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A New Population of De Brazza's Monkey in Kenya

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Abstract: Until recently, de Brazza's monkey (*Cercopithecus neglectus*) was not known to occur east of the Great Rift Valley in Kenya. However, after eight months of intensive surveys in the remote and isolated Mathews Range Forest Reserve of Samburu, we were able to count a total of 162 de Brazza's monkeys in 24 groups; including 139 adults and sub-adults and 23 infants. They were found in ten separate *laggas* distributed throughout the mountain range, with the highest concentration in the central part of the reserve. By extrapolating information gathered on this study—from interviews and field observations—the population of the entire Mathews Range Forest Reserve was estimated at 200–300. Although the threats arising from the human activities in the forest ecosystem are generally minimal, they were considerable on the lower elevations, affecting especially this species. The most affected habitats are those near human settlements on the lower altitudes (where 75% of the total population of de Brazza's monkeys occurs) since they are easily accessible. During the onset of the dry season and periods of drought, communities invade these areas with large herds of livestock, where they feed them on leaves of evergreen tree species such as *Faidherbia albida*, *Ficus* sp., and *Olea* sp. The people cut the branches almost denuding the tree. These species are important in the diet of de Brazza's monkey. The study resulted in the first record of de Brazza's monkeys occurring above 2,100 m above sea level. They were seen in Olkaela in the Mathews range at an elevation of 2,203 m.

Key Words: de Brazza's monkey, *Cercopithecus neglectus*, Mathews Range, survey, population distribution, local community, Kenya

Introduction

De Brazza's monkey (*Cercopithecus neglectus*) is one of the most unusual species in the group of Old World monkeys commonly known as guenons (Nowak 1991; MacDonald 1993). They live in forests along the banks of streams and rivers, at the mid or lower canopy layers of the forest. De Brazza's are arboreal, spending 70% of their time in the understory and 20% on the ground (Gautier-Hion 1988). They are good swimmers. They feed mainly on fruits and seeds, leaves, arthropods, flowers and mushrooms (Staden 1996).

The species is fairly common in its core range, in riparian and swamp forests in the Congo Basin, in southeast Cameroon, Equatorial Guinea, and Angola. It is rare, and found only in isolated pockets, in some parts of extreme east and west Uganda, western Kenya and southwest Ethiopia (Brennan 1984; Decker 1995). Although large populations of de Brazza's monkey exist in central Africa (Gautier-Hion and Gautier 1978), the population in Kenya is small and under

immense anthropogenic pressure (Brennan and Else 1984; Brennan 1985; Decker 1995).

In Kenya, knowledge on the distribution of de Brazza's monkey has expanded over the years, as interest has increased in the study of this species. Prior to a report by Booth (1962), the species was believed to be restricted to the western slopes of Mt. Elgon. Booth (1962) reported that it also occurred 60 km further east in the Cherangani Hills. Its range was found to extend northwards to southwest Ethiopia by Brown and Urban in 1969 (Wahome, 1993). Brennan (1984) found further groups in the western range of the species, between Mt. Elgon and Cherangani, while Wahome (1989) extended its southern range to Kisere forest, north of Kakamega forest. Mwenja (2004) added more new sightings in the region; more than tripling the known population in Kenya. Douglas-Dufresne (2005) reported a new population of the species in the Mathews Range, the first found east of the Rift Valley: before then, the species was believed to be restricted to western Kenya (Brennan 1985; Decker 1995; Karere 1995).

In Kenya, threats to the survival of de Brazza's monkey arise mainly from the rampant deforestation caused by the ever-increasing demand for firewood, timber and farmland, and accompanying growth of human settlements. Their diminishing forests result in small populations, reduced opportunities for dispersal, and heightened competition from other species (Brennan 1984; Olubayo 1998). Those that have survived have been, and continue to be, pushed to higher altitudes along the rivers, or are left in small, isolated remnant habitats that cannot sustain them, and expose them to poaching (Mwenja 2004). Today, the majority of the population is spread through very thin, increasingly fragmented, strips of riparian forest on private farms; usually in small, isolated groups. These pockets of habitat maintain populations of only a few individuals, which may not be genetically viable (Brennan 1984; Mwenja 2004). However, the situation in Mathews Range Forest Reserve is different, given that it suffers little anthropogenic pressure (Bronner 1990; Blackett 1994) when compared to western Kenya.

