

Book Reviews

THE MONKEYS OF STORMY MOUNTAIN: 60 YEARS OF PRIMATOLOGICAL RESEARCH ON THE JAPANESE MACAQUES OF ARASHIYAMA. Edited by Jean-Baptiste Leca, Michael A. Huffman, and Paul L. Vasey. Cambridge: Cambridge University Press. 2012. 498 pp. ISBN 978-0-521-76185-7. \$120.00 (Hardcover).

The monkeys of Arashiyama occupy a special place in primatological research. Modern primatology began in the 1950s when a group of scientists of the Department of Zoology at Kyoto University decided to study Japanese macaques (*Macaca fuscata*) from a sociological perspective. A tourist park opened during the same period on the forested hills overhanging the small town of Arashiyama just west to the city of Kyoto, and quite naturally the macaques of Arashiyama became one of the main study groups for the researchers. In 1966, the group split; collaborative projects with American teams then led to one of the two daughter groups being sent to Texas in 1972, and in its turn, this group became the source of another wealth of studies under the name of Arashiyama West group. This research work was first reviewed in 1991 in a book edited by Linda Fedigan and Pamela Asquith, *The Monkeys of Arashiyama: Thirty-five Years of Research in Japan and the West*. This new book reports the latest findings about one of the longest-studied populations of nonhuman primates in the world.

The volume is composed of a foreword by Masao Kawai and a short preface, followed by 19 chapters and four boxes, complemented by a comprehensive bibliography from the first publication on Arashiyama botany in 1941 to the present. The first set of chapters includes two essays translated from Japanese. This is the most charming part of the book, as it relates the history of Arashiyama macaques and the early efforts of the pioneers having studied them. The first to express an interest in monkeys was Eiji Ohta, a school teacher who first encountered them in 1948. He writes that most Kyoto citizens at this time had never seen one. Japanese monkeys had been hunted for years and they were afraid of humans. Looking for them was something of an adventure, which explains why Japanese scientists soon started distributing food to habituate animals to the presence of human observers. By identifying and naming each individual, they produced the first long-term studies ever conducted in mammals. Yukimaru Sugiyama recalls that until the 1950s, groups of primates were considered as closed societies, meaning that all individuals should remain in the same social unit for their entire lives. However, in 1960, a subadult male named Chikusha, who had disappeared from his natal group was witnessed several months later, some 20 km away in a neighboring group, thus documenting male dispersal for the first time. As reported by Naoki Koyama, a complementary finding was that groups of Japanese macaques are organized in subgroups of kin-related females, which affects dominance relationships and patterns of group fission. A last chapter provides a report of macaque demography at Arashiyama based on a 50-year demographic record. The fact that a proportion of females received contraceptive implants to control population

growth, however, sometimes complicated the task for authors when dealing with the reproductive life of females.

A second section is devoted to the study of sexual behavior and mating patterns. Michael Huffman and Yukio Takahata address mate choices, whereas high-ranking males prefer to mate with high-ranking and mid-aged females, it appears that females frequently mate with mid- and lower-ranking males, thus pushing the highest ranking males who have stayed in the group for a long time to transfer to another group. Paul Vasey, Doug Vanderlaan, and Yugi Takenoshita argue that courtship and mounting between same-sex partners belong to the normal repertoire of the species, and that they should be considered as genuine sexual behaviors, even if they are not necessarily adaptive. Mary Pavelka and Linda Fedigan update their previous work on post-reproductive females by analyzing the reproductive life of 62 grandmothers, their 175 daughters, and 905 grandchildren. They conclude that the grandmother hypothesis—which states that aging females stop reproducing in order to invest in the survival and reproductive performance of their offspring and grandoffspring—is not supported in Japanese macaques. Few females reach a post-reproductive stage, and reproductive termination appears to be a by-product of selection favoring longevity rather than a result of direct selection.

A third section deals with different kinds of social interactions including play and the social transmission of behavior. Jean-Baptiste Leca and collaborators review the well-known stone handling tradition reported in Arashiyama: a juvenile female was observed for the first time playing with stones in 1979, and from this time onward the behavior spread first to peer playmates then it was transmitted mainly from mothers to offspring in a second stage. A main finding is that while less than 10 types of stone-related behaviors were described in the first decade (gather, carry, clack, and rub stones together, etc.), they progressively accumulated until a repertoire of 34 different patterns was reached in 2008. A second primary conclusion is that stone handling has no adaptive value. It is striking to realize that the study of Arashiyama macaques has shed light on three cases—homosexual behavior, postreproductive alloparental care, and stone-handling—when behavior did not result from the action of natural selection, an event which is often difficult to substantiate with evidence. In the following chapters, Patrick Bélisle, Mariko Fujimoto, Sergio Pellis, and their collaborators analyze sequences of interactions to characterize social relationships. They particularly show that high levels of nepotism and social competition in Japanese macaques contrast with the more egalitarian relations reported in some other species of macaques. A chapter written by Michael Huffman and Andrew Macintosh then considers whether macaques are able to recognize the medicinal value of plants. Their main contribution is made up of two tables, composed of 10 and 36 pages, which provide a list of the plant species consumed by macaques and an extensive database of the plant compounds reported to possess bioactive properties; without doubt these elements will be a starting point for future work on the topic. A last section is composed of two chapters giving information about hormonal

methods used to control female reproduction in the population, and educational endeavors focused on the monkeys of Arashiyama.

