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### Title

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# A BIOCULTURAL APPROACH TO SOCIAL IDENTITY AT HISTORICAL MIDDENBEEMSTER

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## *Stahl Field Report 2015*

Archaeological Research Facility, UC Berkeley

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Despite the wide body of research on arable agriculture and its economic importance in the North Sea area during the latter half of the first millennia, there is currently little information on the development of any of the rural societies there. During the summer of 2014, a Stahl Endowment Fund was used to support an initial field research project, that aims to examine aspects of gender and age identity in the post-Medieval population of skeletons from the cemetery of Middenbeemster, through the analysis of skeletal markers of bone growth maintenance and activity-related stress. The individuals from the Middenbeemster cemetery provide an opportunity to study not only the dynamics of social identity over the life course, but also provide biological information and cultural insights on a society and region that has been neglected in academic literature.

The small town of Middenbeemster is located in the modern municipality of Beemster in the province of North Holland, Netherlands. The Beemster polder (a ring canal system employing a windmill to drain water away from bog fields to create arable farm land) was completed in 1612, during a period of intense land reclamation focused on reducing the amount of fallow land in the North Sea Area, and Middenbeemster quickly became one of the largest dairy farming villages in Holland. During the summer of 2011, the cemetery used by the colonizing farming community of Middenbeemster, from 1623-1866, was excavated as part of a joint rescue project by Hollandia Archeologen and the Laboratory for Human Osteoarchaeology of Leiden University. More than 500 individuals were recovered representing all ages, and many in excellent preservation. The majority of the interments date to the 19<sup>th</sup> century and were carefully laid out and numbered with historical records of the individuals interred there from 1829-1866 catalogued by the adjoining church.

Since there is a variety of historical documentation about Dutch culture, as well as historical documentation on the cemetery of Middenbeemster and the individuals interred there, this cemetery is uniquely poised to address questions about the evolution of social identities from the 17<sup>th</sup> to the 19<sup>th</sup> centuries in North Holland including: If gendered activity differences occur, when in life do they begin? Are there any changes in the activity patterns, or divisions of labor, between the original dairy farming community and the pre-industrial farmers? Additionally this study may contribute to the understanding of the larger project goals in clarifying the transition in North Holland from an agrarian to an industrial economy, including the physical and potentially cultural impacts that such a change may have had on the contemporary population.

Clinical and osteological studies have provided evidence that patterns in human skeletal morphological variations can be correlated with general patterns of activity. A whole-body life-course

approach, which combines a variety of activity pattern analyses, provides the strongest support for activity related morphological variations and their development during life. During the summer of 2014, preliminary data was collected on 89 adult individuals for various markers of activity related stress including: non-pathological osteoarthritis of all appendicular joint surfaces, 8 non-genetic non-metric traits, and 27 enthesal muscle insertions (per side) chosen to represent a variety of major muscle groups/movements from across the entire body. Preliminary statistical analyses suggest significant differences in upper limb activities between the sexes as well as in lower limb activities between different age groups, suggesting workloads divided by both age and sex. Further analyses will include CT scans of the humerii and a femur of each individual, in order to ascertain the structure and cross-sectional properties of the long bones; this will help define age ranges during which changes in activity patterns (as suggested by the already completed analyses of enthesal changes and non-genetic non-metric markers) appear. Additionally, radiographs of the second metacarpal of all adults will be taken and will serve as a proxy for bone remodeling rates for each individual, against which the results of the activity pattern analyses will be also be compared. By incorporating numerous types of analyses, this study will provide a fuller examination of activity related markers over the life course and a nuanced approach to gender and age related identity.



**Figure 1.** Map of the North Sea Area