

**PREHISTORIC SMALL GAME SNARE TRAP
TECHNOLOGY, DEPLOYMENT STRATEGY,
AND TRAPPER GENDER DEPICTED IN MIMBRES POTTERY**

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ABSTRACT.-Small game traps have been recovered from throughout much of the American Southwest and Great Basin, primarily from cave contexts where they were stored. Since these traps have not been recovered *in situ* from locations of use, no direct archaeological information has been obtained on prehistoric deployment strategies. Archaeologists have drawn from historic and ethnographic analogy to explain small trap use in prehistoric times. Prehistoric pictorial evidence of trapping technology and strategy, however, was documented in pottery motifs by the American Southwest's Mimbres culture in the eleventh century. These motifs portray the deployment of multiple snare traps to procure multiple game by male trappers. Additionally, trapping activities were probably conducted in conjunction with other hunting activities.

RESUMEN.-Se han encontrado trampas para caza menor en buena parte de Suroeste y la Gran Cuenca de los Estados Unidos de Norteamérica, principalmente en cuevas donde fueron almacenadas. Puesto que estas trampas no han sido halladas *in situ* en localidades donde estaban siendo usadas, no se ha obtenido información arqueológica directa sobre las estrategias prehistóricas de colocación de las mismas. Por ello, los arqueólogos se han basado en analogías históricas y etnográficas para explicar el uso de trampas pequeñas en tiempos prehistóricos. Sin embargo, los diseños en cerámica de la cultura Mimbres de Suroeste de los Estados Unidos en el siglo onceavo documentan evidencia pictórica de la tecnología y la estrategia de la caza con trampas. Estos diseños muestran la colocación de múltiples trampas con señuelo por parte de hombres tramperos para cazar presas múltiples. Además, las actividades de los tramperos probablemente tomaban lugar en conjunción con otras actividades de caza.

RÉSUMÉ.— L'exploration d'une grande partie du Sud-Ouest et du Grand Bassin américain a permis la mise à jour de pièges à petit gibier provenant principalement de cavernes où ils étaient remis. Ces pièges n'ont pas été retirés *in situ* de leurs lieux d'usage et, par conséquent, nous n'avons aucune information archéologique directe sur les stratégies préhistoriques d'utilisation. Ainsi, les archéologues ont dû travailler à partir d'analogies historiques et ethnographiques pour expliquer l'usage des petits pièges durant la préhistoire. Toutefois des témoignages picturaux sur la technologie et les stratégies de piégeage nous sont parvenus sous la forme de motifs de poterie. La poterie du II^e siècle provient de la culture mimbres du Sud-Ouest américain. Les motifs montrent des trappeurs mâles déployant de nombreux pièges à lacets dans le but de prendre plusieurs sortes de gibiers. Il semble également que les activités de piégeage aient été menées conjointement avec d'autres activités de chasse.

INTRODUCTION

Trap use has been documented historically and ethnographically as an effective technique for procuring animals of varying sizes (Anell 1960, 1969; Coon 1971; Hudson 1991; Oswalt 1976). This was especially true in the American Southwest and Great Basin, where much of the human-exploited animal biomass consisted of small game. For small game, traps often provided a more effective means of procurement than other hunting methods, such as the use of bows and arrows.

While small game trap use was documented in historic times in western North America (e.g., Beaglehole 1936; Beals 1933, 1943; Bennett and Zingg 1935; Cushing 1920; Kelly 1932; Loeb 1932, 1933; Pennington 1963; Radin 1923; Reagan 1919-1921; Spier 1955; Stephen 1936; Steward 1933), prehistoric use of traps for small game is not as well documented. Most prehistoric Native American traps, such as snares, were made out of perishable materials (hair, plant fibers, or wood) and are rarely preserved intact, unless recovered from dry cave contexts (e.g., Aikens 1993; Cosgrove 1947; Echlin *et al.* 1981; Elston 1986; Fowler 1963; Guernsey and Kidder 1921; Gunnerson 1959; Janetski 1979, 1980; Kidder and Guernsey 1919; Lambert and Ambler 1961; Loud and Harrington 1929; Morris 1980; Schellbach 1927). Studies such as these provide a range of data about traps, including the types of traps, their antiquity, materials, methods of construction, methods of repair, and storage or caching in caves. When recovered archaeologically, these traps closely resemble those described ethnographically for the procurement of smaller game such as birds, rodents, rabbits, and small carnivores (Beals 1933:349, 1943:16; Bennett and Zingg 1935:117; Fowler 1986:82; Gilmore 1953: 153; McKennan 1935:64; Pennington 1963:91-92). Unfortunately, because the traps were recovered from places of storage, little direct contextual information has been ascertained about prehistoric trap use or deployment.

