

STUDYING FOREST ELEPHANTS BY DIRECT OBSERVATION IN THE DZANGA CLEARING: AN UPDATE

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The Dzanga clearing, located in the forests of south-western Central African Republic, continues to attract large numbers of forest elephants, *Loxodonta africana cyclotis*, which are the subjects of the first long-term study, by direct observation, of this subspecies.

To date, more than 2,100 individual elephants have been identified, 85% of which have been re-identified a second time or more. After five years of observation, data are still being collected on population structure and growth, social organisation, birth rate, behaviour and biometrics.

This presentation updates the results presented at the AfESG meeting in 1994 and later published in an article by Turkalo and Fay (1995), in which a full description of the study site and methods used is provided.

RESULTS

From 1 January 1991 to 31 December 1995, a total of 932 days and 2796 hours were logged in the clearing.

The following table summarises the population structure and increase in individuals observed between March 1994 and December 1995.

Table 1. Population structure in Dzanga clearing, March 1994 and December 1995

Age class	31 March 1994	31 December 1995
Adult females with offspring	509 (31.7%)	539 (25.3%)
Solitary females	50 (3.1%)	104 (5%)
Adult males	448 (27.9%)	519 (24.3%)
Subadult males	103 (6.5%)	83 (3.8%)
Offspring	495 (30.8%)	887 (41.6%)
TOTAL	1605	2132

The number of elephants identified per day, expressed as a percentage of the maximum 30 minute count, continues to increase. At the end of December 1995 it was calculated at 82% for the period of 1 October 1995 to 31 December 1995.

New identifications now average one individual per week.

Groups

Females

Of a total of 655 adult females recorded, 539 were mothers accompanied by at least one offspring. The following table illustrates the frequencies of group sizes occurring in the Dzanga population.

Table 2 Frequency distribution of female -calf groups, including solitary females (adults and subadults).

Number of elephants in group	Frequency of group size
1 (Subadults & adults)	104
2	239
3	200
4	41
5	16
6	5
7	2
8	1
9	1
11	2
14	1

The mean group size, including solitary individuals, is 2.5 (1994: 2.3) and 2.8 (1994:2.7) if the solitary females are excluded. The mean number of offspring per female is 1.6 (1994:1.3).

Reproduction and birth rate

During the entire study period, from January 1991 to December 1995, a total of 154 newborn were recorded, from known females. Of these females, three are known to have given birth a second time.

In trying to determine a birthdate when the observation point is fixed, one can only know between which two dates an infant was born i.e. between the date when a particular adult female was seen without a newborn and the date when she was observed first with a newborn. For the three adult females who have given birth a second time during the study period, a birth interval of between approximately three and a half and four years has been determined. This is similar to the birth interval in savanna elephants.

Males

Behaviour

Adult males are never observed forming groups and are always solitary. Younger males may associate with adult males but these associations are never observed to exist for more than a few hours. They centre around social activities, such as play, ingestion of minerals and feeding on the edges of the saline.

Musth

Musth is a common phenomenon observed in the saline where large numbers of elephants congregate. During the period from January 1991 to January 1996 a total of 45 bulls were seen in musth. Nineteen of the 45 were observed in musth at least a second time. The following table represents the number of bulls and their frequency of musth.

Table 3. Frequency of musth in males in the Dzanga population.

Number of males	Frequency of musth
26	1
13	2
4	3
2	4

Musth in the Dzanga male population appears to be synchronised, occurring approximately at the same time each year for each male seen in musth. Sixteen of the 19 males observed in musth more than once were in musth during one of the two dry seasons: 11 in the long, dry season, which spans from November to February and five in the short, dry season, which occurs in July and August. Among bulls observed only once in musth

(n=26), 14 were seen in musth during the long, dry season, six in the short, dry season and the remaining six at other times of the year (i.e. rainy season).

The table below shows the frequency of musth by month in the Dzanga bull population.

Table 4. Frequency of musth by month in the Dzanga bull population.

Month	Frequency of musth
January	12
February	3
March	3
April	2
May	2
June	1
July	7
August	5
September	2
October	1
November	1
December	6

From this data, musth can be described as a dry season phenomenon. In the Amboseli study (Poole, 1987) it was found that musth mainly occurred during or following the rainy season. In the case of the Dzanga population, musth occurs most frequently after the rainy season in the two annual dry seasons. This high frequency of musth during the two dry seasons may be correlated with the fruiting period and food availability, but dietary data have yet to be analysed.

In the Dzanga study the duration of musth has been impossible to determine because of the fixed point observation method. Bulls in musth spend little time in the saline and are generally not seen more than once during their musth period.

Guarding of cows by musth males has been observed on three occasions and one copulation has been seen between two known individuals.

REFERENCES

- Poole, J.H. (1987) Rutting behaviour in African elephants: the phenomenon of musth. *Behaviour* 102,283-316.
- Turkalo, A. & Fay, J.M. (1995) Studying forest elephants by direct observation: preliminary results from the Dzanga clearing, Central African Republic. *Pachyderm* 20, 45-54.