

## The Chewaucan Cave Cache: A Specialized Tool Kit from Eastern Oregon

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*The Chewaucan Cave cache, discovered in 1967 by relic collectors digging in eastern Oregon, consists of a large grass bag that contained a number of other textiles and leather, including two Catlow twined baskets, two large folded linear nets, snares, a leather bag, a badger head pouch, other hide and cordage, as well as a decorated basalt maul. One of the nets returned an Accelerator Mass Spectrometry (AMS) radiocarbon date of 340±40 B.P. The cache has been noted in previous publications, but has never been fully documented. Because of the well-preserved perishables, and the direct association that the artifacts have with each other as a cache or tool kit, the assemblage is an excellent example of late Archaic hunting and textile technology, with basketry consistent with materials produced historically by the Klamath people.*

In the summer of 1967, two relic collectors were digging at Chewaucan Cave, located on Tucker Hill, within the Lake Abert-Chewaucan Marsh Basin of southeast Oregon. The collectors, John Wendler and George Warner, discovered a large grass bag containing other basketry, netting, cordage, and hide. Stephen Bedwell, a student of Luther S. Cressman's working on his doctoral dissertation research in the area, learned of their find and, with Cressman, convinced them to donate the cache to the Museum of Natural and Cultural History (MNCH) at the University of Oregon. Cressman, who by then had retired as museum director and professor of anthropology, referred to the materials, now Museum Accession 263, as the "Tucker Hill Cache." The Chewaucan Cave cache, as it is more generally known, has been noted in previous publications (Aikens 1993; Connolly 1994; Oetting 1989; Snitker 2008), but the artifact assemblage has never been fully documented.

### BACKGROUND

Chewaucan Cave faces north, about 200 feet above the Chewaucan River, on Tucker Hill, which lies between

the Upper and Lower Chewaucan marshes. Warner provided a typed description of the cave location and the collector's findings; that document is included in the museum accession file. He described the cave as being nearly filled to the ceiling with silt, stone, sticks, animal bone, and feces. On their first day of excavation, the diggers sifted through fill and basalt rocks from roof fall, finding projectile points, charred animal bone, and pieces of cordage and matting. On the second day, they discovered the large grass bag.

Warner's description noted that the bag was "located about eight feet in from the mouth of the cave and two feet below the surface." It was covered by a piece of tule matting, and lay on a bed of grass, with a sage rope looped around the bag. The bag contained two large Catlow twined baskets, a leather bag, and leather-wrapped cordage and sinew bundles. The two baskets were folded closed around other artifacts. One of the baskets was folded over two bundled nets made from Indian hemp (*Apocynum* sp.) tied with cordage. The other basket contained fragments of badger fur. The leather bag contained a conical maul, fourteen snares bundled together, a badger-head pouch, and a strip of fur which may be from a mink. The artifacts observed on the first day (lithics, bone, fragments of cordage and matting) are not curated at the museum, and Warner's description does not mention where they were taken or if they were collected.

Museum records state that a sample of the grass bag returned a radiocarbon date of 340±80 B.P. (GaK-1755). A sample was taken from one of the nets (catalog 1-31284) in 2008 and returned an AMS date of 340±40 (Beta-249775). In 1996, BLM archaeologist Bill Cannon sampled a small fragment of netting from the Lake County Museum that was reportedly recovered from "a Tucker Hill Cave" and which returned an age of 325±50 B.P. (AA-30375). Although not from the bagged cache, and with uncertain provenience, this reported age is effectively the same as the other two, which provide a calibrated age from ca. 430–320 years ago.

The cave site lies within the Lake Abert-Chewaucan Marsh Basin, which is just south of Paisley Caves and the Fort Rock Basin. The Fort Rock-Chewaucan region boasts a long history of human occupation; Dennis Jenkins' continued work at Paisley Caves documents a human presence as early as 14,500 cal B.P. (Aikens et al.

2011:49–54; Jenkins et al. 2012). C. Melvin Aikens, Thomas Connolly, Dennis Jenkins, Albert Oetting, and others have made significant contributions to our understanding of the region's climate, material culture, human settlement, and subsistence (Aikens et al. 2011; Aikens and Jenkins 1994; Jenkins et al. 2004).

Archaeological work documenting the intensive prehistoric occupation of the Chewaucan wetlands began with Luther Cressman's 1939 excursions to Chewaucan Marshes, Paisley Caves, and Summer Lake (Cressman 1942). Oetting's (1989, 1994) chronology of the Lake Abert and Chewaucan marshlands is based on projectile point typological cross-dating from two extensive surveys and some test excavations. The Late Archaic period (2,000 B.P. to the historic era) is divided into an earlier and a later period. The Chewaucan Cave cache dates to the latter—the Late Archaic II—at a time when lake water levels had declined and were close to modern elevations, likely placing significant stress on a population which relied heavily on lacustrine resources, resulting in abandonment of the area by 500 B.P. (Pettigrew 1985). Oetting (1989:231–236) suggests that the abandonment of the area may have been the result of Northern Paiute aggression, rather than primarily due to environmental stress. The population was at its highest levels, with decreased mobility evident in an increase in semi-sedentary villages closely tied to wetland resources along the river floodplain, at the south end of the lower marsh, and at Lake Abert.