Two studies discussing prehistoric trapping from the West and Southwest inferred that prehistoric trappers probably did not just set individual traps, but also set series of traps in "trap lines" (Echlin *et al.* 1981:65; Janetski 1979:312). This trapping strategy was inferred on the basis of the recovery of numerous bundles of multiple snares from caches in dry caves. The numbers of snares was analogous to ethnographic sources that described using multiple snares in trap lines. New

insight into prehistoric trapping comes from southwestern New Mexico in the form of pictorial evidence painted on the interior of Classic Mimbres bowls. These motifs match ethnographic data for trap line use and positively identify the use of trap lines in prehistory.

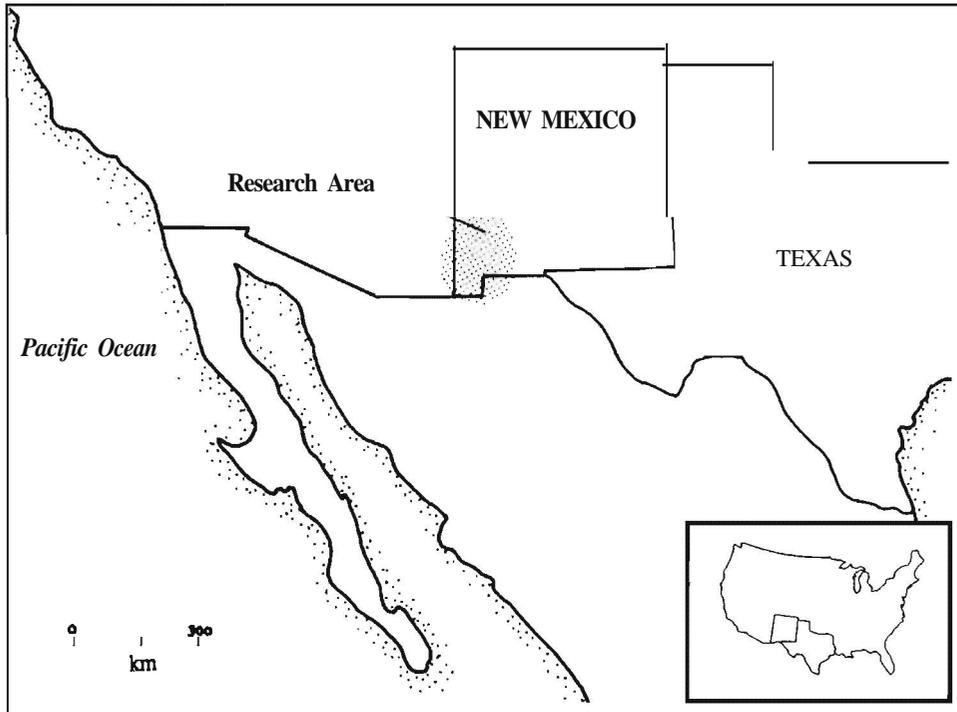


FIGURE I.-Map of Mimbres region.

MIMBRES OVERVIEW

The Mimbres (A.D. 200 - 1150) were a regional group of the Mogollon, with most of their sites concentrated in the Mimbres River Valley of southwestern New Mexico (Figure 1). During the Classic Period (A.D. 1000-1150), the Mimbres people lived in above-ground pueblo structures and produced much of the pottery for which they are known. By A.D. 1150 the core area of the Mimbres was abandoned and the pottery was no longer produced (Anyon *et al.* 1981; Anyon and LeBlanc 1980; Gilman 1987; LeBlanc 1983a, 1983b:23-33; Shafer 1982a, 1982b; Shafer and Brewington 1995; Shafer and Taylor 1986).

