Chimpanzee Survey in Mali, West Africa

Chimpanzees occupying dry habitats are particularly interesting because of the insights they provide on early hominid adaptations to a woodland/savanna way of life. Though certainly not "surrogate australopithecines," chimpanzees are undoubtedly closer to our ancestors in terms of morphology, physiology and intelligence than are other contemporary primates living in open woodland environments. By comparing chimpanzees living in hot, dry, "marginal" habitats with those living in more forested areas, we can hope to increase our understanding of the environmental pressures experienced during a move from the trees to the plains, and thus refine models of how our ancestors might have responded to these pressures (see Suzuki, 1969; Tutin et al., 1983). In addition to conserving the species by protecting optimal forested habitat capable of supporting high chimpanzee densities, there is thus a compelling reason to protect smaller chimpanzee populations at the very limits of their acceptable ranges.

Kortlandt (1983) recently called attention to southwest Mali as possibly being the hottest and driest place in which western chimpanzees (Pan troglodytes verus) exist. With funding from the L. S. B. Leakey Foundation and WWF-US, M. Mamadou Diakite (Eaux et Forêts, Mali) and I made a three-week survey of southwest Mali during December, 1984. The survey covered about 650 km by road and about 100 km on foot. In addition to the primary focus on chimpanzee distribution, we conducted a preliminary survey of a proposed national park site along the Baing River between the towns of Baing Makana and Manantali, where a large hydroelectric dam is under construction (Figs. 1-2).

Most of the survey zone lies between the 1100 mm and 1300 mm isohyets (PIRT, 1983). This zone has been termed "soudanien" or "soudano-guineen" by various authors (see Kortlandt, 1983) and is characterized by low rainfall (restricted to July through November) and high daytime temperatures. Much of the land is rocky with frequent lateritic plateaus (Fig. 3); some of which are surrounded by high cliffs broken by ravines that contain evergreen Ficus, etc. Many of these plateaus are covered with short grass during the rains, but are barren, rocky plains by January. Vegetation off the plateaus is diverse, and depends on the local history of human use as well as on soil depth and moisture. It is likely that all of the fertile soil in the region has been cultivated at one time or another, and the practice of annually burning off the grasses has probably affected the entire region.

![Map of Mali showing the study area](image_url)

**Fig. 1:** Map showing the location of the study area in southwestern Mali (map by Stephen Nash from author's original).
After our survey along the route from Kayes-Faraba-Manantali, the
distribution of chimpanzees was estimated by scoring 18 x 18 km quadrats
on a 1:200,000 map as: (1) confirmed presence (nests seen); (2) suspected
(habitat contiguous with neighboring confirmed presence areas); and (3)
probable (maps and recent LANDSAT images show similarity to con-
firmed habitat and low human density) (Fig. 4). We were greatly aided
in this by the use of 1:500,000 LANDSAT imagery and vegetation maps
compiled by the Projet Inventaire des Resources Terrestres. The pro-
ject’s final report (PIRT, 1983) contains detailed information on vegeta-
tion, soils, hydrology, human demography, etc. in southern Mali, and
represents a valuable resource for anyone interested in West African
ecology.

Fig. 2: Map showing portion of study area surveyed for proposed national
park and region threatened by flooding from hydroelectric project (map by
Stephen Nash from author’s original).

The dominant woody plants in the zone include Combretum spp.,
Pterocarpus erinaceus, Bombax costatum, Lannea spp., Parkia
biglobosa, Terminalia spp., Dlanetilla oliveri, Detarium microcarpum,
Vitellaria paradoxa, and others. Adansonia digitata (baobab) are patch-
ily distributed and many of the chimp nests we observed were near
fruiting baobabs. Large mammals are scarce due to ubiquitous small-
scale hunting; signs of buffalo, roan, hartebeest and warthog were en-
countered regularly near the Bafing River and we were told that eland,
lion, leopard, and wild dog also occur at very low densities (see Sayer,
1977 for a summary of large mammal status in Mali). Human popula-
tion density in the area is low (5/km²; PIRT, 1983), but small hamlets
are widespread and few if any areas are protected from hunting by sim-
ple absence of people.

Fig. 3: Cliffside forest at Dabia. Chimps utilize isolated forest patches on
the steep slopes (photo by J. Moore).

Fig. 4: Quadrat map used to estimate chimpanzee densities within the study
area (C = confirmed presence [nests seen], S = suspected presence [habitat
contiguous with confirmed presence areas], P = probable presence [habitat
similar to confirmed presence areas and with low human population densi-
ty]) (map by Stephen Nash from author’s original).

We found chimp nests (Fig. 5) at all survey sites south of Kassama
(about 13°30’N, close to the 1100 mm isohyet on the Bafing), and saw
two groups of chimpanzees near Binda: one of 2 adult females, 2 adult
males, 1 subadult male and 1 juvenile, and a second group of 1 adult
female and adult male, who interacted briefly with the 6-member group.
Nests were observed as much as 20 km from the nearest permanent river
but most seemed to be within about 10 km of available water and several
local informants commented on range shifts as water holes dried up
seasonally. This overall distribution agrees well with that found by Sayer
(1977), except that our survey indicates that chimpanzees are spread wide-
ly through the sousanien woodland and are not restricted to riverine
forest.

