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Elephant ecology and the emergence of the state in Great Lakes Africa

Andrew Reid [Institute of Archaeology, University College London]

Abstract: When European travellers first visited Great Lakes Africa in the later part of the nineteenth century they found a belligerent attitude to the large elephant populations of the region, fuelled by the ivory trade and by the political need to protect cultivation from elephant attack. During the days of the Uganda Protectorate in the twentieth century, this contestation between declining elephant and expanding human populations continued until widespread poaching began in the late 1960s. This political significance may well extend back to the origins of the state in the Great Lakes region. Around the northern shores of the lake, elephants may have enabled movement through difficult terrain, but they would also have proved a threat to the new banana plantation agriculture. The recent removal of elephant populations has had ecological consequences for areas that were previously renowned for their suitability for cattle-rearing. It is in these areas that the earliest traces of political centralisation are found, particularly associated with large cattle herds, beginning around AD 1000. It is highly likely that these herds would not have been sustainable without the ecological impact of elephants. They controlled bush encroachment, suppressing the threat of trypanosomiasis. Elephants would also have sponsored the regeneration of pasture and the exposure of salt sources, both of which are essential for cattle populations today. It is therefore likely that human-elephant relationships were significantly better in the distant past and that the impact of elephants may have been crucial to the emergence of states.

Conventional contemporary narratives on human-elephant relationships emphasise the small-scale conflicts that occur over the raiding of crops. The preferred theme is that of isolated cultivators battling forlornly against forces of nature. This construct finds common ground with the notion of unfettered wilderness that is drawn on by wildlife tourism, particularly in Sub-Saharan Africa. Such modern mythemes ignore the past presence of human populations in recently designated wildlife areas and also ignore the evidence for dynamic political organisation and action within past societies, a matter of especial sensitivity when considering the African continent. This study seeks to address these issues by exploring the interaction between elephant populations and precolonial African states within the Great Lakes region of Africa.[1]

The precolonial states of the Great Lakes region of Africa (Figure 1) are a distinct and unique group of polities within sub-Saharan Africa.[2] Their importance lies, unusually, in their relatively late emergence compared to other parts of the continent and as a consequence the large body of historical sources that are available relating to their structure and operation.[3] In addition, they are of significance because they are the one area of incipient state formation in sub-Saharan Africa for which there is no suggestable external contact. These have to be entirely African political constructs and hence they demonstrate that, contrary to colonial myths, political structures were created by Africans here and elsewhere.[4]

These states were first encountered by European explorers as part of the "Scramble for Africa" in the nineteenth century, Speke and Grant reaching the Buganda capital in 1862, by when the states were mature or even in decline.[5] The nature of these initial encounters helped define subsequent relationships between Europeans and indigenous

polities and the historical manifestations that were consequently produced under indirect rule.[6] Buganda, one of the first encountered, was regarded by Europeans as superior to its neighbours – in no small part because that was how Buganda presented itself. Its neighbour, Bunyoro, regarded Europeans with suspicion since Europeans had first arrived from Buganda, its long-term rival. Rwanda simply regarded Europeans as dangerous and so banned them from entering their territory – and was hence considered

