**Project Summary**

The proposed *Comparative Island Ecodynamics in the North Atlantic Project* seeks to improve scientific understanding of the complex interactions of human governance, climate change, human environmental impact, and world system effects on the diverging fates of two closely related Scandinavian communities in Greenland and Iceland. While the Icelanders survived centuries of adverse climate, volcanic eruptions, large scale soil erosion, epidemic disease, and harsh world-system economic impacts to develop a modern society now ranking high in international assessments of quality of life, their relatives in Norse Greenland suffered complete extinction by the mid-15th century CE. Why did one northern community achieve sustainability on the millennial scale, while its near neighbor underwent genuine social-environmental system (SES) *collapse* despite centuries of successful adaptation and what we now recognize as comparatively resilient economic management? How can the lessons of these thousand year cases of long term human ecodynamics and their radically different outcomes be more effectively understood and interpreted for the wider effort to mobilize the past to serve modern efforts to secure a genuinely sustainable future? What lessons of survival and extinction can be learned and taught for both local northern community heritage and for global education for sustainability?

**Scientific Merit:** This project seeks to build upon new data, new integrative tools and common standards, and upon the strong international, interdisciplinary links forged during the recent *International Polar Year* (IPY) effort that connected projects, researchers, and local communities across the North Atlantic. It will make use of prior NSF support to the successful NABO (North Atlantic Biocultural Organization) research and education cooperative and leverage international funding support for new collaborative investigations based on a solid base of existing and developing infrastructure of personal and institutional commitments. This proposal seeks to combine field work, laboratory analyses, environmental modeling, and data management using both existing and new cyberinfrastructure with innovative community involvement and contributions to science education for sustainable development (ESD). The proposal combines the data and expertise of history, human bioarchaeology, zooarchaeology, archaeobotany, geoarchaeology, artifact distribution, stable isotopic analysis, geochronology, environmental modeling, and K-12 and college education professionals. It will bring together teams of scientists, educators, and local residents from across the region and create genuinely transdisciplinary and genuinely transformative approaches to shared problems of human survival and sustainable adaptation in the north.

**Wider Impacts:** The demise of Norse Greenland has become aclassic and controversial case of failed long term sustainability, and there is urgent need to go beyond uncritical and easily falsified generalization to place this important case of collapse on a firmer empirical basis and to set this case in the wider context of contemporary N Atlantic communities who survived the stresses of changing medieval climate and society. Norse Greenland remains an important cautionary example, not because it “chose to fail” but as a far more complex and interesting case of tradeoffs between adaptation and resilience, short term and long term robustness, and the effects of cross-scale conjunctures. The proposed project will build on IPY education and outreach efforts and coordinate with the IHOPE (*Integrated History of People on Earth*) and GHEA (*Global Human Ecodynamics Alliance*) initiatives to provide the fullest possible dissemination of results and effective application to sustainability science and education.