

Ellis M. Locke, Changes in molar topography and 3D shear crest lengths with tooth wear in two cercopithecoid primates from Malaysia, *American Journal of Physical Anthropology*, 10.1002/ajpa.24023, **171**, S69, (164), (2020).

As herbivorous, diphyodont mammals with relatively low-crowned molars, primates experience changes in dental function during their lifetimes as teeth become progressively worn. Maintaining tooth function with wear is thought to pose a particular challenge for folivorous primates whose diets emphasize molar shearing actions. Recent studies using dental topographic methods suggest that certain primate folivores have molar morphology that maintains or increases functional shearing surfaces with tooth wear ('dental sculpting'). Evidence for this phenomenon has been found in folivorous but not frugivorous New World monkeys, supporting the hypothesis that dental sculpting is an adaptive trait linked to diet. This analysis extends these methods to two sympatric Old World monkeys from Sabah, Malaysia, possessing distinct diets and dental morphologies: the folivorous colobine *Trachypithecus cristatus* (n=25) and the more frugivorous cercopithecine *Macaca fascicularis* (n=22).

For each species, 3D shear crest lengths and four dental topographic variables (relief index, slope, angularity, and Dirichlet Normal Energy [DNE]) were measured from variably worn lower second molars. Preliminary results indicate that for any given degree of wear, *Trachypithecus* has longer shear crest lengths and higher relief, slope, angularity, and DNE than *Macaca*. The two species exhibit different patterns and degrees of change in topography and shearing crest lengths across the wear series. However, these changes do not always match expectations based on their respective diets. Correlations between 3D shear crest lengths and other dental topographic measurements suggests that the type of metric used to assess shearing potential may affect whether or not dental sculpting is detected.

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