

ARCH/BIOANTH LUNCH TALK

WEDNESDAY, NOVEMBER 29, 12:00PM
SOC SCI 1, 261

DR. VICKY OELZE

ASSISTANT PROFESSOR
UC SANTA CRUZ



BIOMOLECULAR MARKERS OF GREAT APE DIETARY BEHAVIOR

*WHAT WE CAN AND SIMPLY CANNOT TELL
FROM STABLE ISOTOPES*



Stable isotopes can be a powerful non-invasive tool to assess several aspects of diet, particularly in elusive species such as unhabituated great apes. Early isotope studies on chimpanzees failed to inform on actual feeding behavior, mainly due to a lack of local plant baseline isotope values to begin with. With my work on the stable isotope ratios of great ape hair and environmental samples I illustrate that we first need to understand the different factors related to an isotopic response, such as local plant baselines, individual variation in age, sex and social rank, and seasonality. I demonstrate that if plant baselines but also individual variation are completely ignored, the isotope signatures of wild primates are easily misinterpreted.

However, primate isotope ecology is indeed useful to make inter-population comparisons and to study inter-individual dietary variation. Sympatric great apes can inform on how stable isotope signatures relate to different feeding niches, as we could show for frugivorous chimpanzees and more folivorous sympatric lowland gorillas. In habituated bonobos we found a significant effect of social dominance rank and female reproductive state on feeding selectivity or access to meat, as revealed by isotope values. My aim is to use this refined understanding of isotopic patterns to reconstruct the various degrees of folivory, faunivory and dietary seasonality in largely unstudied chimpanzee populations across different habitats and regions of Africa.

In my current research, I critically refine the use of $\delta^{15}\text{N}$ as a marker for meat consumption in wild chimpanzees. I relate isotope values of habituated chimpanzees to their observed meat eating frequencies and consider age and reproductive state of females to address whether $\delta^{15}\text{N}$ can truly be related to meat eating frequencies alone. In a separate project I seek to establish a $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ plant baseline dataset from the different strata of the rainforest canopy to reconstruct the vertical niche differentiation of sympatric arboreal primates. Finally, I will present my newest research on the toxins of *Macrotermes* termite species, which I seek to utilize to indirectly trace the tool-assisted foraging on termites by unhabituated chimpanzee through biomolecular analysis of hair.