Study Area and Methods

The Mathews Range Forest Reserve was originally gazetted in 1956 as a Crown Forest, due to its importance as a water catchment area (Fig. 2). In 1964, it was declared a Central Forest with an area of 93,765 ha. The mean annual rainfall is 700 mm at lower elevations and 1100 mm at the top of the range, with a peak in October and April. The minimum temperatures range from 14°C–20°C in the dry season. Daily maximum temperature exceeds 30°C in the dry season (Bronner 1990; Blackett 1994). There are three main forest types found in Mathews Range: those dominated by *Croton megalocarpus*; *Juniperus/Juniperus-Olea*; and mixed *Podocarpus* (Beentje 1990; Blackett 1994).

The Mathews Range forms the southern part of a mountain chain (formed since the Precambrian) that crosses the savannah plains of Samburu. The soils, developed on an undifferentiated basement system, are somewhat excessively drained, shallow to moderate deep, reddish brown, friable sandy clay loams. The lower slopes of the mountains are rocky, and at the higher elevation the soils are quite acidic (Blackett 1994).

The survey was carried out from 14 May 2007 to 28 December 2007, covering a total of 53 km within the selected survey transects (Table 1). I used general survey methods suitable for collection of data on geographical distribution, estimating densities, and assessing habitat, as well as obtaining limited information on age and sex composition, as described by Struhsaker (1981). Given that de Brazza's monkey is largely riparian (Hill 1966; Kingdon 1974; Gautier-Hion and Gautier 1978), all field visits were directed at surveying river valleys (*laggas*). I surveyed in the morning hours, from 08:00 to 11:00, and in the afternoon from 15:00 to 17:00 when the monkeys are active. I walked along the *laggas* slowly and quietly, at less than 1 km/hr, stopping every 60 m for 50 seconds (Butynski 1984).

Time spent on each *lagga* depended on its length and accessibility. Adjacent *laggas* were surveyed concurrently to avoid the error of double counting. Each *lagga* was surveyed at least twice during both the dry and wet seasons to increase the chances of sighting the monkeys. Surveys were made throughout the altitudinal range of 800 m to 2,400 m above sea level. The data collected included: date, name of the location, time spent (starting and finishing time), number sighted (adults and young), activity, association with other animals, tree species, elevation, GPS co-ordinates, mode of detection, and any other aspects of interest. Each data sheet represented one *lagga*, which in turn represented a single transect or sampling unit.

Interviews targeted people living near the forest and those who would visit it regularly. The livelihoods of the Dorobo depend on the forest, and they were the key respondents given their knowledge and understanding of its biodiversity. Interviews complimented the data collected from the field surveys.

Results

A total of 162 de Brazza's monkeys in 24 groups were counted during the survey. These included 139 adults and sub-adults and 23 infants (Table 1). These were found in ten separate *laggas* throughout the mountain range, save for the northwestern part where the presence of the species needs to be investigated further. By extrapolating information gathered on this study—from interviews and field observations—the population of the entire Mathews Range Forest Reserve was estimated at 200–300. The first ever record of de Brazza's monkey occurring above 2,100 m above sea level was recorded in the Mathews Range at 2,203 m at Olkaela.



Figure 1. The map of distribution of de Brazza's monkey (*Cercopithecus neglectus*) in Africa, showing the newly discovered population in Mathews Range Forest Reserve (black dot), the first record of the species east of the Great Rift Valley.

The areas where these 24 groups were found at high elevations and in the interior of the forest, included Napuruwaso, Olkaera, Manoea, Rapaelapit Nachapa, Kiserian, Kojos, Ntukuda and Wamba. At Nkii, Murit, Miwaa, Sitin, Ngare narok and Ngare nabor, they were found at lower elevations and along forest edges.

