



Mary C. Stiner is Associate Professor of Anthropology at the University of Arizona, Tucson.

The Faunas of Hayonim Cave, Israel

A 200,000-Year Record of Paleolithic Diet, Demography, and Society

Mary C. Stiner

"Superb...Stiner's work raises exciting new possibilities for monitoring Late Pleistocene changes in human population size, and particularly for identifying population bottlenecks that may have shaped the genetic makeup of modern humans."

—JOHN D. SPETH, MUSEUM OF ANTHROPOLOGY,
UNIVERSITY OF MICHIGAN, ANN ARBOR

A decade of zooarchaeological fieldwork (1992–2001) went into Mary Stiner's pathbreaking analysis of changes in human ecology from the early Mousterian period through the end of Paleolithic cultures in the Levant. Stiner employs a comparative approach to understanding early human behavioral and environmental change, based on a detailed study of fourteen bone assemblages from Hayonim Cave and Meged Rockshelter in Israel's Galilee. Principally anthropological in outlook, Stiner's analysis also integrates chemistry, foraging and population ecology, vertebrate paleontology, and biogeography.

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Book Abstract

This zooarchaeological project, lasting nearly a decade (1992-2001), focuses on Middle Paleolithic human ecology. Very little is known about the Levantine zooarchaeological record of the early Middle Paleolithic, although the Galilee preserves many later Paleolithic faunas that can be used to set it in evolutionary perspective. The study employs a comparative approach to understanding human behavioral and environmental changes based on a very long faunal series from one locality, the Wadi Meged, that spans the early Mousterian through the end of the Paleolithic. The 14 faunal assemblages examined by this study come from two sites, Hayonim Cave (the main source) and Meged Rockshelter, both of which contain rich faunal records in association with abundant tool assemblages and hearth features. The approaches taken in this study are highly integrative in that they draw on knowledge from chemistry, engineering, population ecology, behavioral ecology, paleontology, biogeography, and of course anthropology.

My main goal in writing this book, and compiling the contributions of close colleagues, is to present new findings on early Middle Paleolithic human foraging behavior as reflected by the exploitation of ungulates and small animals. Some portions of the research have already appeared in journal articles (see Stiner's CV), but most of the information has not. What one can accomplish in a book that is almost never possible in short articles is a unified presentation that effectively raises understanding of the data to a new level. The first major hurdle in this research has been to evaluate the taphonomic history of the bone accumulations (Chapters 3-5), and the second to understand something about the economic behaviors of early humans, including small game exploitation and the early development of humans' adaptations for ungulate hunting (Chapters 6-11). Several families of data are brought to bear on these questions, including (a) molecular diagenesis and leaching of skeletal materials in sediments; (b) density-mediated bone attrition; (c) bone macrodamage such as from burning, contact with stone tools, gnawing by carnivores or rodents, weathering, and green-bone fracturing; (d) species abundance and diversity; (e) prey body part representation and the techniques and intensity of marrow processing; (f) mortality patterns and sex ratios in common prey species (ungulates & tortoises); and, (g) the spatial distributions of skeletal materials in the deposits relative to stone tools, wood ash, and microfauna. In collaboration with other investigators, I also pursue some unexpected observations that emerged early in the research, mainly through a series of controlled experiments in bone diagenesis (Chapter 3) and, through a very different route, predator-prey simulation modeling (Chapter 8). The first of these trajectories focuses on how bone mineral diagenesis affects the quantification of archaeofaunal records and was undertaken with the aid of Fourier-transform infrared spectroscopy in collaboration with Stephen Weiner (Weizmann Institute of Science, Rehovot, Israel). As will become apparent in Chapters 2 and 4, this work is closely allied with Weiner's and Paul Goldberg's investigations of mineral microenvironment in the sediments of Hayonim Cave. The second area of conceptual exploration concerns Paleolithic predator-prey dynamics of small game animals and its implications for changes in human population densities during the Middle and Late Pleistocene. This work was done in collaboration with Todd Surovell and Natalie Munro at the University of Arizona in Tucson. The research on ungulate exploitation builds on earlier theoretical and methodological developments by the author and other zooarchaeologists. Because this aspect of human predatory ecology may have emerged quite early, the ancient Mousterian deposits of Hayonim Cave are critical to evaluating the antiquity of the sort of large game adaptations (prey age selection, carcass transport and processing) that we so often use to define modern human behavior. The implications of these research experiences extend beyond the geographic and theoretical confines of the Middle Paleolithic.

THE FAUNAS OF HAYONIM CAVE (ISRAEL):
A 200,000-YEAR RECORD OF
PALEOLITHIC DIET, DEMOGRAPHY & SOCIETY

Mary C. Stiner

With contributions by

Ofer Bar-Yosef
Anna Belfer-Cohen
Paul Goldberg
Steven L. Kuhn
Amy V. Margaris
Liliane Meignen
Natalie D. Munro
Todd A. Surovell
Bernard Vandermeersch
Stephen Weiner

For Eitan, dear friend and colleague

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