

## Weight loss due to abnormal molar change

### CASE REPORT

Date: September 2023

Data provided by: Linda + Christian Schiffmann

Species: Asian elephant

Accommodation: Zoo

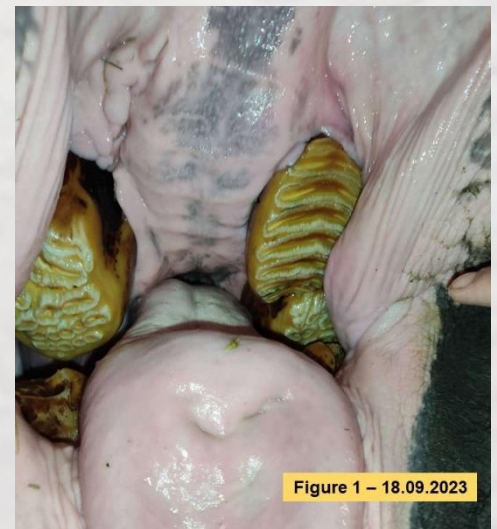
Age, gender: 24 years, female

#### History:

A 24 yrs-old lactating Asian elephant (her male calf was born in May 2022) showed a decrease in body mass from 3900 kg in November 2022 to 3400 kg in July 2023. The Body Condition Score (BCS) decreased from 7/10 to 5/10, which is still within the preferred reference range. One bucket of concentrates (bran and corn flakes) was added to the daily ration in July 2023.

*18.09.2023:*

Oral inspection revealed a status of molar progression M4/M5 in the upper left jaw (Fig. 1). Blood chemistry and hematology parameters were within reference ranges. Analysis of fecal particle size by a simple method (Schiffmann et al. 2023) revealed an increased fiber length compared to a female herd mate. Feeding of branches was intensified in order to facilitate the process of molar progression.



*04.10.2023:*

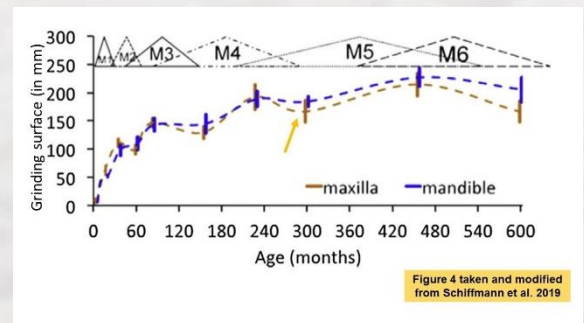
In the morning, keepers found a piece of M4 (weighing 324g) on the ground (Fig. 2). Eating and chewing behavior seemed uneventful. A pus plug was noticed in the alveolar space (Fig. 3) which was flushed with tap water for a few days. From August till November 2023 the body mass stabilized around 3600-3700kg.



**Treatment:** Adaptation of diet, continuous monitoring of body mass and BCS

**Treatment results:** stabilization of body mass

**Additional notes:** Given that there were no indications of a chronic disease, it seems reasonable to consider the molar condition in combination with the increased demand due to the lactation as the underlying cause for this female's weight loss. At her age (24 years = 288 months) the total grinding surface of all molars is expected to be reduced due to physiological molar progression (Fig. 4). This reduced grinding surface can explain the increased fecal fiber length, resulting in less efficient digestion of food and the subsequent weight loss. Another explanation might be a pain-induced alteration of the chewing behavior due to the molar progression. Unfortunately our knowledge on these aspects of elephant mastication and digestion is limited. Nevertheless it seems reasonable that dental pain can significantly impact chewing efficacy.



### Literature

Schiffmann C, Hatt J-M, Hoby S, Codron D, Clauss M 2019. Elephant body mass cyclicity suggests effect of molar progression on chewing efficiency. *Mammalian Biology* 96: 81-86

Schiffmann C, Schiffmann L, Bonillo J, Bulkeviciute I, Gozalbes Aparicio E, Paniagua J, Ribera G, Ruiz M, Torro M, Clauss M (2023) A simple approach to monitor faecal particle size in the Asian elephant – a proof of concept study. *Gajah* 56: 30-35