The Mimbres people are known for their elaborate pottery that was painted and decorated with geometric and naturalistic motifs on the inside of ceramic bowls. The naturalistic motifs are often quite explicit, detailed, and provide useful information about prehistoric lifeways by portraying specific tools, activities, ceremonies, and often the sex of the persons portrayed. Many of the motifs com-

pare closely with ethnographically documented daily, seasonal, and ceremonial activities for Puebloan and other Native American peoples (Brody 1977:203-207, 1983:123; Carr 1979:4; Fewkes 1989a [1914], 1989b [1923], 1989c [1924]; Kabotie 1982; LeBlanc 1983a:120-137; Moulard 1984:xxiv-xxv; Shaffer and Gardner 1995a, 1995b; Shaffer *et al.* 1995; Snodgrass 1973:11). The link between the motifs and the ethnographic record is important since many of the motifs portray intangible technology, behavior, and artifactual technologies that either cannot, or did not survive otherwise in an empirically recognizable manner in the Mimbres archaeological record (Shaffer and Gardner 1995a, 1995b; Shaffer *et al.* 1995).

DESCRIPTION OF MIMBRES SNARE TRAP MOTIFS

No Mimbres artifacts have been identified and reported as traps, although most Mimbres sites abound with remains of smaller animals that zooarchaeologists assumed were procured, in part, by trapping (Olsen and Olsen 1996; Powell 1977; Shaffer 1991). Two Classic Mimbres bowls and one sherd (Figures 2-4) depict the use of traps (snares) for the procurement of small game. While Figures 2 and 3 have been previously identified as trapping scenes (Brody 1977, Figure 167; 1983, Figure 98; Crimmins 1930, Plate 22; Fewkes 1989b [1923:7-8], Figure I), none of the motifs have been synthesized in relation to ethnographic data. Furthermore, not only is information provided about Mimbres snaring technology, these motifs provide insight as to the strategy of deployment, sex of the trappers, and related activities combined with trapping.

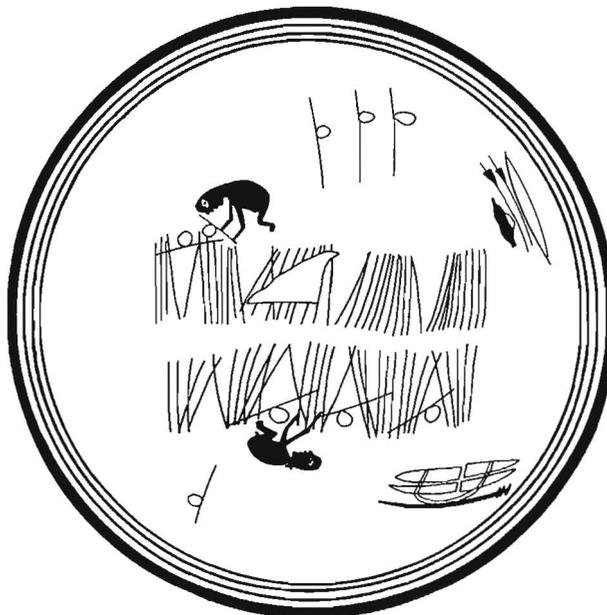


FIGURE 2.-Trappers setting snares (redrawn from Brody 1983, Figure 98).



FIGURE 3.-Male trapper, unset, and sprung snares (redrawn from Fewkes (1989, [1923:7-8, Figure1]) and Brody (1977, Figure 167).

Images of traps and trap technology are rare on Mimbres pottery. Figures 2-4 represent the only reported examples from published Mimbres literature or documented among the 5288 Mimbres vessel record cards curated in the Mimbres Archives in the Maxwell Museum of Anthropology at the University of New Mexico. While an W1 common motif, the drawing of all three snare motifs is uniform. For example, all W1 sprung snares are drawn as a loop on a straight line. All set snares were deployed in "V"-shaped gaps in the vertical lines, possibly representing grass or other wild plants, crops, or fences. The fact that each design motif was drawn similarly in each figure indicates that a common practice and technology are portrayed.

Depicted in Figure 2 are two people who are setting snare traps. Both people appear to be sitting or kneeling and bent over while setting the snares. In the hands of the person at the top of the motif is an unset snare. To the front of this person one snare has already been set (in the "V"-shaped gap in the vertical lines) and behind this person are three unset snares. The vertical lines into which the snares are placed may represent tall grass or other wild vegetation, crop rows (for garden hunting), or possibly a fence to guide animals to the snares (e.g., Crimmins 1930; Oswalt 1976:135; Spier 1955:4).

