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Marcos C Martinez, Alexandra M Greenwald, Jelmer W Eerkens, Alex de Voogt, Francigny Vincent

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Jelmer W. Eerkens, Alex de Voogt, and Vincent Francigny

American Museum of Natural History

The University of California Davis

INTRODUCTION

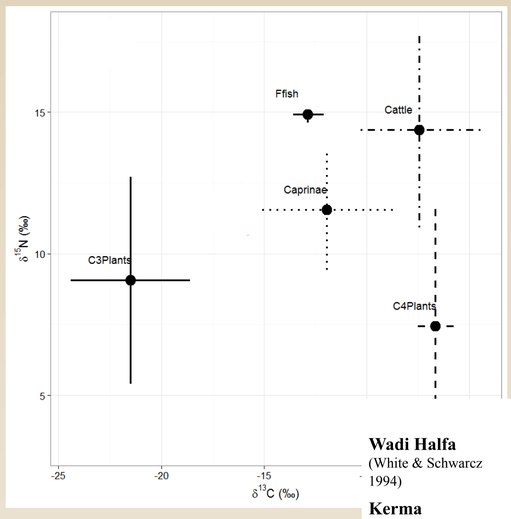
Sai Island is between the second and third cataracts of the Nile, in what is now northern Sudan. While we focus on the Meroitic-period of occupation from the 1st-4th century AD, the site is multi-component, with occupations from Nubian prehistory to the modern era. Excavation and analysis of Cemetery 8-B-5.A interments suggests that individuals buried there were the Meroitic elite. Wooden funerary beds, bioarchaeological analyses, and luxury grave goods, e.g. glass vessels and ivory decorations, are are evidence of the status of the individuals interred there.

THE GOAL OF THE CURRENT STUDY IS TO UNDERSTAND THE DIET, ON A FINE TIMESCALE, of THE ELITE MEROITIC RESIDENTS OF SAI ISLAND and any inter- and intra-personal variation.

Figure 2 Meroitic Acropolis, Sai Island Sai Island Archaeological Mission

BACKGROUND

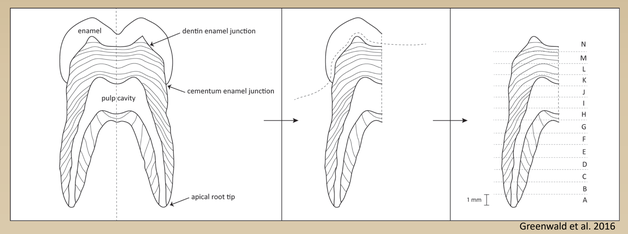
Previous isotopic work in the region suggests that the Meroitic diet was dominated by C_3 plants, as well as terrestrial herbivores – presumed to be domesticated cattle and caprinae (sheep and goats) (White and Schwarcz 1994).



	# of Samples	$\delta^{13}C$	$\delta^{15}N$
Wadi Halfa (White & Schwarcz 1994)	31	-18.1	12.4
Kerma (Iacumin 1998)	1	-20.4	21.8
El Hobagi (Iacumin 1998)	2	-7.8	23.4
Al Khiday (Iacumin 2016)	26	-19.0	N/A

METHODS

We reconstruct diet for 9 individuals interred in Cemetary 8 B 5.A using $\delta^{15}N$ and $\delta^{13}C$ measures derived from third molar serial micro-samples of dentinal collagen. Internally aging each sample within a tooth using age-related landmarks and growth rates permits the estimation of diet on a roughly annual basis for each individual from approximately age 9 to 21 years.



Greenwald et al. 2016

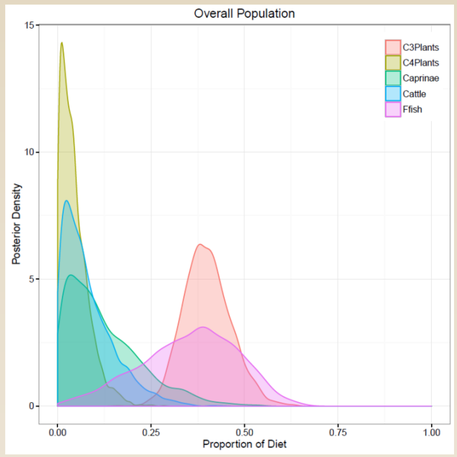
RESULTS

Mixing Model

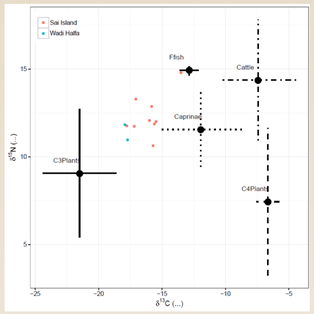
Dentinal collagen isotopic measures for 9 individuals from Cemetery 8-B-5.A were entered into a mixing model that included the resources plotted in the food web that are known to have been used by the Meroitic population (Rowley and Conway 1989, White and Schwarcz 1994, and Iacumin 1998).

MixSIAR is a hierarchical Bayesian model for estimating isotopic mixing which creates likelihood distributions for the inclusion of each resource. This approach to estimating the diet of the population treats individuals as random samples from the underlying population, and can incorporate specific parameters and estimates of uncertainty, with the goal being to accurately reproduce the mean and deviation present in a population exploiting multiple resources.

The model indicates that C_3 plants were of primary importance, followed by freshwater fish, and cattle, with caprinae included in smaller quantities.



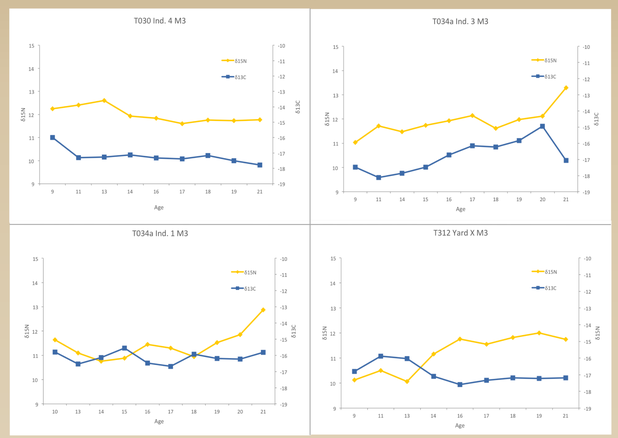
Dietary Resource	Percent Diet	SD
C_3 plants	40%	± 7
Freshwater Fish	35%	± 13
Caprinae	12.5%	± 10
Cattle	8%	± 7
C_4 plants	4%	± 4



RESULTS

Serial Samples

Moderate variation in resource consumption within individuals
Fluctuations in relative inclusion of C3 plants and animal protein (fish and Caprinae).
Low inter-individual variation in resource use.
Variation across time in resource availability but not between individuals.



DISCUSSION & CONCLUSIONS

Our preliminary results are intriguing, as the bulk of previous archaeological work posits a Nubian/Meroitic reliance on C_4 cultigens. Cross cultural ethnographic data suggest that millet is often considered a low status crop, only eaten by domestic herbivores and members of lower social status when wheat, a C_3 plant, is readily available. The Meroitic population sampled for this study was likely high status, and their consumption of C_3 plants may not be representative of all Meroitic peoples.

Variation in resources availability observed in serial samples might be due to harvest periods. C_3 vegetables and fresh water fish could be harvested throughout the year, while wheat and barley are a fall/winter staple, and C_4 crops, predominately sorghum and millet, are grown in the spring and summer. Seasonal variation in fish availability due to flooding may also be a possibility. The periodic culling of young males in herds could also play a part, with sporadic increases of caprinae and bovid protein.

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