

# ECOMORPHOLOGICAL IMPLICATIONS OF PRIMATE DIETARY VARIABILITY: AN EXPERIMENTAL MODEL

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## ABSTRACT

The evolution and function of the mammalian skull and feeding apparatus is intimately related to the mechanical demands imposed by food items. The diets of wild species are often seasonal and thus individuals may experience multiple masticatory loading regimes across their ontogeny. However, despite the temporal complexity of many mammalian diets, it remains poorly understood how such long-term dietary variability affects the growth and form of the craniomandibular complex.

This experimental research evaluated the effects of longitudinal variation in dietary mechanical properties on craniomandibular morphology and on the biological processes that underlie functional adaptation in this region. Results suggest that the skeletal morphology of adults, particularly those characters associated with the mandibular joint and muscle insertion sites, best reflect an individual's diet. Furthermore, variations in bone physiology and growth rates were observed to be influenced more by an individual's masticatory loading history than by absolute levels of loading.

This study emphasizes the character- and age-specific nature of phenotypic plasticity related to variation in dietary properties. Furthermore, this work also highlights the importance of long-term, ontogenetic studies for assessing the impact of diet on craniomandibular form. This enhanced understanding is critical for evaluating ecomorphological reconstructions of feeding behavior in living and fossil mammals.