Paleoenvironmental: Vertebrates

Late-Pleistocene Horse (*Equus* sp.) from the Wilson-Leonard Archaeological Site, Central Texas

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The Wilson-Leonard site (41WM235) near Austin represents one of the best preserved and dated, long-term archaeological sequences in the Southern Plains. Occupations are pre-Clovis through late-Prehistoric in age (Collins 1998; Collins et al. 1993). The site is located on Brushy Creek in Williamson County, on the eastern edge of the Edwards Plateau along an ecotone with the Black Prairie. The Wilson-Leonard site has received wide attention for the recovery a late-Paleoindian human female skeleton (Wilson Component), as well as for the generalized human diet inferred for the late-Pleistocene / early-Holocene transition (Bousman 1998). Extensive subsistence and environmental data have been reported, including a well preserved vertebrate faunal assemblage (Baker 1994, 1998a, 1998b, 1998c; Balinsky 1997, 1998; Decker 1998, and Winkler 1990).

Within the faunal assemblage is a single horse bone (*Equus* sp.). Following the nomenclature of Driesch (1976:91) and Peters (1987), the bone is a complete left central tarsal (*os tarsi centrale* [navicular]. Archaeological provenience is as follows: Excavation square E28/S78; Level 39A&B; Stratigraphic Unit Isi/Icl. The central tarsal is not burned, and no cut marks or other forms of potential cultural modification were observed. This bone was recovered from an area of the site referred to as the Bone Bed Component. The Texas Department of Transportation (TxDOT) recovered the bone during 1982-1984 excavations at the site. Subsequent excavations by the Texas Archeological Research Laboratory at the University of Texas at Austin yielded no additional horse remains.

The Bone Bed Component, which overlies a Clovis component, dates to ca. 11,400-11,000 yr B.P. (Collins 1998). Stylistically, the artifact assemblage from the bone bed is difficult to interpret. Artifacts include an unfluted projectile point, 26 bifaces, an engraved stone, chipped stone tools, a mano, sandstone and hematite, and more than 3,000 debitage fragments. Associated faunal remains include the horse bone, the partial remains of at least two bison (*Bison* sp.), along with low frequencies of other taxa such as snake (Colubridae), musk turtle (*Sternotherus* sp.), bird (Phasianidae), woodrat (*Neotoma* sp.), gopher (*Geomys* sp.), muskrat (*Ondatra zibethicus*), rabbit (*Sylvilagus* sp.), canid (*Canis* sp.) and deer (*Odocoileus* sp.).

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The horse bone was identified based on comparison with skeletal material in the Zooarchaeological Research Collection, Texas A&M University and the Vertebrate Paleontology Laboratory, The University of Texas at Austin. Following the measurements of Driesch (1976:91), its greatest breadth is 4.56 cm. Late-Pleistocene and early-Holocene records of horse in Texas, along with paleoenvironmental implications, are reviewed by Toomey (1993:407-413) and Toomey et al. (1992). Kurtén and Anderson (1980:291) noted that terminal dates for native *Equus* in North America may extend to ca. 8,000 yr B.P. However, Meltzer and Mead (1983) reported the youngest reliable age for North American *Equus* at 10,370±350 yr B.P. from Jaguar Cave in Idaho. More recently, Toomey (1993:409) reported *Equus* from Hall's Cave on the western Edwards Plateau of central Texas dating to 8,700-9,200 yr B.P. He stated, however, that "Until more radiocarbon dating . . . can be done, it would be premature to claim late horse survival in central Texas" (Toomey 1993:409).

Toomey (1993:109) noted that all late-Pleistocene equids were cursorial grazers and that their presence suggests the presence of open grasslands. The bison remains from the Wilson-Leonard bone bed also reflect open grasslands at this ecotonal setting. A taxonomic assessment of the Wilson-Leonard horse remains difficult. Small late-Pleistocene equids may be of either the *E. francisci* group (stilt-legged), or the *E. alaskae* group (stout-legged) (Lundelius and Stevens 1970; Toomey 1993:408; Winans 1985, 1989). The *E. alaskae* group of Winans (1985, 1989) includes what is most commonly identified as *E. conversidens*. Distinction between the small stilt- and stout-legged forms is based on cranial and metapodial characters and morphometrics. Since the Wilson-Leonard sample produced only a single equid central tarsal, a more detailed assignment beyond *Equus* sp. could not be made. For more recent discussions of fossil horse taxonomy, the reader is referred to Azzaroli (1992, 1995), Azzaroli and Voorhies (1993), Eisenmann and Baylac (2000), and Pichardo (2000).