Although the threats arising from the human activities in the forest are generally minimal, their impact at the more easily accessible lower elevations of Ngare narok, Nkii, Sitin, Miwaa and Murit during the dry season is significant. During the dry season and periods of drought, these areas are invaded, and when the browse is exhausted cattle are taken into the interior of the forest, where they are fed leaves of evergreen trees such as *Faidherbia albida*, *Ficus* spp., and *Olea* spp. by cutting the branches and practically denuding the trees. These species happen to be some of the most preferred by de Brazza's monkeys; hence the conflict.

The forest and the vegetation along the rivers are often burnt, either by the honey collectors or livestock keepers, in order to trigger pasture regeneration and control ticks. Areas near settlements are largely grazed, but more distant areas are also affected by honey harvesting—often leading to forest fires. We found no signs of direct persecution of the de Brazza's monkeys by the local people: poaching/hunting, poisoning, or snaring were not evident in the area. As a result the Forest Reserve is currently one of the least disturbed habitats for de Brazza's monkeys in Kenya. The people living there are pastoralists, and their culture does not allow them to kill wildlife for food. Its cousin, *Colobus guereza percivali*, listed as Endangered on the IUCN Red List of Threatened Species, on the other hand, is killed for the beautiful skins it provides.

Discussion

Obviously, this relatively large population of an otherwise rare species has been thriving in the Mathews Range for many years. The species' quiet nature, large inter-individual distances within groups (Gautier-Hion and Gautier 1978), relatively small group sizes, and, unlike other primates, rare use of group calls, and lack of alarm calls (Maté *et al.* 1995), explain why so little is known about it there. The area is also remote and has a history of insecurity that has made it difficult for biologists to work there. According to Kingdon (1974), Brennan (1984) and Wahome (1989), de Brazza's monkeys keep close to water ranging not farther than 200 m. away. All the de Brazza's monkeys seen in the Mathews Range were within 200 m of water, except for one group at Ntukuda that was seen 1,000 m away from the nearest water, probably the first such record.

Seven of the ten most preferred plants, which make up 80% of the de Brazza's monkey's diet in Kisere Forest Reserve (Wahome 1989) are also found in the Mathews Range (Blackett 1994) where they are also among the most preferred species (see Table 2). This implies that the habitat of this satellite population is similar to those occupied by de Brazza's

monkeys in western Kenya. It also explains why the species is present in Kisere but absent in neighboring forests in western Kenya, such as South Nandi, Buyangu and Isecheno forests of the wider Kakamega forest (Mwenja 2006) which have significant differences in their floristic communities and lacking de Brazza's monkeys' most preferred plant species (Karere 2000).

