

# **The Distribution on Elephants in Relation to Crop Damages Around Bia Conservation Area During the 1999 Raining Season**

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## **EXECUTIVE SUMMARY**

The distribution of elephants and how it influenced crop damage during the 1999 raining season was investigated in and around the Bia Conservation Area (BCA). Two sets of line transects were established and dung-piles counted on them. The first set comprised of 22 transects randomly distributed within the CA. The second set was made up of 13 four-kilometer transects randomly distributed around the periphery of the CA. For each four-kilometer transect, 2km fell within the CA and the other 2km went into the nearby bush. The data from the transects were analysed using the standard line transect method to estimate the dung-pile density. The overall elephant density for the CA was estimated at 0.42 per sq. km, and the elephant population was 127  $\pm$  108.

Signs of illegal activity and the presence or absence of streams were recorded on the 13 transects which were on the edge of the CA. There was no relationship between the distance from the periphery and dung-pile density. However, it appeared that whenever elephant density near the periphery exceeded a certain threshold level (i.e. when dung-piles density was between 400 and 900 dung-piles/km<sup>2</sup>), then there was a high probability that elephants would move out and into the adjacent farmland. Over sixty percent of all dung-piles recorded on the transects were found in disturbed, open-canopied forest.

Analyses of the dung-piles indicated that around the periphery, elephants were probably avoiding areas where poachers were active. It also suggested that elephants clumped around watering points created as a result of logging. A multiple regression conducted on the transects just inside the periphery of the CA, established that both illegal activities and presence of streams together can explain a high proportion of the variance in elephant density.

There were 68 incidences of farm damage by elephants. Damage occurred only around certain portions of the CA and coincided with the elephant distribution around the periphery. There was about 79% probability that a raided farm would be visited again and about 82% chances that the subsequent raid would be within 3 weeks of the previous.

Crop damage increased steadily from June when the study was initiated, till it peaked in September. About three-quarters of the area around the CA have farms adjacent to the boundary line. Hence all farms damaged were within 500 meters outside the boundary line. The most often damaged crop was Cocoa.

Damage caused per raid to farms ranged between 1.3% and 21.4%, while accumulated damages to farms could range up to 33.3%. The loss to a farmer was estimated between US\$13 and US\$280.