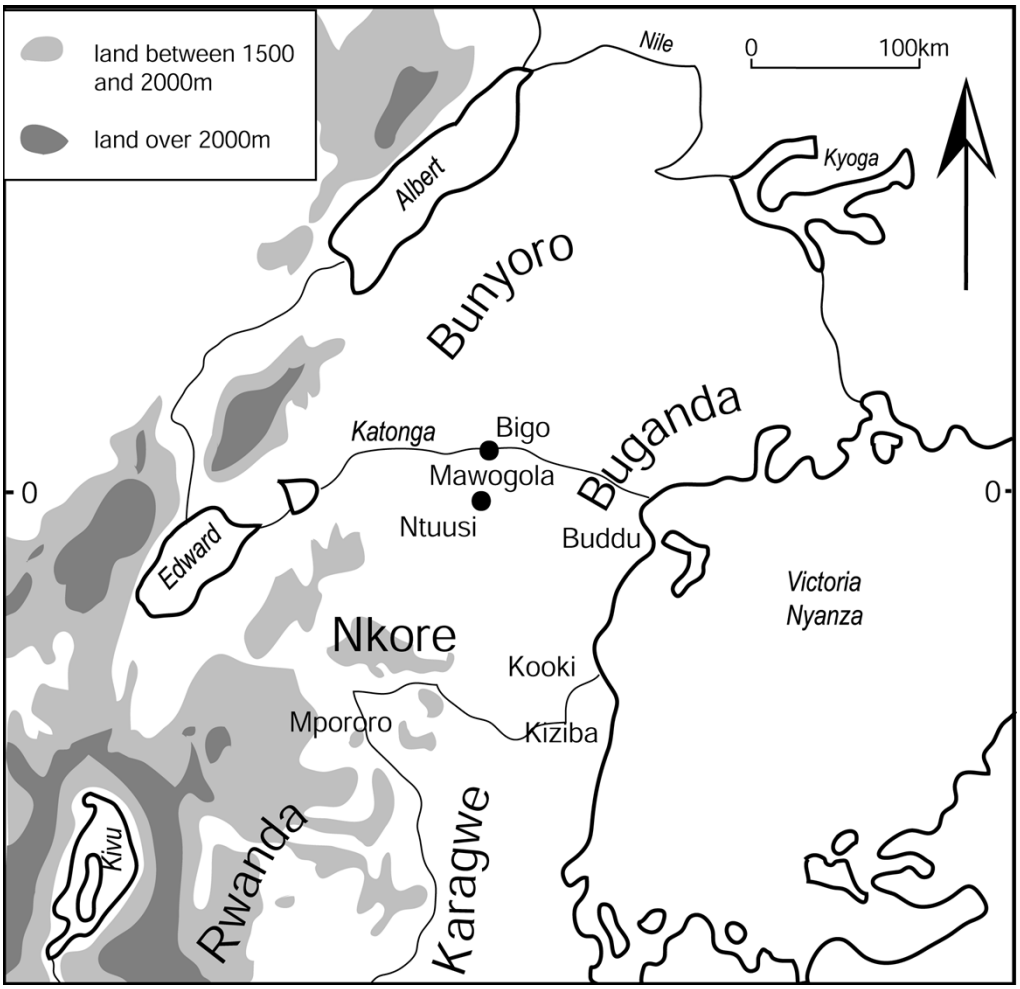

Figure 1: Precolonial Great Lakes Africa

by Europeans to be closed and conservative. Not surprisingly, then, the largest amount of information available is from Buganda. What is also clear is that these states were mature political formations with complex structures and long-standing foundations in their core areas that extended beyond the limits of living or inherited memory. Hence, notions of state formation were – and in large part still are – accommodations which rationalised the political structures of the nineteenth and twentieth centuries and were shady on the actual origins of the state. For these reasons archaeology is potentially an extremely important source of information relating to early phases in the processes of political transformation. Sites have been found which seemingly relate to these early transformations, but their archaeological investigation is hampered by the combination of poor preservation of materials, building traditions that used entirely biodegradable resources, leaving little or no trace, and settlements that were characteristically both short term and dispersed so that there was no appreciable development of habitation deposits.

To consider the relationship between elephant and human populations in the context of the emergence of states in the Great Lakes region, this paper will first review the historical evidence for the relationship in the mature states of the nineteenth century. It will then examine the subsequent stresses both elephant populations and colonial administrations faced in the twentieth century, because these tensions emphasise the importance of the dynamic in the nineteenth century. Ultimately the twentieth century oversaw the near complete extinction of the elephant from the region. Finally, the paper will explore episodes of state formation in the early second millennium AD through archaeological and associated evidence. The latter discussion will focus on two areas in particular: the forested north western margins of the Victoria Nyanza from which Buganda emerged and the much drier grasslands of Mawogola from which much archaeological evidence for the emergence of political economies based on cattle has been produced, centred around the site of Ntuusi. This archaeological consideration will look at likely impacts, because, besides ivory, it is quite rare to find bone evidence of elephants on archaeological sites. Elephants carry so much potential meat and their bones are so massive, that butchery will take place at untraceable elephant kill sites from which no bone will be taken back to the human habitation site where it might have been preserved.[7]

Conflict in the nineteenth century

When European travellers, such as Speke and Stanley, first visited Great Lakes Africa in the mid-nineteenth century they found a belligerent attitude to the large elephant populations of the region, fuelled in part by the ivory trade but more importantly by the political need to protect cultivation from elephant attack. To Buganda, elephants