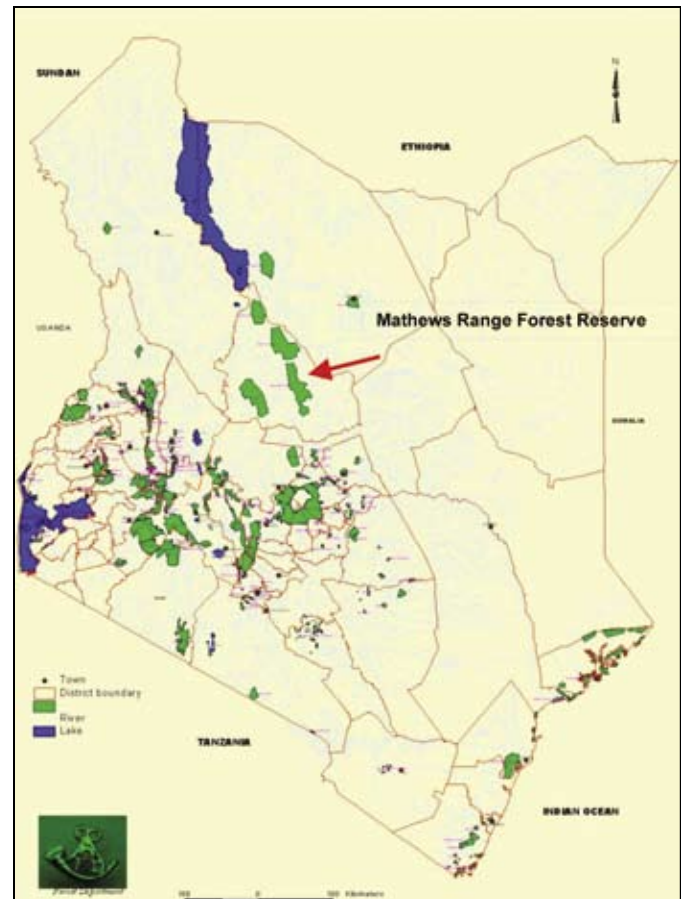


Figure 2. Map of Kenya's Forest Reserves showing Mathews range Forest Reserve.



Figure 3. Livestock grazing at Sitin, adjacent to an important area for de Brazza's monkeys in the Mathews Range, Kenya. Photo by Iregi Mwenja.

Other species exploited by de Brazza's monkeys in Kisere (Wahome 1989) and also found in Mathews Range Forest Reserve include: *Ficus sur*, *Ficus sycomorus*, *Ficus natalensis*, *Trichilia emetica*, *Strychnos usambarensis*, *Dombeya* spp., *Diospyros abyssinica*, and *Croton megalocarpus*.

The species is known to avoid polyspecific associations (Gautier-Hion and Gautier 1978; Wahome 1989), but I noted some association of de Brazza's monkey with other primates at Mathews Range, including the vervets and guereza colobus. This contrasts with my observations in western Kenya, where

vervet monkeys keep a safe distance from de Brazza's monkeys (Mwenja 2006). At Ngare narok, vervet groups were seen on three occasions feeding in the same tree with de Brazza's monkeys. At Ntukuda, a group of guereza colobus was found together with a group of de Brazza's monkeys. This confirms Mwenja (2004), Wahome (1989) and Decker (1995) that the de Brazza's monkeys sometimes tolerate the colobus. The guereza colobus specialized on feeding at the top of the canopy, while the de Brazza's monkeys forage in the lower canopy layer (Gautier-Hion 1988; Wahome 1989). This niche

Table 1. A summary of the distribution and abundance of de Brazza's monkey (*Cercopithecus neglectus*) in Mathews Range, Kenya.

Lagga	Distance covered (km)	GPS Coordinates	Elevation (m)	Number seen		No. of Groups	Tree species where they were seen
				Adults	Young		
Napuruwaso	3	01.17571 N 037.26918 E	2,059	4	3	1	<i>Ficus thonningii</i> <i>Neonotonia wightii</i>
Rapaelpapit	1	01.25451 N 037.25695 E	2,054	3	0	1	<i>Neonotonia wightii</i> <i>Podocarpus falcatus</i>
Nachapa	2	01.29343 N 037.27028 E	1,897	1	0	1	<i>Ficus sycomorus</i> <i>Trichilia emetica</i>
Olkaela	2	01.24943 N 037.26859 E	2,203	1	0	1	<i>Faidherbia albida</i>
Rocheta	5	01.27118 N 037.28797 E	1,456	7	0	1	<i>Celtis africana</i>
Kiserian	2	01.20616 N 037.34498 E	1,369	1	0	1	<i>Ficus sycomorus</i> <i>Trichilia emetica</i>
Ntukuda	4	01.22111 N 037.34515 E	-	3	0	1	<i>Ficus sycomorus</i> <i>Trichilia emetica</i>
Nkii	7	1.23174 N 037.3538 E	1,152	18	5	2	<i>Ficus</i> spp. <i>Faidherbia albida</i>
Murit	3	01.18610 N 037.36497 E	-	14	3	2	<i>Scutia myrtina</i> <i>Neonotonia wightii</i>
Ngare narok	6	01.33887 N 037.19995 E	1,157	26	5	3	<i>Ficus sycomorus</i> <i>Trichilia emetica</i>
Sitin and Miwaa	12	01.27418 N 037.34284 E	866 to 1,335	46	4	8	<i>Scutia myrtina</i> <i>Faidherbia albida</i>
Wamba	3	-	-	6	1	1	<i>Ficus natalensis</i>
OI doinyo lenkio	3	-	-	8	2	1	<i>Ficus</i> spp. <i>Faidherbia albida</i>
Total	53			139	23	24	

Table 2. The top ten most important species used by the de Brazza's monkey in Kisere Forest.

