



Section 1: Previous surveys



Infant chimpanzee in Musanga tree. T.Furuichi

Introduction

The forests of western Uganda are some of the largest remnants of forest remaining in this country and also some of the most important for conservation (Uganda Forest Department 2002; Howard, 1991). However the size of these forests rarely exceeds 4-500 km² of tropical-high forest (additional land consisting of savannah or montane grassland occurs in most of the gazetted forest reserves, boosting their size). This surface area may be insufficient to protect some of the larger-bodied mammals in the long term because their population sizes will be too small to be viable, and factors such as disease and genetic inbreeding may lead to their long-term decline and eventual extinction (Soulé 1987). In Uganda, chimpanzees (*Pan troglodytes schweinfurthii*) are one of the species that is probably most vulnerable to population extinction because, where studied, these animals tend to occur at lower densities than other large mammals. Their reproductive ability to recover quickly from a population decline is also poor, with interbirth intervals of between 4.4 to 6 years (Wrangham, de Waal, and McGrew, 1994; Boesch and Boesch-Achermann, 2000) and females commencing reproduction between 10-15 years old (Wallis, 1997).

The eastern chimpanzee (*Pan troglodytes schweinfurthii*) occurs across much of north and north-eastern Democratic Republic of Congo and reaches the

western forests and woodlands of Burundi, Rwanda, Tanzania and Uganda. It is one of the four subspecies of chimpanzee now recognised to exist in Africa. This subspecies is classified as endangered under IUCN criteria as is the species *P.troglodytes* because of the extensive decline in populations across Africa as a result of hunting and habitat loss. The conservation of chimpanzees requires knowledge about the extent of their distribution, the threats they face, population dynamics and their abundance and relative importance of sites for their long-term survival. This requires research, much of it long-term because of the need to habituate animals to the presence of observers. It usually takes between three to ten years, depending on the size of communities, to habituate chimpanzees to humans so that they can be followed (Boesch and Boesch-Achermann, 2000; A.Plumptre pers. obs.).

Uganda has had a long history of research on chimpanzees dating to 1962 with the pioneering work of Vernon and Frankie Reynolds (Reynolds and Reynolds, 1965). This was followed by a long programme of research on chimpanzees in Kibale forest initially by Ghiglieri (Ghiglieri, 1984) in the 1970s and then by Gil. Isabirye Basuta, Richard Wrangham and Colin Chapman in the 1980s (Wrangham et al., 1986) with many additional researchers contributing to studies here in the 1990s. Following increased security in Uganda in the 1990s several additional studies were initiated in Budongo Forest Reserve (Vernon Reynolds, Christopher Bakuneeta and Andrew Plumptre), Semuliki Wildlife Reserve (Kevin Hunt), Bwindi Impenetrable National Park (Craig Stanford and John Bosco Nkurungi) and Kalinzu Forest Reserve (Chie Hashimoto and Takeshi Furuichi).

Chimpanzee communities

Chimpanzees live in communities of individuals in a similar way to humans. This means they do not move around in one group like gorillas or monkeys but split up and come back together at intervals in what is termed a 'fission-fusion' society. Communities vary in size and in Uganda they range between about 20 to over 100 individuals. Infants are born every 45 years and stay with their mothers until they are 8-10 years old. They do not become sexually mature until about 10 years old (Goodall, 1986). The late onset of sexual maturity,

together with low fecundity, makes the species extremely vulnerable as it can take decades for a population to recover from a decline in numbers. This is one of the main reasons chimpanzees are a conservation concern globally.

The complex social system of chimpanzees makes it particularly difficult to census this species. You cannot count the number of individuals in groups for instance because they rarely, if ever all come together. It is possible to count the number in a community through the recognition of individual animals. This takes time and studies of the habituation process show that it can take several years to recognise all the individuals in one community. This species is also very difficult to census through standard line transect surveys unlike many other primates because they are rarely seen because of their low abundance and ability to freeze and remain silent when an observer passes by. One aspect of their behaviour however does help in the estimation of their numbers and that is the fact that they build nests to sleep in at night once they have been weaned. Counting nests has been used as an alternative to counting individual chimpanzees (Ghiglieri, 1984; Tutin and Fernandez, 1984; Plumptre and Reynolds, 1996, 1997).