The person setting the snare at the bottom of Figure 2 appears to be a male. This assessment is made based on the presence of an apparent phallus, and the presence of a hair knot or bun on the back of *his* head, frequently portrayed on anatomically explicit males in Mimbres pottery. The sex of the person at the top of Figure 2 is not recognizable from the image depicted. By contrast to the male at the bottom of the figure (shown with anatomically and culturally male traits), the

person at the top is not shown with such sex or gender traits and therefore could be a female, adolescent, or another male depicted without detail. For example, females in Mimbres pottery motifs are usually depicted with anatomical traits such as breasts or being pregnant, and cultural traits such as string apron sashes (LeBlanc 1983a), baskets, or hair whorls.

Additional implements are present on the right side of Figure 2. At the top right are a bow, two arrows, and an unidentified bilobate object. The bilobate object may be representative of bundled snares which have been recovered throughout the West and Southwest (Echlin *et al.* 1981; Janetski 1979, 1980), or could be a bilobed gourd with a carrying strap. At the bottom right are two more objects, one of which is a sword or staff motif, while the other is an unknown object. The triangular shape in the middle of the bowl in the top row of vertical lines is part of a "kill" hole in the center of the bowl. "Kill" holes may indicate that the bowl was ritually punctured before interment with a human burial (Brody 1977:51-52; LeBlanc 1983a:64; Snodgrass 1973:10). Most of the broken pottery from the "kill" hole was recovered and reconstructed except for the missing triangle.

The result of successful trapping is presented in Figure 3. Brody (1977:203-204) described Figure 3 as a man trapping birds in a garden, although Brody felt the motif may also depict a mythical story. Crimmins (1930:74) identified this motif as a trapper with snares set in the openings along a constructed wattle fence. At the top of Figure 3, a male trapper holds an unidentified object, possibly a feather, in one hand and three snares in the other. At the bottom of the bowl's design are four traps that have been set in the gaps of vertical lines. Three traps are sprung and contain captured birds. A fourth trap remains unsprung. The "X" marks under the snared birds possibly indicate the footprints of the birds.

The group of objects at the top left of Figure 3 includes several items. The two birds depicted may be escaping the snares or may represent dead birds harvested from the snares. The footprints under these two birds appear to belong to the trapper and not the birds. Near these two birds are three additional vertical lines and a bilobate object that was similar to the object described in Figure 2. The circular shape below the trapper is a "kill" hole.

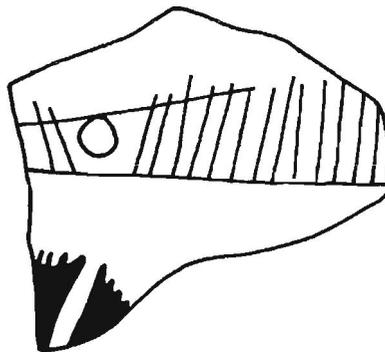


FIGURE 4.-A set snare motif painted on a ceramic sherd recovered from Swarts Ruin (redrawn from Cosgrove and Cosgrove 1932, Plate 232g).

Figure 4 consists of a sherd recovered from Swarts Ruin (Cosgrove and Cosgrove 1932, Plate 232 g). Similar to Figures 2 and 3, Figure 4 shows the vertical lines with a "V"-shaped gap, and a snare placed in the gap. Also shown at the bottom left are two shapes with jagged edges. These may represent human feet and toes, although they could also represent bird tail feathers.

DISCUSSION

In western North America, trapping was documented as a male dominated activity, where multiple traps were set to increase the chances of success (Beaglehole 1936:17, 1937:18; Beals 1933:349; Du Bois 1935:13; Kelly 1932:88; Spier 1928:113; Underhill 1991:63-64; White 1962:301-302), as seen in both Figures 2 and 3. In Figure 2 one male is setting multiple traps with another person (sex and gender undetermined), and in Figure 3 a man is depicted holding three traps in association with four other deployed traps. These graphical Mimbres representations substantiate Janetski's (1979:312) and Echlin *et al.*'s (1981) inferences that prehistoric peoples set multiple traps simultaneously, as has been described historically.

