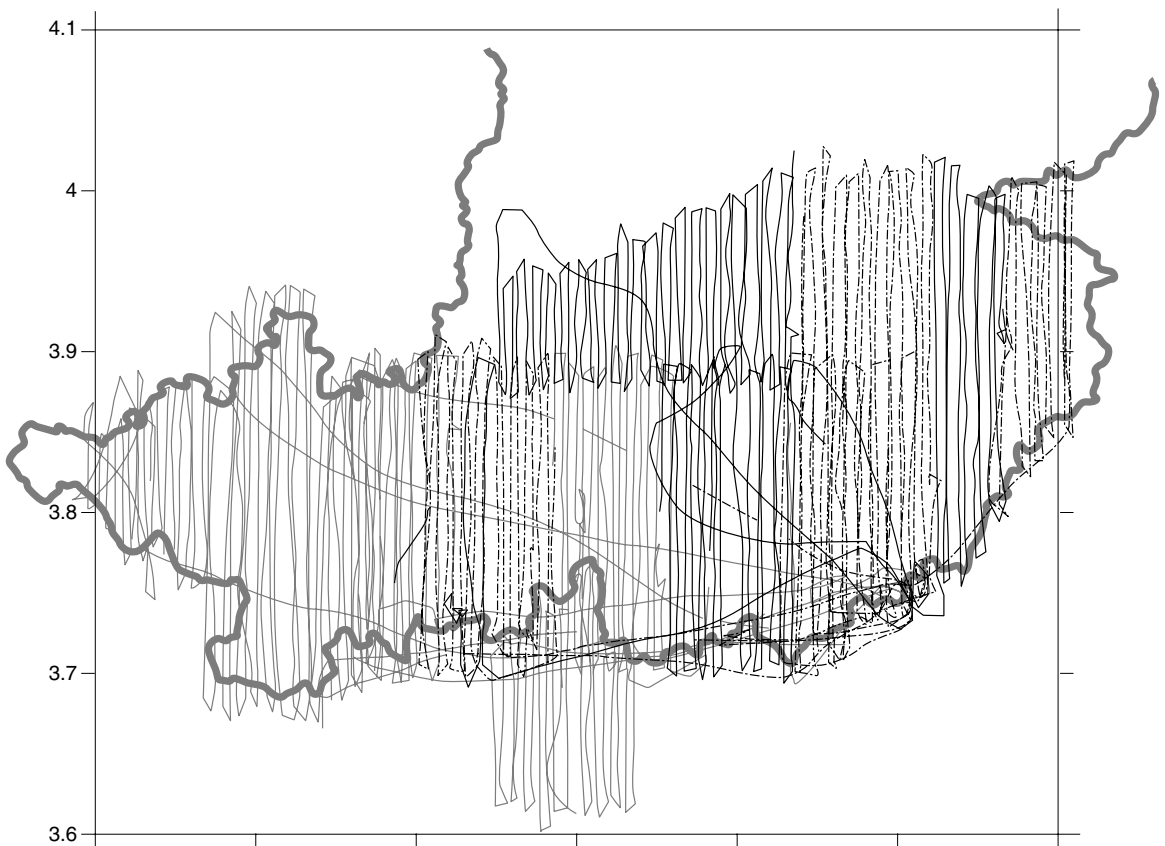


Figure 2. The southern sector of the park with flight paths registered using GPS tracklogs.

Hillman Smith and Ndey 2005). Elephant carcasses were also counted during the flights and were categorized as *recent* (aged < 1 month) and *old* (those that were > 1 month) (Hillman Smith et al. n.d.; Beyers et al. 2001; Blake 2002).

Results

We estimate that a *minimum* of 1202 elephants was present in the southern sector of GNP between the Garamba and Dingu Rivers, based on a total count of all individuals encountered. Extrapolation from an indicative density produced by a sample aerial count yielded an estimate of 1305 individuals. These estimates differed by 9%, indicating that both methods produce relatively similar estimates. We sighted 28 elephant carcasses: one was fresh with ivory removed, and 27 were over 1 month old; we saw 13 poaching camps.