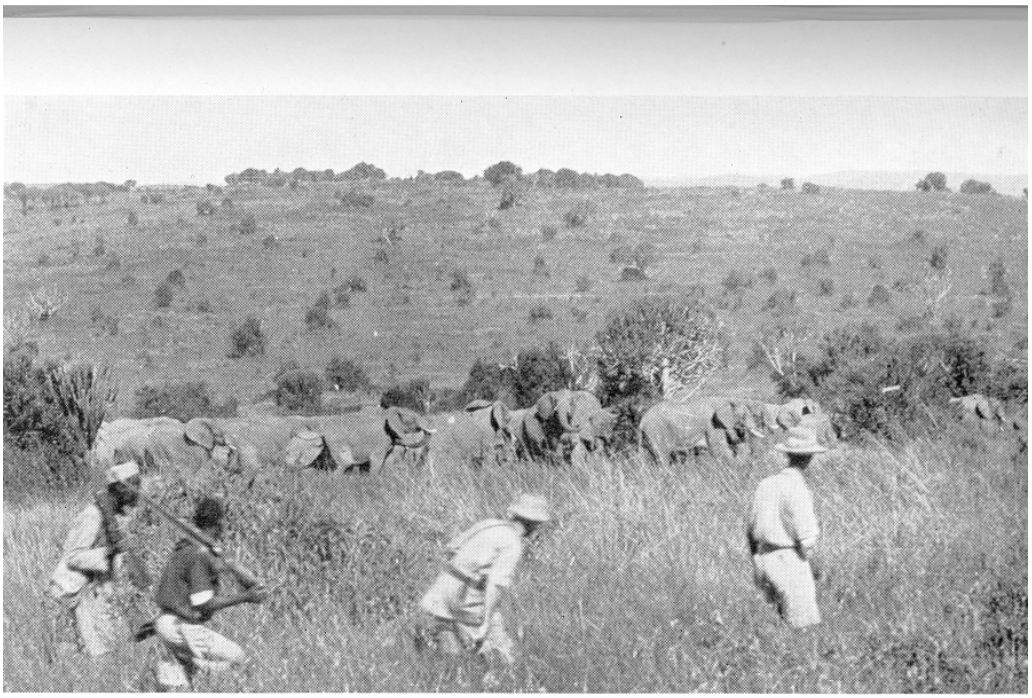

Figure 2: Elephant hunting in Mawogola in the early twentieth century

represented a major pest capable of devastating the banana plantations that were the economic core of the state. For instance, during the reign of Semakokiro between around 1780 and 1810, the *kabaka*, or king, "saved the country from being devastated by

elephants" and effected the most popular of political solutions by "driving the elephants into Bunyoro".[8]

In Buganda and Bunyoro recent work has re-assessed hunters, suggesting that they played a key role in the state both economically and politically.[9] Hunters, maintained by the state, were responsible for drawing elephants away from cultivated areas. As demand for ivory increased, because of contact with the Swahili coast and traders from the Sudan, elephant hunting took on further importance and harassed elephant populations were less frequently found within the more densely inhabited core areas of the states. Consequently, from the mid-nineteenth century at least, hunters from Buganda and Bunyoro operated in the marginal lands around the states, following the herds that sought refuge there. Even with firearms available, the hunting mostly involved spears, or the use of impaling pit traps and trip wire traps attached to weighted spears.[10] In more forested areas hunters armed with heavy spears might hide themselves in trees.[11] More appropriate to the grasslands was this alternative:

Another method of hunting elephants, and one used on the open plains, or where there was only scrub, was for three or four men carrying throwing-spears to approach the animals as they were feeding. The men crawled along the ground, and they were such adepts at stalking that they would creep into the herd without being perceived; they were not detected by the scent, because their smell was not unlike that of the animals. They would next deliberately pick out one of the animals and spear it in the head. As soon as the man had speared an elephant, he had to escape as best he could; his companions would help him by rushing forward and spearing the animal again, and so diverting its attention from the man who had first attacked it. In this way, by taking turns to spear and to divert the attention of an animal, they would soon bring it down. This kind of hunting required courage and a strong nerve, and only men who could be trusted to stand by their companions when an infuriated animal charged would be enlisted. Sometimes a hunter would be killed, though this was seldom the case.[12]

It is apparent that the elephant population in the core of Buganda itself had largely been eliminated by the 1870s and that the elephant frontier was being pushed ever further away. Increasingly this will have led hunters under the control of young ambitious political appointees into places like Mawogola to the south west and lying between Buganda and Nkore. One young man, Semei Kakungulu, who went on to become a major political figure in the early decades of the Uganda Protectorate, began his political career as an elephant hunter. Initially, Kakungulu was a minor chief in Rakai, producing ivory for the king of Kooki,[13] a polity that was in the process of being drawn under direct Ganda rule. In 1884, Kakungulu presented himself for service in Buganda at the court of Mutesa and, together with firearms and ammunition, was given a small position in Buddu with the express title of *Omulumba njovu*, hunter of elephants.[14] From there the main focus of his hunting would most likely have been to the west into Mawogola, lands he already knew well. Kakungulu initially had at his disposal 110 guns, although the guns may have been more important as items of status than as effective hunting weapons. A rapid presentation of 49 tusks to the king led to an expansion of his authority over elephant hunting into Bulemezi to the north. Unusually Mutesa had arranged that Kakungulu would hand him both tusks from a slaughtered animal, rather than the customary practice where each chief retained one of the tusks. Even more unusually, when Mutesa died Kakungulu retained his position under the new king, Mwanga, whilst most other functionaries lost their posts. Further indications of the economic importance of Kakungulu are provided in 1886 when he was threatened with arrest and execution during Mwanga's anti-Christian purges. Gifts of several tusks were sufficient to gain Kakungulu a pardon.[15] Two years later when Mwanga was