Deployment of trap lines represents a form of sequential multiple predation (Steele and Baker 1993), where the trappers attempt to increase their success and to maximize their bounty by using multiple traps during a single trapping episode. The use of these traps reflects a nonselective hunting strategy where the trapper does not choose the target prey individually in terms of age or sex (Hudson 1991), but apparently is selective in terms of the targeted prey species (in this case, birds). The presence of the bow and arrows in Figure 2 would indicate that snaring was probably combined with other animal procurement activities, such as either selective or opportunistic hunting. Thus, Figure 2 depicts a possible multi-task procurement strategy of both snaring and hunting, as has been documented historically (e.g., Wheat 1967:69-73). If the vertical lines are indeed crop vegetation, then the repeated depiction of snares placed in crop fields would be indicative of garden hunting (Linares 1976; Peterson 1982). Hence, the Mimbres could have exploited game attracted to the fields, thereby protecting the crops while snaring invading animals for food or other uses.

More information can be ascertained regarding trap use and implementation strategies for snaring of animals by the Mimbres from these motifs than if the actual artifacts themselves were recovered. This is because the scenes depicted provide a context of use by humans. While large numbers of traps have been recovered from throughout the southwestern and western United States (noted above), none have been reported from a context of use. As such, the Mimbres motifs provide a unique perspective on these artifacts and their implementation.

There is no way to know if Figures 2-4 are representative of actual events or mythical stories, are sympathetic magic, or have symbolic meanings beyond the empirical imagery. Whichever may be correct, the Mimbres artisan(s) conveyed their message using images of trapping technology. As such, these images allow archaeologists to identify behaviors and technologies of past lifeways that may not have been preserved otherwise. Even so, the symbolism beyond the empirical aspects that was intended by the painters may never be known (Brody 1977:200-210).

SUMMARY

The technology and use of traps to capture small game is well documented historically in North America. Numerous prehistoric examples of traps have been recovered from cave or rockshelter contexts. Little direct information, however, regarding trap deployment strategies has been ascertained from these finds. Three Classic Mimbres painted bowl motifs provide prehistoric confirmation of these trapping strategies and, in one case, additional subsistence information.

Mimbres snare trap motifs depict the simultaneous use of several traps to capture multiple game. This trapping strategy has been described ethnographically and is supported indirectly in prehistory through the archaeological recovery of stored snare bundles suggestive of trap lines. In addition, two of the depicted trappers are identifiable as male. This matches ethnographic accounts and provides the prehistoric documentation of the trappers' gender that has not been substantiated through other archaeological work.

The motifs described here also provide insight into trapping technology, selective and nonselective hunting, and illustrate a method of animal procurement used by the Mimbres. Using archaeological evidence, it would have been difficult to positively identify trap line deployment strategy, the gender of the trappers, or other archaeologically obscure facets of trapping had it not been for the graphic depiction of the events by the Mimbres pottery painters.

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LITERATURE CITED

- AIKENS, C. MELVIN. 1993. Archaeology of Oregon. U.S. Department of the Interior, Bureau of Land Management, Portland, Oregon.
- ANELL, BENGT. 1960. Hunting and Trapping Methods in Australia and Oceania. *Studia Ethnographica Upsaliensia* 18.
- — —. 1969. Running Down and Driving of Game in North America. *Studia Ethnographica Upsaliensia* 30.
- ANYON, ROGER, PATRICIA A. GILMAN, STEVEN A. LEBLANC. 1981. A Reevaluation of the Mogollon-Mimbres Archaeological Sequence. *The Kiva* 46(3):209-225.
- ANYON, ROGER and STEVEN A. LEBLANC. 1980. The Architectural Revolution of Mogollon-Mimbres Communal Structures. *The Kiva* 45(4):253-277.
- BEAGLEHOLE, EARNEST. 1936. Hopi Hunting and Hunting Ritual. Pp. 3-26 in *Yale University Publications in Anthropology*, No.4. Yale University Press, New Haven.
- — —. 1937. Notes on Hopi Economic Life. Pp. 5-88 in *Yale University Publications in Anthropology* 15. New Haven, Connecticut.
- BEALS, RALPH L. 1933. Ethnology of the Nisenan. *University of California Publications in American Archaeology and Ethnography* 31 :335-414.
- — —. 1943. *The Aboriginal Culture of the Cáhita Indians*. University of

