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Reconstructing temporal variation in great ape diets - stable isotope analyses in non-invasively collected hair

Seasonal scarcity or richness in food resources and the adaptation to these fluctuations in diet has large effects on many aspect of primate life. Stable isotope analysis of carbon and nitrogen in primate hair provide a novel tool to reconstruct feeding behavior in many elusive species. Particularly in great apes, hair keratin can be obtained non-invasively and allows for investigating inter-and intra-individual dietary variation. Given its incremental nature, hair can also record temporal variation in diet over longer periods of time and allows reconstructing seasonality in species that cannot be directly observed. However, there are some potential pitfalls and particularly knowledge on the physiology of hair can improve sampling strategies and data interpretation. We here present long term isotopic records obtained from hair samples of habituated and non-habituated great apes species across Africa (*Pan troglodytes*, *Pan paniscus*, *Gorilla gorilla*, *Gorilla beringei*) and compare their temporal dietary variation. Using this approach, the dietary flexibility of extant great apes living in different habitat types and niche differentiation between sympatric ape species can be assessed.