Plant species in Kisere	% use	Recorded in Mathews
<i>Ficus thonningii</i>	25.4	Yes
<i>Celtis durandii</i>	17.6	Yes
<i>Manilkara butugi</i>	15.9	Yes
<i>Chaetachme aristata</i>	9.5	Yes
<i>Neonotonia wightii</i>	7.8	Yes
<i>Isoglossa laxa</i>	6.1	-
<i>Prunus africana</i>	5.3	-
<i>Celtis africana</i>	4.4	Yes
<i>Ipomoea wightii</i>	4.4	-
<i>Blighia unijugata</i>	3.6	-

Source: Wahome (1989)

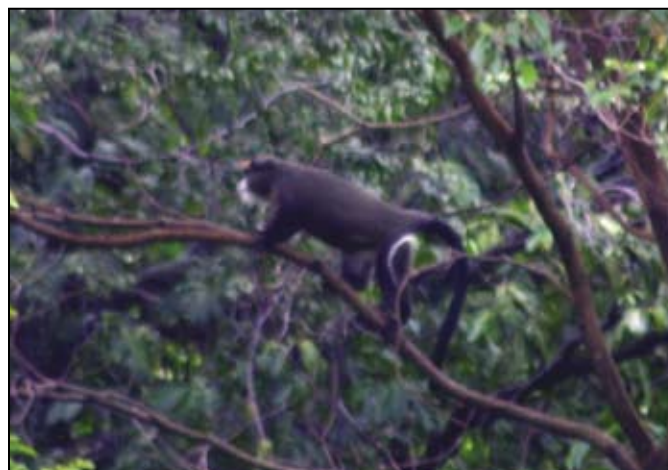


Figure 4. De Brazza's monkey (*Cercopithecus neglectus*) at Ngare narok in the Mathews Range Forest Reserve, Kenya. Photo by Iregi Mwenja.

differentiation between the colobus and de Brazza's monkeys is no doubt a key aspect in allowing them to coexist.

Kingdon (1971, 1997) put the highest elevation of the species at 2,100 m, but this was not the case for one group which I found at slightly above 2,200 m at Olkaela. However the overwhelming majority of the population inhabited areas below 2,100 m. Seventy-five percent of the population was concentrated between the elevations of 900 m to 1,300 m above sea level. The remaining 25% occurred at elevations between 1,300 m and 2,200 m.

Polygamous groups were the case for most of the groups in the Mathews Range, with most having a dominant male, making this population similar to others in Kenya (Brennen 1984; Wahome 1989; Mwenja 2004), but unlike those in the Gabon basin where they are evidently monogamous (Quris 1976; Gautier-Hion and Gautier 1978). Group sizes recorded ranged from 1–18, similar in size to those observed by Wahome (1993) in the Kisere Forest Reserve: 1–16 with an average of 10.1. Although the Mathews Range Forest Reserve recorded a higher population of de Brazza's monkeys than in any other Protected Area in Kenya, most people who live around the forest were unfamiliar with the species—22 (75%) of the 29 people interviewed had never seen it, a rather higher percentage than in western Kenya, where 40 (60%) of 67 people interviewed had no knowledge of the species (Mwenja 2006). The few people who know the animals are the 'Dorobo' people of the Samburu, who rely on forest products for their livelihood.

Richard Leakey (pers. comm.) suggests that a population that has been isolated for over 500,000 years is likely to speciate or at least exhibit genetic divergence from the mainstream population, and for this reason special value may need to be given to these de Brazza's monkeys, which may even have been isolated for a time sufficient for them to be considered a distinct subspecies.

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