- California Press, Berkeley.
- BENNETT, WENDELL C., and ROBERT M. ZINGG. 1935. *The Tarahumara: An Indian Tribe of Northern Mexico*. University of Chicago Press, Chicago.
- BRODY, J. J. 1977. *Mimbres Painted Pottery*. University of New Mexico, Albuquerque.
- . 1983. Mimbres painting. Pp. 69-125 in *Mimbres Pottery: Ancient Art of the American Southwest*, J. J. Brody, Catherine J. Scott, and Steven A. LeBlanc (editors). Hudson Hill Press, New York.
- CARR, PAT. 1979. *Mimbres Mythology*. Southwestern Studies Monograph No. 56, University of Texas, El Paso.
- COON, CARLTON S. 1971. *The Hunting Peoples*. Nick Lyons Books, New York.
- COSGROVE, C. B. 1947. *Caves of the Upper Gila and Hueco Areas in New Mexico and Texas*. Papers of the Peabody Museum of American Archaeology and Ethnology, Vol. 24. Harvard University, Cambridge, Massachusetts.
- COSGROVE, H. S. and C. B. COSGROVE. 1932. *The Swarts Ruin: A Typical Mimbres Site in Southwestern New Mexico*. Papers of the Peabody Museum of American Archaeology and Ethnology, Vol. 15. Cambridge, Massachusetts.
- CRIMMINS, COL. M. L. 1930. Some Indian illustrations prehistoric and historic. *Bulletin of the Texas Archeological and Paleontological Society* 2:69-75.
- CUSHING, FRANK HAMILTON. 1920. *Zuni Breadstuff*. Indian Notes and Monographs, Vol. 8. Museum of the American Indian, Heye Foundation, New York.
- DU BOIS, CORA. 1935. *Wintu ethnography*. University of California Publications in American Archaeology and Ethnography 36:1-148.
- ECHLIN, DONALD R., PHILIP J. WILKE, and LAWRENCE E. DAWSON. 1981. Ord Shelter. *Journal of California and Great Basin Anthropology* 3(1):49-68.
- ELSTON, ROBERT G. 1986. Prehistory of the western area Pp. 141-148 in *Handbook of North American Indians: Great Basin*, Vol. 11. W. L. d'Azevedo (editor). Smithsonian Institution, Washington, D.C.
- FEWKES, JESSE WALTER. 1989a [1914]. *The Mimbres Art and Archaeology*. Smithsonian Miscellaneous Collections, Vol. 63, No. 10. 1989 reprint, Avanyu Publishing, Albuquerque, New Mexico.
- ---. 1989b [1923]. *Designs on Prehistoric Pottery from the Mimbres Valley*, New Mexico. Smithsonian Miscellaneous Collections, Vol. 74, No. 6. 1989 reprint, Avanyu Publishing, Albuquerque, New Mexico.
- ---. 1989c [1924]. *Additional Designs on Prehistoric Mimbres Pottery*. Smithsonian Miscellaneous Collections, Vol. 76, No. 8. 1989 reprint, Avanyu Publishing, Albuquerque, New Mexico.
- FOWLER, DON D. 1963. 1961 Excavations, Harris Wash, Utah. *Glen Canyon Series* 19, University of Utah Anthropological Papers, Vol. 64. Salt Lake City, Utah.
- FOWLER, CATHERINE S. 1986. Subsistence. Pp. 64-9 in *Handbook of North American Indians: Great Basin*, Vol. 11, W. L. d'Azevedo (editor). Smithsonian Institution, Washington, D.C.
- GILMAN, PATRICIA A. 1987. Architecture as artifact: pit structures and Pueblos in the American Southwest. *American Antiquity* 52(3):538-564.
- GILMORE, HARRY W. 1953. Hunting habits of the Nevada Paiutes. *American Anthropologist* 55:148-153.
- GUERNSEY, SAMUEL JAMES and ALFRED VINCENT KIDDER. 1921. *Basket-Maker Caves of Northeastern Arizona*. Papers of the Peabody Museum of American Archaeology and Ethnology, Vol. 8, No. 2. Cambridge, Massachusetts.
- GUNNERSON, JAMES H. 1959. 1957 Excavations, Glen Canyon Area. *University of Utah Anthropological Papers*, No. 43, *Glen Canyon Series*, No. 10. Salt Lake City, Utah.
- HUDSON, JEAN. 1991. Nonselective small game hunting strategies: an ethnoarchaeological study of Aka Pygmy sites. Pp. 105-120 in *Human Predators and Prey Mortality*, Mary C. Stiner (editor). Westview Press, Boulder, Colorado.
- JANETSKI, JOEL C. 1979. Implications of snare bundles in the Great Basin and Southwest. *Journal of California and Great Basin Anthropology* 1:306-321.
- ---. 1980. Wood and reed artifacts. Pp. 75-95 in *Cowboy Cave*, J. D. Jennings

