

Regurgitation and remastication in the foregut-fermenting proboscis monkey (*Nasalis larvatus*)

Abstract

Although foregut fermentation is often equated with rumination in the literature, functional ruminants (ruminants, camelids) differ fundamentally from non-ruminant foregut fermenters (e.g. macropods, hippos, peccaries). They combine foregut fermentation with a sorting mechanism that allows them to remasticate large particles and clear their foregut quickly of digested particles; thus, they do not only achieve high degrees of particle size reduction but also comparatively high food intakes.

Regurgitation and remastication of stomach contents have been described sporadically in several non-ruminant, non-primate herbivores. However, this so-called 'merycism' apparently does not occur as consistently as in ruminants. Here, to our knowledge we report, for the first time, regurgitation and remastication in 23 free-ranging individuals of a primate species, the foregut-fermenting proboscis monkey (*Nasalis larvatus*). In one male that was observed continuously during 169 days, the behaviour was observed on 11 different days occurring mostly in the morning, and was associated with significantly higher proportions of daily feeding time than on days when it was not observed. This observation is consistent with the concept that intensified mastication allows higher food intake without compromising digestive efficiency, and represents an expansion of the known physiological primate repertoire that converges with a strategy usually associated with ruminants only.