The different chapters of the volume are actually a mix of reviews and papers that often present previously published data, and they are of unequal value. In a book centered on a single field site, it is difficult to confer plain thematic consistency to a collection of works produced by investigators who are all pursuing quite different research goals. However, the editors and authors successfully offer an accurate picture of the state of the art. This book should interest primatologists and anthropologists concerned by macaque societies, as well as any

readers who are willing to learn more about the history of primatology.

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VIOLENCE, RITUAL, AND THE WARI EMPIRE. By Tiffany A. Tung. Gainesville, FL: University Press of Florida. 2012. 256 pp. ISBN 978-0813037677. \$74.95 (hardcover).

Compared to the amount of research done on the Inka Empire, little attention has been paid to their Wari predecessors (600–1000 AD) in the Peruvian Andes until fairly recently. With this book, Tiffany Tung marshals bioarcheological evidence from one heartland and two hinterland sites to argue not only that Wari was an early, politically centralized state, but that a key element of Wari imperialism was ritual and martial violence inflicted on its subjects. This thorough treatment of osteological and iconographic correlates of control aptly illustrates the intentionality of Wari practices, their effects on physical bodies, and the construction of individual identities in Wari society.

Tung begins with an introduction to Wari and to the three sites—Conchopata, Beringa, and La Real—whose skeletons make up the majority of the data in the book. Located in the Ayachuco Basin, Conchopata was just a few kilometers south of the imperial capital of Huari, and hundreds of kilometers away in the Majes Valley, the sites of La Real and Beringa provide comparative hinterland samples. Using radiocarbon dates, environmental data, and archeological context, Tung situates these samples within the Wari polity and within the larger sphere of Andean occupation. This discussion, however, could have benefitted from additional maps to orient the non-Andeanist reader to the geographical relationships in this expansive area.

More than 600 Wari skeletons are investigated in light of Tung's proposed bioarcheology of imperialism, or a way to "understand how imperial policies and practices affect individual and community life, and how individual actions shape imperial structures" (p. 9). Skeletal data are ideal for this approach, as an osteological population is composed of individual skeletons whose life experiences can only be fully understood in light of community experience. This recursive interaction is paralleled in the heartland/hinterland dichotomy of the Wari Empire and in the tension between imperial policies and individual agency. By investigating skeletons within their archeological context, Tung argues that a bioarcheology of imperialism in the Andes will reveal information about community organization, health status, and corporeal rituals in terms of both the imperial elite and the local subjects. Definitions of empire, imperialism, and state, however, are not fully presented until the third chapter,

appearing after the theoretical treatment of the bioarcheology of imperialism. Tung does make a convincing case that Wari was an empire rather than a mosaic of autonomous polities, but these early chapters vacillate between an Andes-specific understanding of empire and the suggestion that there is potential for a cross-cultural bioarcheology of imperialism.

The fully developed chapters on demography, trauma, and trophy heads, on the other hand, put the large dataset to good use. Tung's writing shines in the second half of the book, as she explains the data through straightforward, well-organized tables and graphs while deftly building her argument about the role that violence played among the Wari.

The first clue about the differential effect Wari imperialism had on communities comes from demographic data. Comparing the sex ratio, age-at-death distribution, and strontium isotope values of the Conchopata and Beringa populations reveals differences in community organization. Both populations are composed largely of locals and have an expected age distribution, and Beringa has a relatively even sex ratio, but the sex ratio at Conchopata is skewed, with more females than males. Tung interprets this difference as evidence of out-migration of males from Conchopata, a suggestion she backs up with iconographic evidence of reed boats, a type of vessel that would not have been used locally. The heartland site of Conchopata, therefore, hints at a distinct community organization under imperial control, one that involved the physical mobility of males, likely as warriors or other agents of the state.

A second clue to the effects of Wari imperialism comes in the form of skeletal trauma sustained through violent acts, particularly the patterning of blunt-force trauma to the cranium, which Tung observed frequently at all three sites. At Conchopata, where males are under-represented in the burial population, most of the violent acts were directed at the back of the head of females. Beringa, on the other hand, presents both males and females with significant injuries. At La Real, a large portion of the population suffered multiple episodes of violence, and most of the injuries to males are found on the left anterior of the skull. Tung finds, hidden within the similar percentages of traumatic injuries, a very different social context for violence at each site: Conchopata injuries are suggestive of violence sustained in contexts other than warfare, such as domestic struggles;