

My Island, Your Island, Our Islands: Considerations for Island Archaeozoology as a Disciplinary Community

By: Christina M. Giovas and Michelle J. LeFebvre



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**My Island, Your Island, Our Islands:
Considerations for Island Archaeozoology as a Disciplinary Community**

Christina M. Giovas¹ and Michelle J. LeFebvre²

Abstract

Archaeozoologists working in island settings are united by special challenges and issues. However, they generally conduct research within geographic foci (e.g., the Caribbean, Oceania, etc.) whose boundaries can hinder collaboration between practitioners and limit unified approaches toward addressing larger questions in island archaeology such as those relating to colonization processes or island effects on cultural change. We explore some of the diverse research agendas pursued by island archaeozoologists working in varied island settings and suggest that these studies may benefit from greater dialogue and collaboration between practitioners. To this end, we argue for recognition of island archaeozoology as a disciplinary community united by shared theoretical, methodological and topical concerns. The foundations underpinning this proposed disciplinary community, including issues of data collection and analysis, use of interpretive frameworks, colonization, and anthropogenic impacts on island ecology are discussed. We conclude with proposals for fostering dialogue and suggested directions for future research.

Introduction

In this paper we examine the manner in which zooarchaeology is conducted in a particular type of landscape, that of islands and offer something of a philosophical treatment of this practice that we believe has some very practical implications for the way such research is conducted. Like others who work on islands, we believe that zooarchaeologists are in a special position to understand the many ways that exploitation of the land and sea figured into the human experience on islands; from the most basic aspects of subsistence to higher-order social and ideological spheres of culture. Island zooarchaeologists, thus, have a valuable contribution to make to the larger field of island archaeology. The nature of islands themselves has, of course, influenced the direction, or more rightly, directions, taken by island zooarchaeological research in relation to these issues. It has been said that each island is unique, but that islands themselves are ubiquitous. Uniqueness stems from differences in environmental pressures, biogeographic histories, and historically particular cultural developments to which every island is subject.

¹ Department of Anthropology, University of Washington, Seattle, USA
email: cmgiovas@u.washington.edu

² Department of Anthropology, University of Florida, Gainesville, USA
email: mjl0201@ufl.edu

The ubiquity of islands—the fact that there are so many of them (estimates for the Pacific alone are greater than 10,000)—has meant that out of scholarly necessity many islands or archipelagos are parceled out into bounded regions like the Caribbean or Polynesia. Or, they are considered within the context of the closest continent with which they have cultural ties, such as the Mediterranean and Aleutian Islands.

This is true of island-based zooarchaeological studies, where a geographically-defined focus has meant that faunal research has developed into multiple *island zooarchaeologies* instead of a single *island zooarchaeology*. We argue however, that the larger interests of island zooarchaeology transcend these geographic boundaries. Island zooarchaeologists are united by special challenges, theoretical and methodological issues and certain topical concerns, all held in common by virtue of working in island settings, no matter how varied.

Due to this, we argue that zooarchaeologists working in different island regions could benefit from greater dialogue, communication and collaboration with each other. Here, we make a case for recognizing island zooarchaeology as a disciplinary community based on these commonalities. Using selective examples, we will explore the foundations underpinning this proposed disciplinary community, including issues of data collection and analysis, use of interpretive frameworks and unifying themes. We conclude with some proposals for fostering dialogue and directions for future research.

Island Zooarchaeologies

The range of research agendas pursued by island zooarchaeologies is illustrated by some of its most fundamental issues. These include studies of the subsistence and economy of a people and the impacts of their activities on insular and marine fauna. Unfortunately, a thorough discussion of the ways in which these topics have developed in different island regions is beyond our ability to address here, but a few examples may serve to illustrate.

For instance, on the island of Zembra, Hardy et al. (1994) employed mitochondrial DNA of zooarchaeological rabbit specimens (*Oryctolagus cuniculus*) to source their introduction from Spain and France by people crossing the Mediterranean Sea during the Bronze Age. Exploring another aspect of human impacts on ecological communities, Wing and others (Reitz 2004; Wing 2001a; Wing and Wing 2001) have used indicators of growth overfishing and trophic level analysis in Caribbean fish assemblages to detect the effect known as "fishing down marine food webs" in patterns of human predation. In this is phenomenon fish from increasingly lower trophic levels are pursued due to over-exploitation of fish occupying higher levels.

Each of these studies employs very different materials and methods, yet, they are linked by a similar desire to understand the effects of human dispersal and exploitation on island ecosystems. The work of these researchers demonstrates that diverse inquiries can be united by a common thread and it is this point that serves as a basis for resolving island zooarchaeologies into a unified island zooarchaeology.

