

FIELD NOTES

Wild forest elephants shake down fruit and leaves from trees

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Fruit is known to be an important item in the diet of the forest elephants *Loxodonta africana cyclotis* living in central African forests (Short 1981; White et al. 1993, 1995; Powell 1997; Blake 2002) but little is known of the way in which they collect these fruits. Fruiting trees in the forest attract elephants, and the ground underneath fruiting trees is often completely clear of vegetation because of intensive elephant activity. Thus it is assumed that elephants visit fruiting trees and collect fallen fruit, but not whether they actively play a part in making fruit fall. Similarly, elephants feed on leaves of many tree species, using their trunks to gain access to low branches. The use of different techniques by elephants to collect food has mostly focused on how they collect fruit and foliage within their reach or by actually knocking down trees (Feer 1995; Powell 1997). However, a captive forest elephant female in Abidjan Zoo was observed to throw sticks to knock down foliage from branches beyond her reach (Powell 1997). Savannah elephants have also been known to knock fruit out of trees (Douglas-Hamilton 1972).

The area spanning north-east Gabon to south-east Cameroon to north Congo to south-west Central African Republic is a large area of African lowland forests that are among the last to remain partially intact. Within this zone, three neighbouring protected areas span the Sangha River–Lac Lobeke Reserve in Cameroon, Nouabale–Ndoki National Park in the Republic of Congo, and the Dzanga–Sangha–Ndoki complex of Central African Republic. Transboundary

movements of these elephants have been demonstrated (Blake et al. 2001), and the area is considered the single most important zone for African forest elephants (Barnes et al. 1995).

Two extensive elephant studies are under way in the region, one ongoing since 1990 at the Dzanga clearing in Central African Republic focusing on forest elephant demography and social behaviour, and another since 1998 throughout the Ndoki forests of northern Congo, where behavioural and ecological data are collected on elephants and their spatial and temporal movements. In the study in northern Congo, phenological data were collected on individual trees of species that elephants favoured.

The headquarters of Nouabale–Ndoki National Park, Congo, is sited in a band of secondary forest near the village of Bomassa on the Sangha River in northern Congo. In the last two years, forest elephants have started to frequent the area of riverine vegetation and secondary forest around the village, and this has allowed more detailed data to be taken on their movements and behaviour. A number of these elephants have become relatively habituated to human presence, and they now allow observers to approach to within a few metres.

Observations

In July 2000, a number of trees were fruiting at the project headquarters, and elephants were known to be visiting during the hours of darkness. It was some

times difficult to see what they were actually eating as they were hidden in vegetation, but examination the following morning of the places they had been usually revealed that they had been eating fallen fruit or leaves and stems of various herbs or trees.

On 2 and 4 July 2000, an adult male elephant who was often seen in the Bomassa area was observed between 2000 and 2130 at a well-lit area within park headquarters. The elephant was seen to stand at the base of fruiting trees and push hard with its head until fruit fell. The elephant then picked up most of the freshly fallen fruit on the ground. Shaken in this way were three trees of three separate species, *Pseudospondias microcarpa* (Anacardiaceae), *Myrianthus arboreus* (Moraceae) and *Tetrapleura tetraptera* (Mimosaceae).

During field surveys, elephants were heard knocking fruit down from two additional tree species: *Omphalocarpum elatum* and *Chrysophyllum lacourteanum* (both Sapotaceae). The fruit of *O. elatum* is very large and heavy, and it is eaten only by elephants. One of the individual *O. elatum* trees that was under observation in the phenology study was found to have been repeatedly pushed by elephants (from evidence both on the trunk itself and around the base of the tree where it had been loosened from the surrounding earth) when the tree bore ripe fruit.

Also during the field surveys, elephants were seen to shake young *Nesogordonia papavifera* (Sterculiaceae) trees so much that the top whipped back and forth and eventually snapped off. They then ate the leaves. Young *Petersianthus macrocarpum* (Lecythidaceae) trees were found with the top snapped off and elephant sign around the base of the trees, indicating that elephants had pushed the tree and eaten the leaves from the snapped-off top. In and near Dzanga clearing in neighbouring Central African Republic, elephants have been heard and observed knocking fruit from several tree species, including *Allanblackia floribunda*, *Celtis adolfi friderici*, *Desplatsia dewevrei*, *Myrianthus arboreus*, *O. elatum*, *Panda oleosa*, *Polyalthia suaveolens* and *Treculia africana*. Baaka pygmies, native to the area, claim that elephants wait for ripe fruits of certain species of fruiting trees to fall rather than shake them out of the trees.

Finally, in an educational film WWF made in Gamba, a protected area on the coast of neighbouring Gabon, elephants were seen to knock their heads against borassus palm trees, *Borassus aethiopicum*, and

cause fruit to fall, which they then consumed (Baconnet 1996). Borassus fruits are large and heavy and high in oil content.

Conclusion

It is possible that forest elephants frequently manipulate both objects and inedible parts of food plants to obtain food as part of their behavioural repertoire, but because these animals are rarely seen, the literature has little data on the subject. Savannah elephants, more easily observed in their environment, have been documented knocking fruit out of trees (Douglas-Hamilton 1972). The data reported on here are the first from the wild to show that forest elephants deliberately knock fruit and leaves down from trees. It is interesting that observations include both northern Congo and the coast of Gabon, more than 1000 kilometres away. It would be interesting to determine if this is widespread behaviour in forest elephants. If so, it highlights the adaptability of this mega herbivore.

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