Grayson (1984) determined that *Equus* is second only to *Mammuthus* in terms of the number of radiocarbon dated North American late-Pleistocene sites with human associations and extinct mammals. Pichardo (2000:275) stated that horse remains are ubiquitous in Paleoindian sites. However, *Equus* is typically represented by very few individuals at any given site. Kooyman et al. (2001) provided a recent review of such associations. This contrasts with European sites such as Solutré, in which large numbers of horses were exploited in single events (Olsen 1989). Woodward (1991) suggested this is because Pleistocene North American equids lived in smaller and more widely distributed social units than European horses. Overall, while the single horse bone from Wilson-Leonard is not definitively associated with Paleoindian hunting, it adds to the known late-Pleistocene geographic distribution of the genus in the United States.

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References Cited

Azzaroli, A. 1992 Ascent and Decline of Monodactyl Equids: A Case for Prehistoric Overkill. *Annales Zoologici Fennici* 28:151-163.

Azzaroli, A. 1995 A Synopsis of the Quaternary Species of *Equus* in North America. *Bollettino della Società Paleontologica Italiana* 34(2):205-221.

Azzaroli, A., and M. R. Voorhies 1993 The Genus *Equus* in North America. The Blancan Species. *Palaeontographia Italica* 80:175-798.

Baker, B. W. 1994 Vertebrate Remains from the Wilson-Leonard site (41WM235), Williamson County, Texas: Holocene Animal Exploitation in Central Texas Prehistory. Unpublished Master's thesis, Department of Anthropology, Texas A&M University, College Station.

Baker, B. W. 1998a Chapter 33: Vertebrate Faunal Remains from the 1/4-inch and 1/8-inch Screens. In *Wilson-Leonard: An 11,000-Year Archeological Record of Hunter-Gatherers in Central Texas, Volume 5: Special Studies*, edited by M. B. Collins, pp. 1463-1509. Studies in Archeology No. 31, Texas Archeological Research Laboratory, The University of Texas at Austin; and Archeology Studies Program, Report No. 10, Texas Department of Transportation, Environmental Affairs Division.

Baker, B. W. 1998b Appendix 9: Faunal Taxa Descriptions. In *Wilson-Leonard: An 11,000-Year Archeological Record of Hunter-Gatherers in Central Texas, Volume 5: Special Studies*, edited by M. B. Collins, pp. 1685-1696. Studies in Archeology No. 31, Texas Archeological Research Laboratory, The University of Texas at Austin; and Archeology Studies Program, Report No. 10, Texas Department of Transportation, Environmental Affairs Division.

Baker, Barry W. 1998c Appendix 10: Provenience of Faunal Remains. In *Wilson-Leonard: An 11,000-Year Archeological Record of Hunter-Gatherers in Central Texas, Vol. 5: Special Studies*, edited by M. B. Collins, pp. 1697-1853. Studies in Archeology No. 31. Texas Archeological Research Laboratory, The University of Texas at Austin. Archeology Studies Program, Report No. 10, Texas Department of Transportation, Environmental Affairs Division, Austin.

Balinsky, R. L. 1997 Revision of the Pleistocene to Holocene Wilson-Leonard Microvertebrate Fauna and its Paleoenvironmental Significance. Unpublished Master's thesis, Department of Geological Sciences, The University of Texas at Austin.

Balinsky, R. 1998 Pleistocene to Holocene Wilson-Leonard Microvertebrate Fauna and its Paleoenvironmental Significance. In *Wilson-Leonard: An 11,000-Year Archeological Record of Hunter-Gatherers in Central Texas, Volume 5: Special Studies*, edited by M. B. Collins, pp. 1515-1542. Studies in Archeology No. 31, Texas Archeological Research Laboratory, The University of Texas at Austin; and Archeology Studies Program, Report No. 10, Texas Department of Transportation, Environmental Affairs Division.

Bousman, C. B. 1998 The Late Paleoindian Archeology at the Wilson-Leonard Site. In *Wilson-Leonard: An 11,000-Year Archeological Record of Hunter-Gatherers in Central Texas, Volume 1: Introduction, Background and Synthesis*, edited by M. B. Collins, pp. 161-210. Studies in Archeology No. 31, Texas Archeological Research Laboratory, The University of Texas at Austin; and Archeology Studies Program, Report No. 10, Texas Department of Transportation, Environmental Affairs Division.

Collins, M. B. (editor) 1998 *Wilson-Leonard: An 11,000-Year Archeological Record of Hunter-Gatherers in Central Texas*, Volumes 1-5. Studies in Archeology No. 31, Texas Archeological Research Laboratory, The University of Texas at Austin; and Archeology Studies Program, Report No. 10, Texas Department of Transportation, Environmental Affairs Division.