Discussion

Both estimates (total count or sample counts) indicate lower elephant populations in GNP than in previous surveys (Savage et al. 1976; Hillman Smith 1989, 1997, 2005). Although some of the differences in estimates may be due to variations in methods used (1976–1995 used sample counts, 2005 was a total count), a comparison of the two methods, used concomitantly, indicated similar results. The difference of 9% between the two methods, nevertheless, is large enough to preclude intermethodological comparisons based on crude estimates.

Even though the aerial survey was flown at the height of the rainy season when grass is tall (over 2 m high in some areas), which prevented detection of all individuals and introduced a fair probability of failure to detect some elephant groups, we nevertheless think that because the flight was extremely intensive and at low altitude, the present survey captured the real situation of the elephant population in GNP. Assuming that negligible numbers of animals can be found north of the Garamba River (based on a short reconnaissance flight in the northern sector, and on the evidence of staff in Garamba), and even with elephant sightings reported outside the national park in the Domaine de Chasse Gangala na Bodio and in the Pangba and Sambia regions, the present minimum estimate depicts a realistic trend in the conservation status of elephant populations in GNP. Overall numbers of elephant in

the park have drastically decreased from 11,000 in 1996 to 5500 individuals in 2002 (Hillman Smith and Mafuko 2000; Hillman Smith 2002a, 2002b, 2005; Inogwabini et al. 2005). The minimum estimate presented in this report indicates a further decline clearly linked to significant elephant poaching reported in the last 18 months (Hillman Smith et al. 2003; Hillman Smith 2005). Reports from local people and wardens indicate that this new wave of poaching is highly organized, orchestrated by heavily armed and disciplined Arabic groups composed of Muharaleen, Bagara, Mbororo and janjaweed from neighbouring Central African Republic, Chad and Sudan, and appears to be concentrated largely in the dry season (Hillman Smith 2005; Hillman Smith and Ndey 2005; Mayumba and Mboma, pers. comm.).

High levels of poaching, low morale of rangers and wardens, insufficient anti-poaching resources and low political support make the large mammal populations in Garamba extremely vulnerable to poaching. With other species that inhabit the Garamba complex such as the remnant population of the northern white rhinoceros (albeit in a critically endangered situation), eastern chimpanzees, Congo giraffes, a significant wild population of hippos, and a large cohort of other large mammals, Garamba and its relatively unencroached large stretches of savanna is still one of the strongholds for biodiversity in the Democratic Republic of Congo, which deserves more conservation effort at this critical time. Elephant numbers in Garamba declined in the past (fig. 3), particularly between 1976 and 1986, but significant effort invested by both national and international conservation agencies succeeded in curbing the decline. This means that

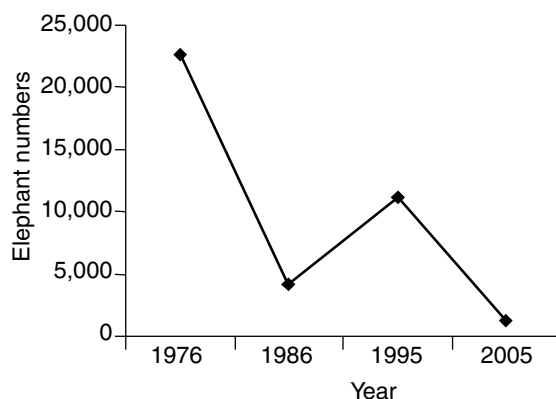


Figure 3. Elephant population trends in Garamba National Park, 1976–2005.

even the current situation can be stopped, stabilized and improved, provided resources (first human and then material) are made available. We would therefore recommend that a more cohesive Garamba conservation plan, piloted by the Institut Congolais pour la Conservation de la Nature but solidly backed by political authority at the highest level, be put in place before the next dry season, which appears to be the period most vulnerable to poaching activities.

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