

Musth discovered in the African Elephant

A long-standing controversy in the field of elephant biology has recently been cleared up with the discovery that musth definitely occurs in the African elephant. The phenomenon of musth (which has been likened to rutting behaviour) in male Asian elephants is well-known both in the wild and in captivity in Asia as well as in zoos and circuses around the world. A male in musth secretes from the temporal glands, has a continual discharge of urine, becomes very aggressive, and in captivity is very difficult to handle. These physical and behavioural characteristics are displayed periodically generally once or sometimes twice a year for each individual. When domestic male elephants come into musth they have to be chained up, taken off work and given reduced feed. Stories abound in the literature of musth males killing their mahouts or their keepers and trainers in zoos and circuses.

Elephant observers including naturalists, hunters, biologists and game wardens, have speculated on the occurrence of musth in the African elephant, since in so many respects African and Asian elephants are similar, but they concluded that it did not occur. The main reason for this conclusion is the apparent difference in activity of the temporal gland between the Asian and African elephant. In the Asian elephant, with rare exceptions, only males in musth secrete from the temporal glands and this secretion is the prime indicator of musth. In the African elephant males, females, juveniles and even young calves secrete from the temporal glands frequently. Elephant observers could find no relationship between the secretion and sexual or aggressive behaviour and so they concluded musth did not occur and furthermore, that the secretion in the African elephant was related to another, as yet unknown, function.

We started our long-term study of the elephants of Amboseli National Park in 1972, and continuous observations have been made on individually known males since September, 1972. The population presently consists of 620 animals of which approximately 164 are adult males.

In our study of the bulls we were not looking for musth, nor were we even trying to discover the function of the temporal gland. However, as the long-term records began to accumulate we started to see some unusual phenomena among the bulls in the older age classes (those over about 30 years). We first started to notice some of these males with continuously dripping urine which was accompanied by a strong odour and a greenish colouration to the end of the penis and part of the sheath. We referred to this phenomenon as the “green penis syndrome” or “GP”. In addition when the bull had the GP syndrome he had swollen temporal glands and copious, thick secretion from the glands. This secretion appeared different in consistency from that of females, juveniles and younger males.

We also noted that males with GP were not in their usual haunts, the bull areas, but were in the company of females, busily moving through the group testing each female in turn. We soon learned to be wary of any bull with GP as these males were very aggressive, not only towards other males but towards observers as well. Later in our study we found that this aggressive behaviour was due to very high counts of the male hormone, testosterone. Even-



Figure 2. Amboseli bull elephant

tually we could recognise the subtle signals of musth at a distance. For instance, as a precautionary measure we often smelled the air as we arrived at a large group. And we learned to recognise the “musth walk”—a head high, chin in, ears tense strut—visible at several hundred meters away.

Over the years we found that each bull has a particular few months of the year during which he comes into musth. For example, M126 has come into musth in June, July and August every year for seven years and M13 has been in musth in March, April and May every year for six years. However, some males exhibit musth for only a day or two while others may remain in musth for upwards of five months. The duration and timing of musth periods is dependent on a complex interaction of environmental and social factors such as rainfall, vegetation biomass, number of available females and male dominance status.

For more detailed information on musth in the African elephant see the following references:

- Poole, J.H. and Moss, C.J. 1981. Musth in the African elephant. *Nature*, 292: 830—831.
- Poole, J.H. 1982. Musth and male—male competition in the African elephant, Ph.D. Thesis, University of Cambridge.

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