- (editor). University of Utah Anthropological Papers, No. 104.
- KABOTIE, FRED. 1982. Designs from the Ancient Mimbrenos with Hopi Interpretation, 2nd edition. Northland Press, Flagstaff, Arizona.
- KELLY, ISABEL T. 1932. Ethnography of the Surprise Valley Paiute. University of California Publications in American Archaeology and Ethnology 31(3).
- KIDDER, ALFRED VINCENT and SAMUEL J. GUERNSEY. 1919. Archeological Explorations in Northeastern Arizona. Bureau of American Ethnology, Bulletin 65. Smithsonian Institution, Washington, D. C.
- LAMBERT, MARJORIE F. and J. RICHARD AMBLER. 1961. A Survey and Excavation of Caves in Hidalgo County, New Mexico. School of American Research, Sante Fe, New Mexico.
- LEBLANC, STEVEN A. 1983a. The Mimbres People. Thames and Hudson Ltd., London.
- . 1983b. The Mimbres Culture. Pp. 23-38 in *Mimbres Pottery: Ancient Art of the American Southwest*. Paul Anbinder (editor). Hudson Mills Press, New York.
- LINARES, OLGA F. 1976. Garden hunting in the American tropics. *Human Ecology* 4(4):331-349.
- LOEB, E. M. 1932. The Western Kuksu Cult. University of California Publications American Archaeology and Ethnology 33:1-138.
- . 1933. The Eastern Kuksu Cult. University of California Publications American Archaeology and Ethnology 33:139-232.
- LOUD, LLEWELLYN L. and MARK R. HARRINGTON. 1929. Lovelock Cave. University of California Publications in American Archaeology and Ethnology, Vol. 25, No. 1. University of California Press, Berkeley.
- MCKENNEN, R. 1935. Hunting. Pp 61-76 in *Walapai Ethnography*, A. L. Kroeber (editor). *Memoirs of the American Anthropological Association*, No. 42. Menasha, Wisconsin.
- MORRIS, ELIZABETH ANN. 1980. Basketmaker Caves in the Prayer Rock District, Northeastern Arizona. *Anthropological Papers of the University of Arizona*, No. 35. University of Arizona Press, Tucson.
- MOULARD, BARBARA. L. 1984. *Within the Underworld Sky: Mimbres Ceramic Art in Context*. Twelve Trees Press, Pasadena, California.
- OLSEN, SANDRA L. and JOHN W. OLSEN. 1996. An analysis of faunal remains from Wind Mountain. Appendix 8 in *Mimbres Mogollon Archaeology: Charles C. Di Peso's Excavations at Wind Mountain*, Anne L. Woosley and Allan J. McIntyre (editors). Amerind Foundation, Inc., Archaeology Series No. 10. University of New Mexico Press, Albuquerque.
- OSWALT, WENDELL. H. 1976. *An Anthropological Analysis of Food-Getting Technology*. John Wiley & Sons, New York.
- PENNINGTON, C. W. 1963. *The Tarahumar of Mexico: Their Environment and Material Culture*. University of Utah Press, Salt Lake City.
- PETERSON, JEAN TRELOGGEN. 1982. The effect of farming expansion on hunting. *Philippine Sociological Review* 30:33-50.
- POWELL, SUSAN JOAN. 1977. Changing subsistence patterns as reflected in faunal remains from the Mimbres River area, New Mexico. Unpublished MA research paper on file with James Hill, Department of Anthropology, University of California, Los Angeles.
- RADIN, PAUL. 1923. *The Winnebago Tribe. Thirty-Seventh Annual Report of the Bureau of American Ethnology*, Smithsonian Institution, Washington, D.C.
- REAGAN, ALBERT B. 1919-1921. Hunting and fishing of various tribes of Indians. *Kansas Academy of Science, Transactions* 30:443-448.
- SCHELLBACH, LOUIS, III. 1927. Ancient bundles of snares from Nevada. *Indian Notes and Monographs* 4(3):232-240.
- SHAFFER, HARRY J. 1982a. Classic Mimbres Phase households and room use patterns. *The Kiva* 48(1-2):17-37.
- . 1982b. Prehistoric agricultural climax in southwestern New Mexico: The Classic Mimbres Phase. Pp. 3-15 in *Southwestern Agriculture: Pre-Columbian to Modern*, Henry C. Dethloff, and Irvin M. May, Jr. (editors).

