

Does Moonlight Affect Asian Elephants?

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The recent publicity about the expanding ivory trade has once again obscured the fact that the ultimate determinant of elephant survival will be space. Elephants are wandering animals that need large ranges, and people need land as well.

Crop-raiding is the proximate manifestation of the competition between people and elephants for land. Most crop-raiding is nocturnal. In the fields one is very conscious of the moon and its passage across the heavens during the slow watches of the night. Yet, to my knowledge, the first report of the moon's effect on elephants was made by Bryan Dickinson (1998) in West Africa. This is odd, because other animal species, and even some aspects of human physiology, are known to be influenced by the moon (Pearson 2006; Cajochen *et al.* 2013). It is possible that there are mentions of this phenomenon in books or magazines in the elephant natural history or hunting literature, but I have yet to find them.

Dickinson was studying crop-raiding around the Kakum Conservation Area in the forests of

south-west Ghana. Later we collected more data around Kakum and confirmed his observation: elephants emerged from the forest on dark nights; they were less likely to raid farms during the full moon (Barnes *et al.* 2007). Was this behavior shown only by forest-dwelling elephants? A team from Anglia Ruskin University and the Animal Behaviour Research Unit (Tanzania National Parks) studied crop-raiding by savanna elephants around Mikumi. They showed that savanna-dwelling elephants, or at least those in Tanzania, are also influenced by the moon (Gunn *et al.* 2013).

The nocturnal movements of elephants in both West and East Africa, in dense forest and savanna, are significantly associated with the phase of the moon. The question is now: do Asian elephants show the same patterns?

There are a number of ways to study this question:

- If sensitivity to the moon is an intrinsic feature of elephant biology, then it will be revealed by studies of captive elephants.



Elephant herd going for a drink in the moonlight (Sri Lanka)
Photo by Prithiviraj Fernando

- There must also be fieldworkers with old data tucked away in their filing cabinets that could be retrospectively analyzed - an interesting subject for a master's thesis perhaps. The paper by Gunn *et al.* (2013) provides information on where one can find moon phase on particular dates in the past, as well as suggestions for methods of analysis.
- The best answer may come from studies planned to separate the question of human activity, such as farmers guarding their fields, from the direct effect of the moon on elephants.
- Finally, there may also be researchers with radio-tracking data that could now be analyzed with respect to the phases of the moon. One could separate out the effects of moon phase and human activity by building statistical models that include human density (or proxies for human density such as road density, village density, etc.).

And so I throw down a challenge to the readers of *Gajah*. Are there descriptions of the effect of the moon on Asian elephants in the natural history literature? Do Asian elephants behave in the same way as African savanna and forest elephants? Can you disprove the hypothesis that Asian elephants' nocturnal movements are determined by moonlight? Can you disprove the

hypothesis that it is human activity on moonlit nights that deters crop-raiding?

References

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Adult males leaving the forest at sunset (Sri Lanka)
Photo by Jennifer Pastorini