Collins, M. B., C. B. Bousman, P. Goldberg, P. R. Takac, J. C. Guy, J. L. Lanata, T. W. Stafford, and V. T. Holliday 1993 The Paleoindian Sequence at the Wilson-Leonard Site, Texas. *Current Research in the Pleistocene* 10:10-12.

Decker, Susan 1998 Chapter 36: Eggshell Analysis. In *Wilson-Leonard: An 11,000-Year Archeological Record of Hunter-Gatherers in Central Texas, Volume 5: Special Studies*, edited by M. B. Collins, pp. 1543-1551. Studies in Archeology No. 31, Texas Archeological Research Laboratory, The University of Texas at Austin; and Archeology Studies Program, Report No. 10, Texas Department of Transportation, Environmental Affairs Division.

Driesch, A. von den 1976 *A Guide to the Measurement of Animal Bones from Archaeological Sites*. Bulletin No. 1. Peabody Museum of Archaeology and Ethnology, Harvard University. Cambridge,

Massachusetts.

Eisenmann, V., and M. Baylac 2000 Extant and Fossil *Equus* (Mammalia, Perissodactyla) Skulls: A Morphometric Definition of the Subgenus *Equus*. *Zoologica Scripta* 29:89-100.

Grayson, D. K. 1984 Archaeological Associations with Extinct Pleistocene Mammals in North America. *Journal of Archaeological Science* 11:213-221.

Kooyman, B., M. E. Newman, C. Cluney, M. Lobb, S. Tolman, P. McNeil, and L. V. Hills 2001 Identification of Horse Exploitation of Clovis Hunters Based on Protein Analysis. *American Antiquity* 66(4):686-691.

Kurtén, B., and E. Anderson 1980 *Pleistocene Mammals of North America*. Columbia University Press, New York.

Lundelius, E. L., and M. S. Stevens 1970 *Equus francisci* Hay, a Small Stilt-Legged Horse, Middle Pleistocene of Texas. *Journal of Paleontology* 44(1):148-153.

Meltzer, D. J., and J. I. Mead 1983 The Timing of Late Pleistocene Mammalian Extinctions in North America. *Quaternary Research* 19:130-135.

Olsen, S. L. 1989 Solutré: A Theoretical Approach to the Reconstruction of Upper Palaeolithic Hunting Strategies. *Journal of Human Evolution* 18:295-327.

Peters, J. 1987 Cuboscaphoids, Naviculo-Cuboids, Language Barriers and the Use of Standardised Osteological Nomenclatures in Archaeozoological Studies. *Archaeozoologia* 1(2):43-46.

Pichardo, M. 2000. Valsequillo Biostratigraphy III: Equid Ecospecies in Paleoindian Sites. *Anthropologischer Anzeiger* 58(3):275-298.

Toomey, R. S., III 1993 Late Pleistocene and Holocene Faunal and Environmental Changes at Hall's Cave, Kerr County, Texas. Unpublished Ph.D. dissertation, Department of Geological Sciences, The University of Texas at Austin.

Toomey, R. S., J. A. Huebner, and T. W. Boutton 1992 Stable Carbon Isotope Ratios of *Equus* sp. and *Bison antiquus* from the Late Pleistocene Deposits at Hall's Cave, Kerr County, Texas. *Current Research in the Pleistocene* 9:112-114.

Winans, M. C. 1985 Revision of North American Fossil Species of the Genus *Equus* (Mammalia: Perissodactyla: Equidae). Unpublished Ph.D. dissertation, Department of Geological Sciences, The University of Texas at Austin.

Winans, M. C. 1989 A Quantitative Study of North American Fossil Species of the Genus *Equus*. In *The Evolution of Perissodactyls*, edited by D. R. Prothero, and R. M. Schoch, pp. 262-297. Clarendon Press, New York.

Winkler, A. J. 1990 Small Mammals from a Holocene Sequence in Central Texas and Their Paleoenvironmental Implications. *The Southwestern Naturalist* 35:199-205.

Woodward, Susan L. 1991 Late Pleistocene North American Equids: Why a Widespread Large Mammal May be Sparsely Represented in Early Archaeological Sites. In *Beamers, Bobwhites, and Blue-Points: Tributes to the Career of Paul W. Parmalee*, edited by J. R. Purdue, W. E. Klippel, and B. W. Styles, pp. 261-272. Illinois State Museum Scientific Papers Vol. 23. Springfield, Illinois.