overthrown, Kakungulu's chieftaincy was seen as too tempting a prize and he was removed from office.

Clearly Kakungulu was of great value to the state, but he also accrued benefits for himself and his followers. As a special dispensation, they were exempt from the ban on smoking "Indian hemp" and did not have to cut their hair. Besides hunting, which provided plentiful meat, he was also plundering neighbouring territories, taking cattle and captives and trading these at Kiziba for imported cloth and for guns. In short, Kakungulu and his young men gained quite a reputation for their lifestyles. Kakungulu's drum is said to have sounded "I eat what I choose; I eat what I find; I eat whatever does not belong to me".[16] The presence of leaders such as Kakungulu in the marginal lands between states would have had a significant impact on deterring both elephant and human populations.

Elephants on the colonial retreat

The precolonial states of the late nineteenth century would seem to confirm the idea of human-elephant conflict, although under the influence of the state, humans appear to have been the principal aggressors. It was in this political context that colonial conservation strategies were formed and they serve to demonstrate the obligations of political authority in the face of expanding human populations encountering disruption by elephants: processes that must have been important within the expanding states of earlier times. Established in 1894 the Uganda Protectorate relied on indirect rule which seemingly drew on precolonial political structures whilst creating greatly altered or even novel forms of political authority. During the days of the Uganda Protectorate in the twentieth century, the contestation between declining elephant and expanding human populations continued until widespread poaching began in the late 1960s. Although elephant populations had greatly suffered in the nineteenth century, significant populations remained and seemed to be recovering in the early years of the twentieth century.

In early colonial Uganda, ivory was the sole commodity which had sufficient value to draw commodities from the East African coast, generating £5,481 in 1894 and £15,295 in 1895. In subsequent years, ivory continued to be the predominant export until 1904,[17] shortly after the opening of the Uganda Railway which drastically reduced costs and made possible the export of lower value commodities. Nevertheless, ivory remained a significant export ranging in income in the years 1925-1934 from £12,736 to £34,575 (10 to 27 tonnes).[18] Control of hunting was clearly of great importance and it was quickly made illegal to hunt without a licence. By 1935 there were firearms licences, annual game licences, professional hunter's licences and elephant licences. Whether daunted by the actual cost or the bureaucracy and effort required in acquiring a licence, the indigenous population felt that it was now illegal for them to hunt elephants, whose numbers were beginning to recover. Imposing such legislation obviously obliged the colonial administration to protect inhabitants and their crops from elephants. Whilst licensed hunting for sport was encouraged, control operations became essential. The situation was particularly acute in Bunyoro, where hunting by Europeans was not favoured by the forest conditions in which the majority of the elephant population lived and by Bunyoro's remoteness and poor roads. There may have been as many as 20,000 elephants in Bunyoro alone during the 1920s. It is clear that junior colonial officers closer to the ground recognised that there was simply not enough hunting to reduce numbers and that elephant populations represented a serious threat to the livelihoods of local populations, but their reports were largely ignored by superiors.[19]

From the 1920s onwards, attempts to control elephants by the administration became much more organised. Records from 1926 to 1958 indicate that 31,966 elephants were shot in Uganda by control operations, with an additional 8,170 shot by licensed trophy hunters.[20] The control operations alone generated over 385 tonnes of ivory. These control operations formed "a policy of harassment and confinement".[21] The overall consequence of control operations, whether intended or not, was to force elephants to retreat into designated reserves. Hence, by 1959, 95% of the elephant population was found in reserves and protected areas, with the Katonga valley, immediately to the north of Mawogola, being one of the notable exceptions.[22] It is estimated that whereas in 1929 70% of Uganda was occupied by elephants, by 1959 this had been reduced to 17%.[23]

Despite the control operations and their intended impact, there was little doubt posed as to the reason for the decline: "the principal and fundamental cause for this drastic decrease in elephant distribution is the great increase in human population which climbed from about 3.5 million in Uganda in 1929 to about 5.5 million in 1960".[24] The growing population needed to expand onto new land and search for new opportunities. This potentially brought them into immediate contact with elephant populations. Archaeological survey in Mawogola encountered two mid-twentieth century farming homesteads, pioneering developments in previously uncultivated areas, which informants revealed were abandoned because of the damage done to their crops by elephants.