Island Zooarchaeology as a Disciplinary Community

Three fundamental areas of commonality unite island zooarchaeologists: theoretical concerns, methodological concerns and thematic or topical concerns. We will begin by addressing shared theoretical concerns. Here we include theory to mean both formal interpretive frameworks, such as evolutionary ecology, as well as general anthropological principles, for

example, the association between differential access to resources and social status. In either instance, sound investigation should include hypothesis testing and interpretation with reference to established principles or the advancement of new principles.

Theory

Due to its emphasis on islands as bounded units subject to varying degrees of isolation, the theory of island biogeography (MacArthur and Wilson 1967, 1963) has been widely drawn upon by archaeologists interested in insular effects on human subsistence as well as evolutionary and phylogenetic approaches to human culture (Burney 1997; Fitzhugh 1997; Keegan and Diamond 1987; Kirch 1984; Vigne 1992; Wing and Wing 1995). Equally, it has been rebuked by critics for treating 'islands as laboratories', ignoring cultural means for overcoming geographic isolation, and for reducing the complexity of culture to simplified ecological systems (Curet 2004; Evans 1973; Golden and Pavlides 1994; Lape 2004; Rainbird 1999; Terrell 2004; Terrell et al. 1997). Notwithstanding, use of island biogeography as an interpretive framework continues, although more recent investigations acknowledge the difficulty of describing cultural systems exclusively in biogeographic terms and make efforts to understand the complex interplay between society and ecology without paring culture down to fit environmental constructs (Fitzhugh et al. 2004; Giovas 2006).

Island biogeography aside, it is fair to say that, in general, the explicitness or rigor with which theory is used in island zooarchaeologies varies across different regions, with the result that our understanding of human-environmental interactions is more sophisticated for some areas than others. This discrepancy hinders large-scale comparisons. For those areas where formal or explicit incorporation of theory is wanting, we might look to Polynesia for a model of critically-informed, inquiry-based approaches being used to address larger questions in island archaeology (Anderson and Leach 2001). Nagaoka (2002a, 2002b, 2000) for example, has applied foraging theory models to explore subsistence change and foraging efficiency in New Zealand and gain insight into not only how Maori diet changed prehistorically, but also why these changes took place.

Like such studies, advanced research approaches in island zooarchaeology should 1) make explicit use of theoretical or interpretive frameworks appropriate to the questions at hand, and 2) integrate the faunal record into a more holistic understanding of human culture in island settings. Following this approach, researchers may engage not only the typical processual questions, but also higher-order questions examining ideology, beliefs systems, and the role of individuals or groups of individuals in a society in creating cultural patterning. For example, informed by the Hawaiian ethnohistorical record, O'Day and Kirch have used faunal assemblages to archaeologically identify prehistoric household complexes (O'Day 2001) and have employed the differential distribution of fatty meat bearing bones to detect socially constructed, status-mediated patterns of food consumption on the island of Maui (Kirch and O'Day 2003). As a final recommendation, we suggest that island zooarchaeologists should also look toward exploring and developing theory aimed at uniquely island zooarchaeological and island archaeological questions.

Methods

Methodological issues unifying island zooarchaeologists have to do with the nature of island faunal assemblages. These generally differ from continental ones in that:

1. they include a significant marine faunal component, fish, shellfish, etc.; and
2. they are relatively lacking in larger terrestrial fauna, especially mammals.

Both these attributes are ultimately important to how faunal quantification and analysis proceed.

As has been well-documented (e.g., Cannon 1999; Gordon 1993; Nagaoka 1994; Nokkert 1999; Shaffer 1992), screen-size is an especially important methodological concern for sites with significant fish remains. Zooarchaeologists working with island-based faunal assemblages are obligated to use screen mesh sizes of $1/8$ " at the very least, and preferably $1/16$ " to avoid analytic bias resulting from failure to capture smaller fish elements (Newsom and Wing 2004). By not adhering to this standard of care, island zooarchaeologists risk overlooking significant evidence for changing technology and resource exploitation strategies, such as the introduction of fishing nets for example (Butler 2001; Crock et al. 1995; Hoffman et al. 2000; O'Day 2002). While screen-size bias should be a concern of zooarchaeologists working anywhere, the potential for this bias to unduly affect island faunal assemblages is greater because these collections tend to have a higher proportion of fish and small animal remains.

Analytical approaches toward shellfish represent another methodological concern. A perception exists that shells differ somehow from vertebrates, even though, strictly speaking, there are no inherent analytic differences between vertebrate hard parts and those of shellfish (Claassen 1998; Mannino and Thomas 2002). The quantification of shell is more likely to be based on weight and MNI rather than the NISP measurements often used for vertebrate taxa. This quantification approach creates problems for comparisons with vertebrate remains, especially when calculating the relative contribution of each to prehistoric diet (Claassen 1998). It also makes it extremely difficult to assess sample size effects on shell assemblage richness and diversity (Grayson 1984).

