

BOOK REVIEW

Holocene Foragers of North India: The Bioarchaeology of Mesolithic Damdama. By John R. Lukacs and Jagannath Pal, with contributions by M.C. Gupta, V.D. Misra, Greg C. Nelson, and G. Robbins Schlug. Published in Oxford by British Archaeological Reports Ltd, 2016. pp. 328. ISBN: 978-1-4073-1452-5, price £49.00, or A\$63.15

In bioarchaeology, little attention has been paid to the Indian subcontinent, especially compared to the volume of work on Native Americans and Europeans. *Holocene Foragers of North India: The Bioarchaeology of Mesolithic Damdama* contributes to the scholarship relating to the Mesolithic Lake Culture (MLC) of Northern India and helps expand the corpus of bioarchaeological work in India.

Lukacs and Pal explore the life of the residents of Damdama through a comprehensive analysis of human remains. The site of Damdama, discovered in 1978, constitutes the third major Mesolithic site in the region to yield a high number of artifacts in association with human remains. To an extent, the bioarchaeology of South Asia has been limited by the poor preservation of human remains, resulting in a focus on the individual rather than the population. However, the Damdama assemblage exhibits uncharacteristically good preservation, allowing Lukacs and Pal to address population-driven questions. Additionally, the position of Lukacs as an author makes this volume unique among studies of Mesolithic Lake Culture peoples, as he studied the other two major MLC sites (Sahar Nahar Rai and Mahadaha). This volume involves comparisons among the three sites so potential interobserver biases are minimized. Intersite comparisons allow for a discussion of the place of Damdama among MLC peoples, and puts the Indian MLC in a larger global context. This assemblage is comprised of 46 well-preserved individuals, allowing researchers to evaluate variables relating to diet, health, stress, activity levels, and the genetic characteristics of the residents of Mesolithic Damdama. To that end, chapters 9-11 focus on the wealth of information derived from the dentition. Chapter 9 focuses on the dental inventory of the assemblage and provides information on the prevalence and degree of tooth wear. The dental inventory is an easily overlooked component of an analysis, but the authors emphasize that understanding sample composition is necessary to recognize potential

limitations and biases of subsequent analyses. Dental wear was scored using the quadrant system of E. Scott (1979) and the Eight Grade System of Langsjoen (1998). Each system is discussed, highlighting its advantages and disadvantages, and noting the appropriate circumstances for implementation. Ultimately, the combination of dental wear scores, and derived variables led the authors to conclude that the inhabitants of Damdama, like other MLC peoples, consumed a coarse diet and were subject to heavy masticatory stresses.

The pattern of dental wear in the Damdama sample was additionally used to support the conclusion that this population subsisted using a hunting-foraging strategy. The authors present a unique use of the quadrant wear system (Scott 1979) to assess the angle of molar wear as proposed by Smith (1984). Smith (1984) asserts that hunter-foragers tend to demonstrate a flatter molar wear plane, while agricultural populations show steeper planes of molar wear. To evaluate molar wear angle, Lukacs and Pal suggest wear scores of the lingual cusps can be compared to the buccal cusps – the greater the difference in wear scores, the more steeply angled the molar wear plane. The authors recognize this analysis may not be precise enough to capture subtle angle differences, but the combination of these two classic dental wear techniques is intriguing and represents an exciting new possibility for future dental anthropological studies.

The focus of chapter 10, dental pathology, includes the prevalence of oral lesions and interpretations of their significance. The study of dental pathology is critical to any comprehensive bioarchaeological research project as it provides a snapshot of the diet and dietary behavior of past populations. In this chapter, the broad category of dental pathology includes developmental anomalies, infectious diseases, and degenerative conditions. We commend the authors on their explicit definitions of pathological conditions to ensure clarity to the reader and replicability in future research. Dental pathology is explored in several contexts. First, frequencies of a given condition are presented by individual and by sex to discern patterns within these divisions. Next, the rates of pathologic manifestations are compared between Damdama and other hunter-forager and agriculturist groups to explore the effects of subsistence on pathology. After a discussion of the prevalence of enamel hypoplasia, the chapter concludes with an interpretation of the suite of conditions observed in the Damdama sample. In total, the profile of the residents of Damdama derived from an analysis of dental pathology is consistent with a hunter-forager population with a diet of coarsely textured

food. Rates of caries and periapical lesions are remarkably low, and rates of antemortem tooth loss are moderate on a world scale. Enamel hypoplasias are common in this population, suggesting periods of childhood stress; however, post-cranial analyses of adult stature suggest these childhood stress episodes were not severe.

The final chapter (11) focuses on the morphology and metrics of the Damdama dentition. These data are used to explore the functional aspects of tooth size and morphology, as well as their utility in assessing population affinity. The sample available for the study of morphology was too small to be statistically robust; therefore, for discussions of morphology, the Damdama individuals were grouped into a larger Mesolithic Lake Culture group. The dental morphology of the MLC population is best described as simple. Although incisor shoveling occurs with moderate frequency, few other mass-additive features were observed. Bio-distance analyses based on dental morphology align the collective Mesolithic Lake Culture people with the generalized Sundadont (Turner 1990) and Indodont (Hawkey 1998) dental patterns. Furthermore, these analyses reveal previously unidentified linkages between the peoples of the MLC and extant tribes. The analysis of tooth size is also revealing. The trend in tooth size at Damdama is toward larger dentitions, exhibiting some of the largest teeth in all of South Asia. The authors offer increased tooth size as support of a hunter-forager subsistence pattern in the MLC. Taken together, the results of morphological and metric analyses of the Damdama teeth are consistent with inferences of diet and subsistence derived from tooth wear and dental pathology.

Lukacs and Pal are to be commended for their comprehensive examination of the bioarchaeology of the Damdama site in northern India, particularly the thorough treatment of the dentition. This work represents the full-complement of a dental anthropologist's contribution to the bioarchaeological literature. Their focus on population-driven questions and quantitative methods represents the future of bioarchaeological research. The acknowledgment by these authors of potential biases and limitations throughout their research strengthens the final product. Knowledge of potential problems helps the reader temper any conclusions drawn from this work. The authors set three goals for the volume: 1) to elucidate the utility of bioarchaeology in understanding prehistoric human behavior, 2) to explore the place of Mesolithic hunter-foragers in the regional archaeological sequence, and 3) to approach the bioarchaeological data in an integrative and synthetic way in researching the MLC of North India. They achieve

all three goals. This volume represents an exceptional standard for bioarchaeological work and shows how the dentition informs bioarchaeological questions and provides direction of future research in South Asia.

CHRISTOPHER A. MAIER¹, Ph.D.; KELLY N. HEIM², M.A.; and G. RICHARD SCOTT², Ph.D.

¹ECKERD COLLEGE

²UNIVERSITY OF NEVADA, RENO

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