Naturally, the consequence of sustaining elephant numbers through the mid-twentieth century but reducing their distribution was the overpopulation of the reserves. There were simply too many elephants present by comparison with likely carrying capacities and these elephants were capable of causing drastic transformation of the landscape. The role of elephants in the conversion of the *Terminalia* woodland into open grasslands in Murchison Falls National Park, is a well-known example.[25] High elephant numbers had encouraged bush loss and stimulated invasion of grasses into newly open vegetation. This grass presence was then prone to fire which further damaged the bush and tree mosaic. In the worst cases this caused the complete removal of bush and left impoverished and denuded grasslands where once forest had thrived. Not only were habitats destroyed but there was a significant impact on biodiversity. To tackle this, in the mid 1960s up to 2,000 elephants were "cropped" in the park and recommendations were made for the removal of 4,000 more.[26]

Whilst the overall process of decline in elephant distribution in Uganda was well established by 1960, and this probably covers the demise of the elephant in Mawogola, it does not explain the accelerated downturn in elephant numbers that occurred in the 1960s and 1970s. For example, the elephant population of the southern sector of the Murchison Falls National Park was reduced by 90% between 1973 and 1975 through unrestrained poaching.[27] The national elephant population in Uganda dwindled to around 2,000 in 1982 as a result of political corruption, lawlessness amongst soldiers and the collapse of the state infrastructure. Elephant numbers in Uganda have recovered slightly to 5,000 in 2011, but, in the face of Uganda's mushrooming population,[28] are almost entirely confined to the Queen Elizabeth and Murchison Falls National Parks with consequent impacts on the ecology of the parks and their immediate surrounds.

There is, therefore, very sound evidence that these artificially compressed high elephant populations had a significant impact on natural ecosystems.[29] The focus this far has been the emphasis on elephant interference with cultivation and the stresses this put on political authority. Necessarily this emphasises the negative relationships between elephant populations and expanding human cultivators. However a very different

dynamic may have been at play in earlier times particularly in the areas where cattle herding became dominant.

Buganda and its origins

Recent work has begun to reveal early processes of change taking place in the Great Lakes region, with particular emphasis on economic specialisation and transformation. Evidence for salt production dates at least as far back as the thirteenth century, locally innovated banana plantation agriculture spread around the fringes of Lake Victoria from the ninth century and specialised cattle herding emerged by the early eleventh century. These economic transformations were also accompanied by social and political changes. Salt became a major commodity in the region, exploitation of which was heavily controlled by elites, particularly from Bunyoro.[30] Banana plantation agriculture in what became Buganda and neighbouring territories, allowed the development of larger communities with new forms of political control and cohesion, moving from inherited control of land by local lineages to larger social units associated with clan identities.[31] Although not nearly so reliant on bananas, there were also similar changes in agricultural practice in Bunyoro from around the twelfth century.[32] In the grasslands to the west of the lake, ownership and control of cattle came to be a major means of defining social relationships and the principal means through which power and class were orchestrated in places like Nkore, Karagwe and Mpororo.[33] It is these latter two elements, the enhancement of agricultural practices and the emergence of large scale cattle herding which are of most importance in this consideration of the impact of elephant ecology on state formation.

Buganda emerged from the lake as the consequence of new political relationships being created by the development of banana plantation agriculture and the settlement of fingers of land extending on promontories from the Victoria Nyanza.[34] Archaeological evidence suggests this was a predominantly lake-based phenomenon occupying the islands and mainland shores of the northern part of the lake, but not penetrating inland. There is also an "explosion" of new linguistic terms at this point indicating the need to innovate new means of describing the plants, their development and their management.[35] Recently, associations have been drawn between these new leadership forms, ritual practice and figurative sculptural forms in clay, very rarely recovered from archaeological sites.[36] The dispersed settlement rapidly spread along the ridgetops heading away from the lake creating new social relationships and forms of political authority. Buganda's success was ultimately to link these isolated ridgetops together with an overriding political leadership, conferred by roads and causeways built across the adjacent swamps. The need for good land and the success of the new agricultural form led inevitably to regular contact with elephants inhabiting the forests and papyrus swamps of the area.

