

RESEARCH NOTES

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ARCTIC ALASKA

RESEARCH IN PROGRESS: ASSESSING MARINE RADIOCARBON RESERVOIR EFFECT VARIATION IN GREATER UTQIAGVIK, ALASKA

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In the summer of 2016, 30 samples of seal and caribou were submitted for radiocarbon dating and stable isotope analysis from archaeological sites in the greater Utqiagvik, Alaska, area. Specifically, one sample from the Utqiagvik Site, three from the Nuvuk cemetery, eight from Walakpa, and eighteen from Pingusugruk. The stable isotope analysis and radiocarbon dating was done at the Scottish Universities Environmental Research Centre at the University of Glasgow. This work was funded by a Research Incentive Grant titled 'Estimating ancient Marine Radiocarbon Reservoir Effects to develop better Arctic settlement histories' (PI Anthony Krus and Co-I Derek Hamilton) from the Carnegie Trust for the University of Scotland.

The project goal was to use multiple securely paired radiocarbon samples to assess the variation in marine radiocarbon reservoir effects (MRE) in greater Utqiagvik, Alaska during the Birnirk and Thule periods. Radiocarbon dates from marine-derived carbon are anomalously old if not corrected for MRE. Modern MRE values from the Alaskan Arctic are highly varied, from several hundred to over a thousand years, due to the extended residence time of ^{14}C in oceanic environments. It is questionable

how reflective modern values are of those from the past because changes in upwelling, climate, and ocean currents will inevitably result in changes in local MRE values through time.

The established weighted mean ΔR correction for MRE for Utqiagvik using known-age historically collected shells is 506 ± 69 . The results of this project suggest temporal variation in MRE and a weighted mean ΔR of 411 ± 69 for Birnirk and Thule archaeological materials from the greater Utqiagvik area.

For the final stages of the project, the ΔR correction values will be further refined with newly developed Bayesian software for calculating DeltaR. A manuscript is currently being drafted that fully presents the methodology and results of the project. Beyond archaeological applications, this new MRE data will be of importance to geo- and marine sciences for calibration radiocarbon dates from shells and foraminifera and for a wider understanding of changes in the ocean carbon cycle. Funding is currently being sought for a largescale multiyear follow-up project that aims to use a Bayesian approach for multi-isotopic modelling and chronology building to refine interpretations for chronology and diet in the Western Arctic further.

WALAKPA ARCHAEOLOGICAL SALVAGE PROJECT (WASP) 2016

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Walakpa, located on Utqiagvik Iñupiat Corporation (UIC) lands on the Chukchi Sea coast, 20 km south of Barrow, is the only site between Canada and Cape Krusenstern containing confirmed intact vertically stratified Paleoeskimo, Neoeskimo and recent occupations. Walakpa was stable until 2013, when waves undercut it, exposing stratigraphy 2 m deep. A third of the features mapped by Stanford