Previous surveys of chimpanzees

From as early as the 1920s, Uganda Forest Department staff have undertaken surveys of timber and tree distributions within Uganda's forest Reserves. Biologists have also visited the forests and collected animal and plant specimens and documented species distributions across Uganda. However, there has been little quantitative work on large mammal distribution and abundance in these forests. There have been some quantitative studies within certain forests such as Kibale Forest (now National Park) by Struhsaker (1997) and others, and in Budongo Forest (Reynolds 1992), but these have focussed on one site within a forest, sometimes only one or a few species of animal and have not compared different forests. More recently there have been some surveys that look at the geographical variation of the abundance of primates and large mammals within single forests: Budongo Forest Reserve (Plumptre & Reynolds 1994, 1996, 1997); Kibale National Park (Chapman & Lambert, 2000; Chapman et al. 1999; Mitani, Struhsaker and Lwanga 2000) and Bwindi

Impenetrable National Park (McNeilage *et al.* 1998). There have been few studies, however, that have collected similar data across forests to allow comparisons to be made.

Chimpanzees were first surveyed formally in Uganda in 1962 (Reynolds and Reynolds, 1965). This survey showed chimpanzees distribution in Uganda but did not determine population sizes in most of the forests surveyed (an estimate was obtained through more detailed research for Budongo Forest). This survey successfully identified the main forest blocks that supported chimpanzees but did not record all sites where chimpanzees occur in Uganda. In the 1970s Ghiglieri estimated the density of chimpanzees in Kibale forest and subsequent work by Chapman and others has monitored the population density in this forest (Ghiglieri, 1984; Chapman *et al.*, 1999; Chapman and Lambert, 2000). In the 1980s, Peter Howard surveyed 12 of the larger forest reserves in Uganda. The presence, and approximate locations, of evidence of large mammals and human activity along forest paths walked were recorded. In seven of the forests (Kibale National Park, Semuliki National Park, Kalinzu Forest Reserve, Maramagambo Forest Reserve, Bwindi Impenetrable National Park, Kasyoha-Kitomi Forest Reserve and Itwara Forest Reserve), estimates of primate density were obtained using transect lines (Howard 1991).

In the 1990s surveys were made of chimpanzees in Kalinzu Forest Reserve (Hashimoto, 1995; Furuichi *et al.*, 2001). Biodiversity surveys of all of the large Forest Reserves and National Parks in Uganda were also undertaken by the Uganda Forest Department which built upon Howard's surveys of the 12 forests and expanded it to 65 forest reserves which formed about 75% of Uganda's forest estate (Howard & Davenport 1996). These surveys focused on certain taxa (birds, trees, rodents and shrews, butterflies and moths), and were designed to investigate the relative species richness of the different forests to guide future conservation planning within the Forest Department. These inventories did not survey primate populations or other large mammals in the forests because the diversity of species was not particularly high in comparison with other taxa, however they did record the presence of chimpanzees as this is a species of conservation concern. These surveys

confirmed the presence of chimpanzees in Otzi Forest Reserve on the Sudan border which had been rumoured but not proven (Davenport et al., in press).

Censusing chimpanzees in Uganda

In 1997 the Uganda Wildlife Authority and Uganda Forest Department held a workshop to carry out a population and habitat viability assessment for chimpanzees in this country. One of the workshops' main recommendations was that surveys be undertaken in the forests where chimpanzees are known to occur. This was due to the fact that at that time most information on the species came from only two forests; Kibale National Park and Budongo Forest Reserve (Edroma, Rosen and Miller 1997). Much of the research has focussed on ecological and behavioural studies of primates (*Budongo*: Plumptre et al. 1997; Newton-Fisher 1999; Newton-Fisher et al. 2000; *Kibale*: Ghiglieri 1984; Chapman & Wrangham 1993; Wrangham et al. 1986; Struhsaker 1997; Lambert 1998; Conklin-Brittain et al., 1998; Mitani & Watts 1999) rather than population and distribution surveys.

In 1999 the Jane Goodall Institute (JGI) and the Wildlife Conservation Society (WCS) commenced a four-year programme in collaboration with the Uganda Wildlife Authority and the Uganda Forest Department, to evaluate the current status of chimpanzees in Uganda. At the same time data were collected on other primates and large mammals. In addition the surveys aimed to collect quantitative data on the human impact and use of these forests so that an evaluation of the threats to each forest could be made. The main objectives of the surveys were to:

1. Assess chimpanzee population size in the different forests and relative abundance between forests.
2. Assess the distribution of chimpanzees within forests to identify those areas of greater importance for their conservation.
3. Assess the population status of other primates and large mammals and their relative abundance between forests.
4. Evaluate the current threats to the forest and the large mammals in the forest.

This report summarises the findings of these surveys.