A recent study of crop-raiding behaviour by elephants in Kibale Forest, western Uganda, provides some insights into the likely nature of contact. These studies of crop raiding behaviour have suggested that the overriding nutritional benefit derived by elephants consuming crops as opposed to wild food sources, is confined to higher sodium values.[37] The two crops most favoured by elephants in the Kibale Forest were bananas and maize. Whilst maize is a much later introduction, the new banana plantation agriculture being pioneered from the lake at the end of the first millennium AD would have presented conspicuous targets for elephant populations, that once identified may well have proved to be an attractive resource. At their very outset, therefore, the new forms of political leadership would have had to face the challenge of how to deal with crop-raiding by elephants – or risk losing their authority. Larger social groups and the development of

clan identities would also have provided support to help offset the impacts of this predation.

However, the Kibale Forest study also throws up another factor in which elephants may well have promoted human settlement from the lake. The study itself collected its data merely by following trails of destruction left by elephants, noting the crops fed upon and the intensity of this attention. The societies of the late first millennium settlements of the north western lake were heavily associated with the lake because it, rather than the land, provided the means of access and dispersal around the islands and lake edge. The lake margins on the other hand were deeply indented and irregular and furthermore were covered in dense forest interspersed by papyrus swamp. Elephant trails through the forest would have provided major means of gaining access to the mainland and identifying resources for exploitation and lands upon which to settle. Unwittingly, elephants may therefore have made a significant contribution to the initial process of settlement upon which Buganda ultimately emerged.

Ntuusi and the Mawogola landscape

Situated only eighty kilometres from the north western shores of the lake, lie the Mawogola grasslands and the site of Ntuusi. Ntuusi's importance is that it provides the first, tentative archaeological instance of centralisation and political complexity in the Great Lakes.[38] The site is also the first evidence for occupation of the central grasslands, a much drier zone stretching from Mawogola south into Karagwe in the north western corner of Tanzania. In marked contrast to the wetter montane forests of the west and to the much wetter lowland forests to the east and north, these grasslands are much drier, at Ntuusi with an annual average rainfall of around 1,100mm. As has already been seen, Mawogola featured elephants in the nineteenth and twentieth centuries and they were almost certainly present in earlier times. There were no doubt earlier engagements between humans and elephants in Mawogola, but as yet there is no evidence from hunter gatherer habitation sites or from rock art. Ntuusi covers an area of over 100 hectares and dates between AD 1000 and AD 1500. The settlement at Ntuusi was essentially sporadic in nature and not all of the site was occupied at any one time.[39] Habitation appears to have consisted of isolated compounds which are cattle enclosures, but which also feature abundant evidence of grain agriculture.[40]

There is significant debate over the environmental conditions in which settlement took place at locations like Ntuusi. Contrasting arguments have been made that settlement was encouraged either by wetter or by drier conditions, the contestation lying in the inability to reconcile radiocarbon chronologies from archaeological sites with the separately generated palaeoenvironmental evidence.[41] There are also misunderstandings as to the consequences of different environmental conditions: wetter regimes are generally assumed to have benefitted grain agriculture, but would also have encouraged the increase of bush which hosts insect populations such as tsetse fly, and hence would have negatively impacted cattle through the spread of insect-borne disease. Drier conditions would have led to a more open grassland habitat. Even in such drier conditions sorghum and finger millet would have succeeded with potentially two crops a year provided that rainfall was reliable and suitably concentrated within growing seasons.

In this landscape cattle herding was extremely successful. In the area around Ntuusi, archaeological survey found a series of small sites at which inhabitants were herding cattle and cultivating crops.[42] Animal bones recovered from these sites are overwhelmingly cattle[43] – more than 90% of the bone on all sites – with wild mammals, including bushbuck, impala, wild pig and duiker, forming between 0 and 0.5%. This occupation of Mawogola was the first visible appearance of the unique pastoralism of

the Great Lakes region, with herders clearly beginning to explore the possibilities of cattle culture, whilst still cultivating.[44] Ultimately by the seventeenth and eighteenth centuries cattle became the cornerstone of states like Nkore and Karagwe, in which social position was negotiated through the manipulation of cattle and the king was regarded as pastoralist-in-chief, nominally owner of all the herds.[45] The faunal collections from Ntuusi also include over 200 fragments of ivory which demonstrate working processes as well as finished items. The existence of this ivory and its wasteful processing, with bead blanks regularly shattered whilst drilling, suggests no great need for efficiency in the working process.[46]

A common problem for archaeology is that these habitation sites found during archaeological survey, obviously do not directly reveal the activities undertaken in the broader landscape, in which contact with elephant populations would have taken place. The narrow river valleys running south from the Katonga would have been thoroughfares for both humans and elephants, and they also served to trap water, resulting in the concentration of herding settlements nearby. On habitation sites, as has been seen, the archaeological record reveals surprisingly little about the wild fauna encountered on a daily basis.

