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Title: **Relationships between sex, body mass and tooth wear in Cayo Santiago rhesus monkeys (*Macaca mulatta*)**

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Understanding factors affecting tooth wear in primates is of interest because as teeth wear, their chewing efficiency can change—in some species positively and in others negatively. It is well known that teeth wear with age, but relationships between sex and tooth wear and between body size and tooth wear are less well understood. Here we analyze molar wear scores from a cross-sectional sample of 212 Cayo Santiago rhesus monkey (*Macaca mulatta*) adults examined in 1985. Because males are generally larger than females --potentially processing more food over their lifetimes--we hypothesized that with age included in an ordinal logistic regression model, males would exhibit significantly greater wear than females. We further hypothesized that males of larger body mass would exhibit greater wear than males of smaller body mass. Finally, because many of the females were pregnant or lactating at the time of dental examination, we hypothesized that there would be no relationship between body mass and wear in females. We found that with age included in ordinal logistic regression models, males had significantly more worn molars than females, larger males had more worn molars than smaller males, and that for females, molar wear was not significantly related to body mass. These results suggest that over the life course, animals with larger body sizes (males vs. females and larger vs. smaller males) may accumulate more wear than those with smaller body sizes. Future analyses to be conducted on the Cayo Santiago monkeys' skeletal remains will further evaluate this possibility.

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