Recent fires throughout the survey area had singed many of the nests,
making it difficult to estimate their ages and preventing us from quan-
titatively estimating chimpanzee populations based on nest counts alone
(see Tutin & Fernandez, 1984). An alternative method is to assume a
density equal to the lowest reported for chimpanzees, 0.08 individuals
per km² (Baldwin, 1982), and calculate the population based on
this figure. This would yield an estimate of about 190 chimps for the
quadrats in which we confirmed chimp presence; including suspected
[type] ... a maximum population for Mali west of the Bafing R. of ca 650. Human ...

and probable quadrats as well suggests that maximum population density is greater east of the Bafing, but there are reported to be several small (isolated?) populations of chimps between the Bafing and Bamako; this might add 50-100 for a total of about 700 chimps. However, the assumption that population density in Mali is no lower than at Mt. Assirik or Ugalla (Tanzania) needs to be tested. If the density in Mali is lower, the population there is of even greater interest regarding hominoid adaptation to a harsh environment.

We obtained only indirect evidence concerning home range size. During the survey of the proposed Bafing Makana park area we found a number of rotten nests, but few recent ones. We were told that chimps migrate into the hills away from the Bafing River during the dry season, which is consistent with the ages of the nests we found. The minimum length of such a migration would be about 25 km, suggesting a home range of at least 300 km², the range estimated for chimps at Mt. Assirik, Senegal (Baldwin et al., 1982).

Because of the difficulties estimating nest ages, estimates of party size based on associated nests are very crude. Nevertheless it is interesting to note that the largest number of identifiable same-age nests in a cluster was only five; at Mt. Assirik 37% of nest groups had more than 5 nests and almost 20% of groups had more than 10 nests/group (Baldwin et al., 1981). This does suggest that average party size may be smaller in Mali. Whether this indicates a lower population density or not cannot be determined from our data.

Estimated densities for other primates were calculated based on sightings from the vehicle and on foot surveys, using average and maximum perpendicular distance to the path and average and maximum sighting distances. Sample sizes are small (5-10 sightings/species) and no accurate counts were obtained, so the results are only approximate.

<table>
<thead>
<tr>
<th>Species</th>
<th>Troops/km²</th>
<th>Approximate Density (#/km²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baboon (Papio papio/anubis)</td>
<td>0.1 - 0.2</td>
<td>15 at 100/troop</td>
</tr>
<tr>
<td>Vervet (Cercopithecus aethiops)</td>
<td>0.17 - 0.25</td>
<td>5 * 20/ *</td>
</tr>
<tr>
<td>Patas (Erythrocebus patas)</td>
<td>0.15 - 0.28</td>
<td>4 * 20/ *</td>
</tr>
</tbody>
</table>

NOTE: The P. papio — P. anubis transition lies very near the survey area and our field sightings were not definitive. There may be a hybrid zone.

No other primates were seen, though we were told galago are common and in Faraba (the southernmost town visited) hunters said that black colobus can sometimes be found near the Naria River, nearer the Guinea border. It is worth noting that patas were reasonably common in the scrubby Combretum woodland; population densities for several open woodland sites are in the neighborhood of 2-8 individuals/km² (Mt. Assirik, C. Henry, unpublished; Laikipia, Kenya, J. Chism, pers. com.; Group II at Murchison Falls, Hall, 1965). Patas are often considered a savanna species, based largely on Hall's account of the overall habitat at Murchison Falls, where patas density may have been as low as 0.04/km². However, their primary habitat may be better characterized as scrub woodland than as "savanna" and conservation planners should probably consider 5 individuals/km² a better "norm" than 0.04/km².

Hamlets are scattered throughout the southwest and most men carry shotguns with them (Fig. 6). No species of mammal, bird or reptile seems exempt from hunting (Figs. 7-9); those not eaten as food are used for magic charms and/or traditional medicine. Skins used for medicine are sold by the piece, and ca .01 m² of chimp skin is worth the equivalent...
Fig. 7: A vendor purchases a patas monkey (*Erythrocebus patas*) head from local people to sell in a Bamako market (photo by J. Moore).

Figs. 8-9: (top) Lion skull, aardvark head and monkey paws among other wildlife artifacts for sale in a Bamako market. (bottom) Various skins for sale in the same market. Arrow indicates a chimpanzee skin (photos by J. Moore).

Establishment of the Bafing park would in principle protect the habitat of the northernmost chimpanzees in Mali. There is every reason to believe that the park zone contains part of the most marginal habitat in which a reproducing chimpanzee community exists. During our survey, we were struck by the increase in signs of larger mammals — droppings, hoofprints, etc. — encountered when we entered the proposed area, and it is one of the apparently few areas in Mali where giant eland are known to occur. In addition, the dam will probably create extensive shallow lakes the lake floods the nearly flat land near the river. This may make the area suitable for waterfowl, which are currently seriously affected by the recurring failures of the annual rains and consequent shrinking of the Niger delta near Mopti. Finally, access to the dam site is excellent, creating the potential for wildlife tourism if animal populations are protected.

Although favoring the creation of the park, the Malian government's resources are being seriously strained by the Sahelian drought. The Bafing park has great potential for research on chimpanzee adaptation to the savanna and, more generally, into the saoudien ecosystem itself. International interest and support for the Government of Mali's plans, possibly in cooperation with the existing international Manantali dam project, will play a vital role in realizing this potential.

Jim Moore
Box 4091
Berkeley, CA 94704-0091

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Literature Cited


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