Additionally, due to the sheer volume of shellfish present in island assemblages and the logistics of transporting and curating these, shells in general are not as likely to be as comprehensively recovered and analyzed as vertebrate remains. As with screen size bias, the likelihood that island assemblages, which often contain significant shell components (e.g., Keegan et al. 2003; Stein 2000; Stager and Chen 1996), will be disproportionately affected by these considerations make this a special concern for island zooarchaeologists.

Themes

Lastly, we would like to address the set of common themes and interests shared by island zooarchaeologists. A major unifying concern centers on island biodiversity and the impacts that humans have on island ecosystems. Relative to continents, island biota are particularly vulnerable to experiencing severe anthropogenic impacts, so it is not surprising that systematic modification of the environment, species extinction, and faunal translocation, all associated with the arrival of humans to an island have been documented repeatedly by zooarchaeologists for the Caribbean (Carlson and Keegan 2004; Pregill et al. 1994; Steadman and Stokes 2002), Oceania (Allen 2002; Kirch and Ellison 1994; Moynz 1997; Steadman 1995; White 2004), the

Mediterranean (Hardy et al. 1994; Vigne 1992), Norse Atlantic colonies (Amorosi et al. 1997; McGovern and Perdikaris 2000), and elsewhere (Erlandson et al. 2004; Rando et al. 1997).

The magnitude and ubiquity of anthropogenic impacts on islands means also that island zooarchaeologists have an opportunity to contribute insight to contemporary extinction events and inform efforts in applied conservation biology (Wing 2001b; Lyman and Cannon 2004a). Such efforts are contributing the growing subfield of applied zooarchaeology which uses a zooarchaeologically informed diachronic perspective to address contemporary problems in conservation biology (Etnier 2004; Lyman and Cannon 2004b).

The arrival of people to an island is also tied to questions about the timing, mechanisms and origins of their migration. Island zooarchaeology is not divorced from these questions and in fact has much to contribute by offering alternative data sources for detecting colonization events. For example, Matisoo-Smith and others (Allen et al. 2001; Allen et al. 1996; Matisoo-Smith 2001, 1998; Matisoo-Smith and Allen 2001) have employed mtDNA distributions in contemporary Polynesian rats (*Rattus exulans*), the descendants of canoe stowaways, to trace the migration of Polynesians in Remote Oceania and establish the presence of social networks between islands.

We also note that island zooarchaeology can inform the ways by which people adjusted and adapted to changing resource structures as they colonized novel island landscapes (Taylor and Giovas in review). An appreciation of these processes is critical to understanding matters such as the rate of migrations as well as why some colonization events in prehistory succeeded while others failed.

Looking Ahead, Moving Forward

What we hope to have done here is demonstrate that zooarchaeologists working in different island regions share many of the same theoretical and methodological concerns and tackle many of the same research questions and topical issues. These commonalities may serve as a source for productive research that contributes not only to issues in island zooarchaeology but also to larger questions in island archaeology and zooarchaeology in general. We have an opportunity to learn from each other, a process that may be facilitated by fostering a dialogue between island zooarchaeologists and promoting collaboration between practitioners that transcends geographical boundaries.

Increased cooperation and collaboration will bring different perspectives and novel approaches to the table. These may be used to generate new understandings and syntheses of important issues, serving in turn to strengthen and invigorate our field of study. We suggest that the following issues might be productive avenues for possible future investigation in island zooarchaeology. They include:

1. Conservation of sensitive coastal archaeological sites;
2. Recording past and preserving present biodiversity – this is a critical issue for islands, which often serve as hot spots of biodiversity and endemism;
3. How to incorporate theory more explicitly into island zooarchaeological research;
- 4a. The appropriateness of different interpretive frameworks for various island faunal data sets, as well as,
- 4b. The appropriateness of different methodologies for quantification and analysis of these data sets;

5. Standardization within and across island regions of data documentation, analytic methods and reporting;
6. Understanding human-landscape relations in island settings; for example, should this be approached differently than on continents?

The means by which these and other issues may be advanced include:

1. The creation of a dedicated forum for the island zooarchaeological community, such as a peer-review journal, or a research or special interest group;
2. The compilation of edited volumes in island zooarchaeology with contributions from diverse perspectives;
3. The organization of multi-national research projects;
4. Fluency and publication in multiple languages;
5. And the organization of conference symposia that treat island zooarchaeology in a holistic fashion.

What do we gain from island zooarchaeologists coming together as a disciplinary community? We foresee a number of important benefits. Among these are the development of more sophisticated research methods through exposure to a diversity of perspectives and approaches; the standardization of reporting techniques and analytic methods that allow for sophisticated inter-site, inter-island and cross-regional comparisons, helping to promote synthesis of the field; and the advancement of theoretical frameworks through renewed investigation and testing. Ultimately, we believe, that by coming together we will be contributing not only to a unified island zooarchaeology but also to a more dynamic zooarchaeology and island archaeology as a whole.

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