

# Pathology in elephant dentition—two addenda

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Parker (2017)\* described a pathological condition of molar/alveola abscesses in elephants (*Loxodonta africana*). Instances cited were 84 in Uganda—all in Murchison Falls National Park (NP)—four single cases from different elephant groups in Kenya and one from Zimbabwe. This note extends those observations to a further six cases from central Mkomasi<sup>1</sup> National Park (then Game Reserve), Tanzania, that were overlooked at the time. The material was obtained during animals culled in 1969 and as described in Parker (2017). They are presented in Table 1.

No cases were seen in a similar cull of 300 elephants in Mkomasi East in 1968, and only one in 300 taken in Tsavo East National Park in 1966. The three groups—Mkomasi Central, Mkomasi East and Tsavo (Koito) were then considered to be three of the ten ‘populations’ occurring in the Tsavo ecosystem (Laws 2014).

The caries and associated alveola abscesses in Parker (2017) were only reported from lower jaws. Overlooked was a single left upper jaw instance of four cavities in M6 exposing the tooth pulp in a 45-year-old male (GMU1395).

Answering an editorial question of whether there were any signs of discomfort associated with the jaw abscesses, none were observed.

All the evidence was post-mortem so behaviour in living elephants was not observed. The severity of the condition might reasonably be associated with pain, and in cases where they were mono-lateral this might favour the diseased ramus and produce greater wear in the opposing healthy jaw. Contrary to expectations, there appeared to be little imbalance in the normal wear between both rami and little interruption of the molars’ forward progression. On this basis the condition did not seem to be causing discomfort.

A further expectation was that if the condition caused pain, it might reduce food intake and loss of weight. See Table 2, for cases of abscessed animals’ live weights available for comparison. The seven animals live weights fell within the weight-at-age scatters of live weights given in Laws et al. (1975), but are too few to confirm or reject the possibility.

The records were searched for evidence that deficiencies of either phosphorus or calcium might be associated with jaw abscesses. A single case in which serum from an abscessed animal was available for comparison with a range of serum samples from elephants without the disease is given in Table 3. Again, the only conclusion is that both P and Ca levels fell within the ranges of animals without the disease.

The incidence of molar/alveola abscesses in Mkomasi Central extends what is known about the incidence of this condition. Subjectively evidence from all cases reported here and in Parker (2017) did not appear to disrupt normal molar replacement or create imbalance between its progression between the two rami. This suggests that they do not cause pain sufficient to induce imbalanced wear between rami. The aetiology of the molar/alveola abscesses as a ‘relatively common and widespread’ aspect

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<sup>1</sup>Author's note: the etymology of Mkomas(z)i derives from *mkoma*—the doum palm, hence the preferred use of spelling Mkomasi

\*See Parker. 2017. *Pachyderm*; Vol. 58: pp. 51-57 <https://pachydermjournal.org/index.php/pachyderm/article/view/417/419>

of elephant biology invites further research, especially the correlation of nutrition and pathological dental conditions among zoo elephants”.

**References**

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Table 1. Six cases of jaw abscesses from Mkomasi Central

Serial number	Age in years	Sex M = male F = female
WLS 379	32	F
WLS 422	17	M
WLS 425	48	F
WLS 505	6	M
WLS 534	27	M
WLS 580	11	M

Table 2. Live weights from seven elephants with abscessed jaws compared to the average live weights of five elephants of the same sex and age without abscesses

Abscess cases Live weights kg	Average live weight of five samples live weight kg with range of weights	Weight of abscessed cases as a % of average of sample weights
male 6 y 1,089	1,004 (range = 800–1,268)	+ 8%
male 17 y 2,411	3,054 (range = 2,010–4,018)	-21%
male 24 y 3,400	3,442 (range = 3,080–3,740)	- 1%
male 27 y 5,750	4,488 (range = 4,010–5,179)	+ 28%
female 32 y 2,625	2,520 (range = 2,090–2,800)	+ 4%
female 41 y 2,020	2,613 (range = 2,430–2,690)	-23%
female 48 y 2,196	2,637 (range = 2,375–2,768)	-17%

Table 3. A comparison of p and Ca levels in the serum of an abscessed elephant with larger serum samples from those without the condition

	P in mm/100ml serum sample n = 50	Ca in mm/100 ml Serum sample n = 28
Range of samples mm/100 ml	3.00 –10.64	9.10 – 17.98
1 abscess case	4.74	12.38