Ape ancestors' teeth provide glimpse into their diets and environments

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Newly analyzed tooth samples from the great apes of the Miocene indicate that the same dietary specialization that allowed the apes to move from Africa to Eurasia may have led to their extinction, according to results published May 21, 2014, in the open access journal *PLOS ONE* by Daniel DeMiguel from the Institut Catalá de Palontologia Miquel Crusafont (Spain) and colleagues.

Apes expanded into Eurasia from Africa during the Miocene (14 to 7 million years ago) and evolved to survive in new habitat. Their diet closely relates to the environment in which they live and each type of diet wears the teeth differently. To better understand the apes' diet during their evolution and expansion into new habitat, scientists analyzed newly-discovered wearing in the teeth of 15 upper and lower molars belonging to apes from five extinct taxa found in Spain from the mid- to late-Miocene (which overall comprise a time span between 12.3-12.2 and 9.7 Ma). They combined these analyses with previously collected data for other Western Eurasian apes, categorizing the wear on the teeth into one of three ape diets: hard-object feeders (e.g., hard fruits, seeds), mixed food feeders (e.g. fruit), and leaf feeders.

Previous data collected elsewhere in Europe and Turkey suggested that the great ape's diet evolved from hard-shelled fruits and seeds to leaves, but these findings only contained samples from the early-Middle and Late Miocene, while lack data from the epoch of highest diversity of hominoids in Western Europe.

In their research, the scientists found that in contrast with the diet of hard-shelled fruits and seeds at the beginning of the movement of great apes to Eurasia, soft and mixed fruit-eating coexisted with hard-object feeding in the Late Miocene, and a diet specializing in leaves did not evolve. The authors suggest that a progressive dietary diversification may have occurred due to competition and changes in the environment, but that this specialization may have ultimately lead to their extinction when more drastic environmental changes took place.

More information: DeMiguel D, Alba DM, Moya-Sola S (2014) Dietary Specialization during the Evolution of Western Eurasian Hominoids and the Extinction of European Great Apes. *PLoS ONE* 9(5): e97442. DOI: 10.1371/journal.pone.0097442

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