A suggestion of the impact of elephants in this landscape is provided by the archaeological investigation of Bigo bya Mugenyi, occupied towards the end of the Ntuusi sequence. Bigo overlooks the papyrus choked Katonga river, thirteen kilometres north of Ntuusi. Bigo is renowned for its extensive ditches, cut up to four metres deep, which extend for more than ten kilometres and encircle a central hilltop.[47] Judging by the very limited extent of the archaeological deposits, Bigo was not a major population centre, and the ditches are not obviously defensive, since in places defenders would be placed at a significant disadvantage.[48] Alternative hypotheses for the ditches have included the possibility that they could be elephant defences. This seems unlikely as only one other site in Mawogola has such features and there is no significant evidence for agriculture at Bigo. Instead the ditches may be better interpreted as focusing political or ritual attention on the habitation at the core of the site as a display of power. Whatever the case, Bigo seems to have been abandoned in the sixteenth or seventeenth centuries at around the same time as Ntuusi, thus leaving the elephants of Mawogola in peace.

In the twentieth century, conditions for hunting and for photography were said to be "ideal" in Mawogola's open grasslands as opposed to the dense forest and thick bush areas to the north. [*Fig*. 2] In Mawogola it was observed that "elephants in large herds….may often be seen in practically open savannah country at all hours of the day and sometimes in proximity to herds of cattle".[49] An indication of the impact of elephants on the local landscape can be seen in aerial photography. In one of the original excavation reports on Bigo an aerial photograph from the early 1950s was used to highlight the ditch network.[50] The image clearly shows up the ditches because they lie in a grassland landscape with very few trees or bushes and those trees which are evident are almost entirely confined to the Riparian forest at the mouth of the Kakinga as it enters the Katonga from the south. This vegetation contrasts markedly with the present day, the site being covered in thick bush and there being barely any open grassland,[51] a pattern common throughout contemporary Mawogola. [*Fig*. 3] The most likely explanation for the emergence of this dense bush is the absence since the 1960s of elephants. As late as 1960, 1,000–1,500 elephants moved into the western part of Mawogola before returning westwards along the Katonga.[52] This development of thick

Figure 3: Net hunters in Mawogola in 1989

vegetation has had a significant impact on cattle herders in the immediate area with the enhanced bush leading to tsetse fly becoming an endemic problem.[53]

This evidence suggests that elephants would have played a vital role in clearing the landscape and preparing it for subsequent human habitation. Furthermore, the continued presence of elephants would have been essential in keeping the landscape open and hampering bush development. Crop raiding may have been less significant. The two crops most favoured in the Kibale Forest study, bananas and maize, would not have been present in the archaeological occupation of Mawogola. Instead sorghum and finger millet would have been grown.[54] Sorghum has higher tannin concentrations which reduces the amount an elephant can consume.[55] Not included as part of the Kibale Forest study, finger millet may also have been important because it can be grown in relatively small compact stands that are easier to protect with thorn and other defences. Elephants in Mawogola would have needed sodium from sources other than crops and they most probably developed salt licks. Sodium is an important issue for herders in Mawogola today, and imported salt has been fed to herds using wooden salt troughs and occasionally modified and compacted termitaria. For herders arriving in Mawogola 1,000 years ago they would no doubt have learned very quickly about natural salt sources from witnessing elephant geophagy in the landscape.

Whilst it is important not to overstate the relationship between elephants and humans in Mawogola in the past, the presumed success of the communities who managed to thrive there for around 500 years suggests that the interaction was relatively benign and indeed beneficial. Posing no threat to the elephant population, humans and their cattle would have been ignored, whilst humans would merely have avoided close contact with elephants. Of course, occasional incidents of crop-raiding and attacks on humans may have occurred, but these would not have been on a scale that jeopardised the success of human settlement, because of the crops that were grown.

Conclusion

This study has demonstrated that important and distinct relationships were generated between elephant populations and the states of Great Lakes Africa. Importantly, within the states of the late precolonial period, as well as the colonial period itself, elephant raiding was perceived less as an act of nature and more as an issue leadership was obligated to control, which could determine whether such leadership was considered successful and therefore worthy of support. For this leadership, unexpected benefits of elephant control arose with the trade in ivory. For various reasons, elephants were, therefore, a component of the broader political landscape.

