

Arch Lake Woman

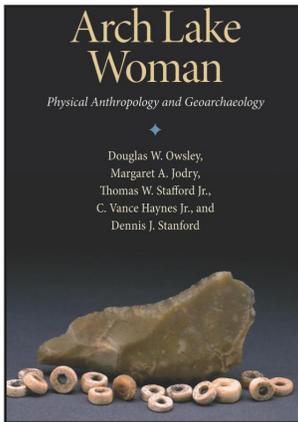
Physical Anthropology and Geoarchaeology



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Arch Lake Woman: Physical Anthropology and Geoarchaeology

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In 1967 amateur archaeologists discovered a heavily mineralized skeleton eroding out of a road cut. Recognizing its importance, they documented it carefully and removed it *en bloc* to the Blackwater Draw Museum at the University of Eastern New Mexico, where it was exhibited from 1969 to 1985. Arch Lake Woman was buried extended and supine in a ridge bordering the seasonal lake for which she is named. Buried with her was pigment, a unifacial knife, stone beads and a bone tool. None of these artifacts was diagnostic of her cultural affiliation or chronology. In 2000, as part of their larger project documenting all Paleoindian remains, Doug Owsley, his coauthors, and eight additional contributors undertook a thorough investigation of the skeleton and its context. This slim book constitutes the definitive publication on a fascinating individual.

A striking feature of this report is the diversity and sophistication of the techniques that the authors bring to bear, many of them not available when the skeleton was discovered. An introduction reviews the history of the discovery and presents a lamentably brief discussion of cleaning and conservation procedures undertaken by the late Carolyn Rose, who coped with two generations of consolidants: shellac and Butvar. The team met for a remarkably short four days of "cleaning, direct observation, sediment sampling, and controlled excavation of the cranium, lower left ribs, pelvis and limb bones" (p. 5), still covered in 2000 with heavily mineralized soil. Each of following 10 chapters presents a specialist's contribution, the whole coauthored by the interdisciplinary team.

The osteology chapter describes the nearly complete skeleton as a 17 to 19 year old female, with poor preservation of the axial elements. Photographs of newly prepared skull show considerable damage, and the facial skeleton appears to consist of well-preserved teeth and bone fragments cemented in soil. Disarticulation and taphonomic alteration of the mandible, as well as the position of the postcranial elements that were recovered *in situ*

are presented in detail. However, at less than three text pages, this chapter is briefer than it might be, and a number of questions concerning the osteology arise out of the analytical chapters that follow.

The chapter in geoarchaeology is a remarkable demonstration of the potential for thorough restudy to illuminate old collections. While the original burial site has long since eroded away, the excavation photos and the soils attached to the skeleton were related to a new geological section. The new section in turn is interpreted in the light of extensive geological and paleoclimatological research on the nearby Clovis type site, suggesting a geological date for Arch Lake Woman of 8800 to 11,000 B.P. Coring for pigment was used to determine that this was an isolated burial rather than part of a cemetery, and a chapter titled "Microprobe analysis of the Iron-bearing Sediment" establishes that the pigment with the burial is powdered ochre sand.

When Arch Lake Woman was discovered in 1967, radiocarbon dating would have consumed most of the skeleton. New AMS dating of the skeleton was undertaken by two labs, Oxford and Livermore, using differing methods for removing recent carbon, and several methods for assessing contamination. The authors argue for a consensus date of 11,260 to 11,640 B. P., a bit older than the geological date. Stable isotope values from the two labs are surprising. First, they differ substantially, reflecting the different methods for reducing contamination. Second, both indicate very high meat consumption, "at least two trophic levels above the herbivorous bison" (p. 29). The authors resist the temptation to interpret these results—one might speculate about fish consumption—and suggest that contemporary local fauna is poorly known and may have been a source for unusually high N15 values.

Cranial morphometrics and dental morphology occupy two lengthy chapters. The Arch Lake cranium is placed in the Principal Coordinates and Mahalanobis Distance analyses that will be familiar to readers of Owsley and his colleagues' earlier studies of Paleoindian crania. Her skull is large and has a low face like other early crania, but the vault is short and round, unlike them: "Although Arch Lake is unique, it may be important that it is morphometrically most similar to Gordon Creek and Horn Shelter No. 2, which are closest to it geographically" (p. 34). Her teeth are like other Paleoindians in lacking several of the distinctive features of Native American dentitions.

Post-cranial measurements are similarly unique. The upper femur is rounded rather than flattened as is common in later Amerindians, and the tibias are short with respect to the femurs. The humerus is short and very robust, a feature the authors link to hide-working. Stature is estimated at 166.5 cm, rather tall for the Southwest, as the authors expect for a person with a high-meat diet.

The chapter titled 'Burial Assemblage' describes the heavily used unifacial tool as Edwards chert fitting "more than one Paleoindian tradition" (p.54), and the beads as "white indurated talc" (p. 55). Known sources for the latter mineral are 320 to 560 km distant. The lost bone tool is described from fragments. The chapter on 'Archaeological Comparison' reviews these findings against other contemporary burials, presenting considerable new information about the Horn Shelter burials in particular. This chapter is particularly valuable for its demonstration of the considerable complexity and variability of Paleoindian mortuary practices. The Arch Lake Woman shares some features with several of her contemporaries, but is again unique with regard to the combination of aspects of mortuary ritual that she presents.

One might think that 93 pages on a single skeleton would exhaust the subject. However, many questions remain. There is no conventional superior or basal photograph of the skull, limiting the reader's appreciation of its shape. We are not told if the spheno-occipital synchondrosis was preserved, and if so whether it was closed. Observations on suture closure are likely limited by preservation, but early closure may have contributed to Arch Lake Woman's unusually short skull, and a fuller description of the sutures would be welcome. Since the age estimate is based on closed proximal epiphysis of the tibia and open epiphyses of the iliac crest and ischium, it would be helpful to know if the proximal epiphysis of humerus could be observed and if so, whether it was fused. If not, potential additional growth at this location and remodeling of the diaphysis at maturity may explain the unusually short and robust humeri. The comparative chapter reviews the extensive evidence for Paleoindian use of teeth as tools, but this interesting topic is not directly addressed in the description of the Arch Lake teeth.

Owsley and colleagues have applied an impressive range of specialties and techniques to the analysis of this exceptional find. Their study raises many questions that can be answered only through new excavation and regional synthesis of local climate and culture ecology at the end of the Pleistocene. This reader would like to know whether the many small salt pans near the Arch Lake locality were permanent lakes and what animals were responsible for the extensive bioturbation associated with the paleosol from which the burial was made, for example. This book is a *Peopling of the Americas Publication* sponsored by the Center for the Study of the First Americans at Texas A & M, and it sets a high standard for description, documentation and illustration of the remains of the most ancient inhabitants of the New World. One hopes that this remarkably detailed first publication on Arch Lake Woman is not also the last.