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Oral Processing Behavior in Bornean Orangutans of Different Age and Sex Classes

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Orangutan diets vary dramatically with food availability. Orangutans preferentially eat fruit when available, but due to dramatic and unpredictable fluctuations in fruit availability, orangutans often consume unripe fruit, bark, seeds, and leaves. Their robust craniodental structure suggests that they are well adapted to consume mechanically challenging foods. Since differences in jaw anatomy and body size pose physiological differences in terms of gape, exerted force, and resistance to wear and breakdown, growth and allometry likely affect an orangutan's ability to process a mechanically challenging diet. Thus, we predict that orangutans of different ages and sexes process foods differently. Given juveniles' smaller and less powerful craniodental structure, and the time required to develop ecological competence, we hypothesized that juveniles may have more difficulty in processing foods than adults. We recorded the frequency that foods were introduced to the mouth, and chewed with different teeth (incisors, canines, and molars) in 561 feeding videos collected in Gunung Palung National Park in West Kalimantan, Borneo on wild orangutans (*Pongo pygmaeus wurmbii*). Videos were stratified by age and sex class and foods were categorized by type. Infants and juveniles use their canines significantly more frequently than adult females ($p < 0.05$) and flanged males ($p < 0.05$). Molar use also differed by age and sex class ($F(3)=2.551$, $p=0.05$), with juveniles chewing with their molars significantly more frequently than adult females ($p=0.05$). Differences in adult and juvenile oral processing profiles suggest juveniles may process some foods less efficiently than adults.

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