Examination of the earlier stages in the emergence of the Great Lakes states suggests that elephants may have had significant influence. On the forest-lined margins of the lake, they would have created means of ingress through which the land behind the shores could be explored and fertile lands and other resources identified. Elephants, however, would have been a potential threat to the newly developed banana plantation agriculture. It has been argued that the lake must have held considerable advantages in terms of transport and access to protein in the form of fish. It may also be the case that the islands were advantageous to the new agriculture, because of the absence of elephants. Once settlement began on the mainland, a significant challenge for the new forms of leadership must have been dealing with elephants, a challenge that potentially threatened the nascent authority of leaders.

In recent years, the removal of elephant populations has had ecological consequences for areas that were previously renowned for their suitability for cattle-rearing. It is in these areas that the earliest traces of political centralisation associated with large cattle herds, are found beginning around AD 1000. It is highly likely that these herds would not have been sustainable without the continued ecological impact of elephants. They controlled bush encroachment, suppressing the threat of trypanosomiasis. Elephants would also have sponsored the regeneration of pasture and the exposure of salt sources, both of which are essential for cattle populations today. In these advantageous conditions, pastoralism thrived. Animals grew in size and helped develop pastoral ideas. Cattle became the means for negotiating social position and pastoral aesthetics were developed in part to service the distinctions pastoralists forged between themselves and non-herders. It is therefore likely that human-elephant relationships in places like Mawogola were positive and that the impact of elephants may have been crucial to the emergence of social classes and cattle states.

These considerations demonstrate that the relationship between elephants and humans was much more complex in the African past than conventional notions allow. Whilst in large part, the obligations elephant populations imposed on leadership, emphasise negative impacts, the response was to regard elephants as a societal issue that had to be addressed by political leadership. In the case of Mawogola, elephants were most likely responsible for the creation and maintenance of the grassland landscape so advantageous to cattle-herding. Although largely invisible in the archaeological record, elephants therefore had a significant influence on the emergence and maintenance of the state in Great Lakes Africa.

Email: a.reid@ucl.ac.uk

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NOTES

1. The Great Lakes region of Africa includes Uganda, Rwanda, Burundi, western Kenya, northwestern Tanzania and eastern Democratic Republic of Congo, and of course Lakes Tanganyika, Kivu, Edward, Albert, Kyoga and Victoria. Whilst the discussion presented here is of relevance to the whole region and reference is occasionally made to other parts of the region, this study is heavily focused on data from within the modern state of Uganda.

2. Connah 1987.

3. Reid 2013.

4. Reid 2013.

5. The theme of decline has been emphasised most recently by Reid 2002 and Hansen 2003 in relation to Buganda.

6. Ranger 1983.

7. Reid 2015.

8. Kagwa 1971: 99.

9. Reid 2002: 55-58; Doyle 2006: 24-5.

10. Roscoe 1911: 447.

11. Roscoe 1911: 445-6.

12. Roscoe 1911: 446-7.

13. Twaddle 1993: 6.

14. Twaddle 1993: 20.
15. Twaddle 1993: 27.
16. Twaddle 1993: 21.
17. Thomas and Scott 1935: 346.
18. Thomas and Scott 1935: 506-7.
19. Doyle 2006: 118.
20. Brooks and Buss 1962: 49.
21. Laws et al 1970: 164.
22. Brooks and Buss 1962: 43.
23. Brooks and Buss 1962: 42.
24. Brooks and Buss 1962: 42.
25. Laws et al 1970; 1975.
26. Laws et al 1970; 1975.
27. Eltringham and Malpas 1976.
28. According to the latest estimates, over 41 million in 2017. http://www.worldometers.info/world-population/population-by-country/ [Accessed 17 March 2017].
29. Laws 1970.
30. Connah 1996.
31. Reid 2016; Schoenbrun 1993; 2016.
32. Robertshaw 1994.
33. Reid 2013; Schoenbrun 1993.
34. Reid 2016.
35. Schoenbrun 1993; 1998.
36. Reid and Ashley 2008; Schoenbrun 2016.
37. Rode et al 2006.
38. Reid 1996a.
39. Reid 1996a; Sutton 1993.
40. Reid and Young 2000.
41. see Robertshaw and Taylor 2000; Schoenbrun 1994.
42. Reid 1996a.
43. Reid 1996b.
44. Reid 2001; Schoenbrun 1998.
45. Bonte 1991.
46. Reid 2015. See Holtzapffel 1980 for a comparison.
47. Posnansky 1969.
48. Robertshaw 2001.
49. Thomas and Scott 1935: 432.
50. Posnansky 1969.
51. Reid 2015.
52. Brooks and Buss 1962: 47.
53. Muraire Paulo pers. comm. 1988.
54. Reid and Young 2000.
55. Rode et al 2006: 447.