- Texas A&M University Press, College Station.
- — — and ROBBIE L. BREWINGTON. 1995. Microstylistic changes in Mimbres Black-On-White pottery: examples from the NAN Ruin, Grant County, New Mexico. *The Kiva* 61:5-29.
- — — and ANNA J. TAYLOR. 1986. Mimbres Mogollon Pueblo dynamics and ceramic style change. *Journal of Field Archaeology* 13(1):43-68.
- SHAFFER, BRIAN SAWYER. 1991. The Economic Importance of the Vertebrate Faunal Remains from the NAN Ruin (LA 15049), A Classic Mimbres Site, Grant County, New Mexico, Unpublished MA thesis, Department of Anthropology, Texas A&M University, College Station.
- — —, HOLLY A. NICHOLSON, and KAREN M. GARDNER. 1995. Possible Mimbres documentation of Pueblo snake ceremonies in the eleventh century. *North American Archaeologist* 16(1):17-32.
- — — and KAREN M. GARDNER. 1995a. The rabbit drive through time: analysis of the North American ethnographic and prehistoric evidence. *Utah Archaeology* 8(1):13-25.
- — — . 1995b. The fish-carrying pole of the Mimbres: A perishable technology preserved on pottery. *The Artifact* 33(2):1-7.
- SNODGRASS, O. T. 1973. A Major Mimbres Collection by Camera: Life Among the Mimbrenos, As Depicted by Designs on Their Pottery. *The Artifact* 2:14-63.
- SPIER, LESLIE. 1928. Havasupai ethnography. *Anthropological Papers of the American Museum of Natural History* 29:83-392.
- — — . 1955. Mohave culture items. *Museum of Northern Arizona Bulletin*, No. 28. Flagstaff.
- STEELE, D. GENTRY and BARRY W. BAKER. 1993. Multiple predation: a definitive human hunting strategy. Pp. 9-37 ill From *Bones to Behavior: Ethnoarchaeological and Experimental Contributions to the Interpretation of Faunal Remains*, Jean Hudson (editor). Center for Archaeologica I Investigations, Occasional Paper No. 21. Southern Illinois University, Carbondale.
- STEPHEN, ALEXANDER M. 1936. *Hopi* Journal of Alexander M. Stephen, edited by Elsie Clews Parsons. Columbia University Press, New York.
- STEWART, JULIAN H. 1933. *Ethnography of the Owens Valley Paiute*. University of California Publications in American Archaeology and Ethnology 33:233-350.
- UNDERHILL, RUTH. 1991. *Life in the Pueblos*. Ancient City Press, Santa Fe, New Mexico.
- WHEAT, MARGARET M. 1967. *Survival Arts of the Primitive Paiutes*. University of Nevada Press, Reno.
- WHITE, LESLIE A. 1962. *The Pueblo of Sia*, New Mexico. Bureau of American Ethnology, Bulletin 184.

BOOK REVIEW

Environmental Values in American Culture. Willett Kempton, James S. Boster and Jennifer A. Hartley. Cambridge, Massachusetts and London, England: The MIT Press, 1995. \$39.95(hardcover). Pp. xiii; 320. ISBN 0-262-11191-8.

This carefully executed, clearly presented and reasoned study by three anthropologists explores an important domain: shared cultural understandings, or cultural models, related to global warming and other environmental changes in the United States. Attention to the conceptual underpinning of popular American thinking about the environment is critical "as the cultural framework shapes the issues people see as important and affects the way they act upon those issues" (p. 1). Surprisingly, given the participation of members of groups that might be ex-