## ARTIFACT DESCRIPTIONS

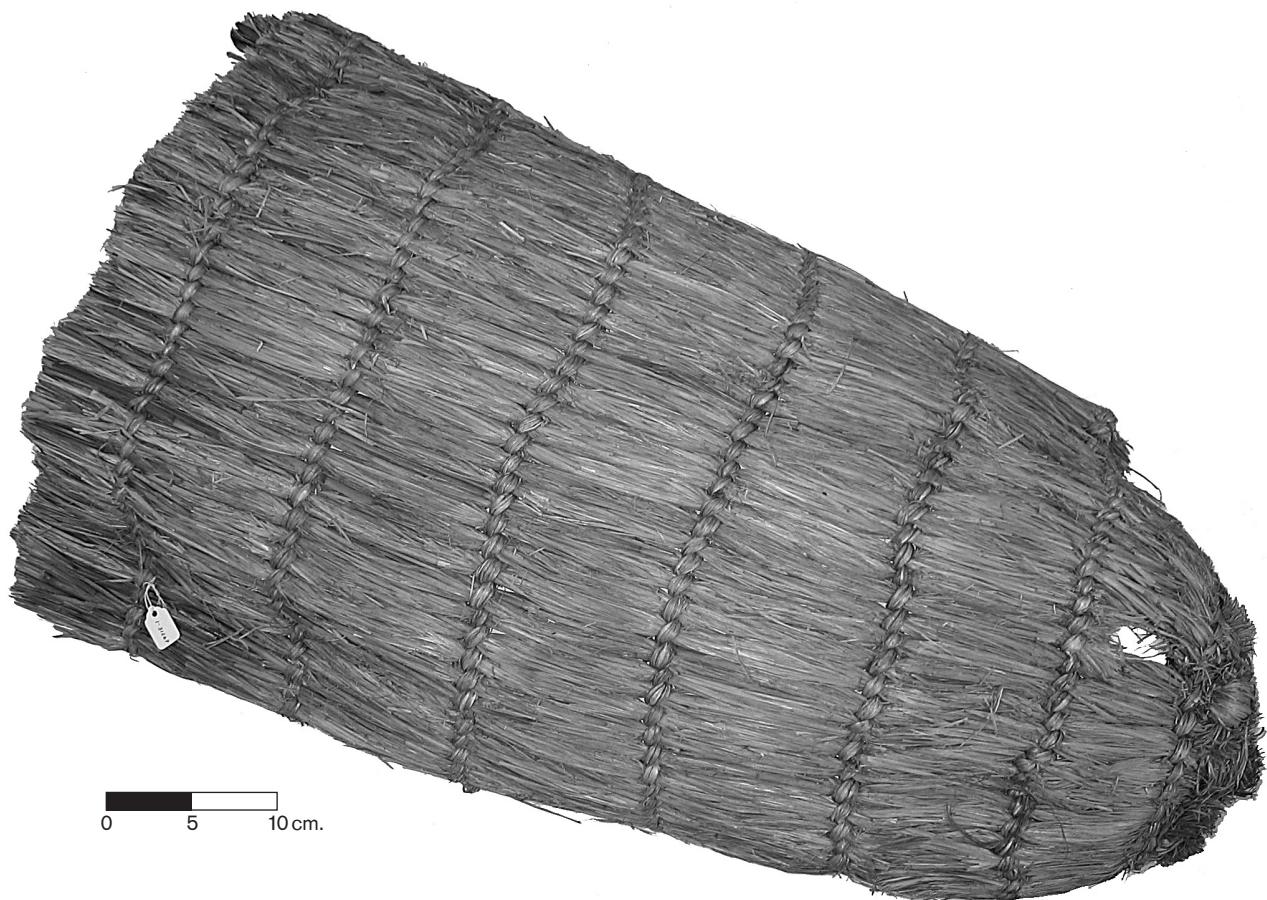
### *Textiles (basketry, matting, bags)*

The tule matting (catalog 1-31266), which Warner states was covering the grass bag, is open simple twining, with a z-twist weft, and measures 76 cm. (weft) by 48 cm. (warp). The three wefts are spaced 16–18 cm. apart, and are 14.8 mm. thick. The bundled warps consist of about four stalks of tule each. The large grass bag (catalog 1-31267), which contained the remainder of the assemblage, has a knotted start, with a continuous spiral weft, and is also open simple twining with a z-twist weft; it is 76 cm. long by 43 cm. wide at the rim (Fig. 1). A total of seven wefts are spaced 10–11 cm. apart, and the bundled warps are 9–13 cm. thick. There is cordage looped around the weft at the rim opening, which may have been a handle.

Both baskets found inside the large grass bag are of Catlow twine, a distinctive twineware named by Cressman (1942:34) for perishables found in Catlow Cave in the 1930s. Catlow twine refers to close, simple twined baskets, with weft and warp elements often made from wetland plants such as split tule or cattail. Wefts are twisted down to the right (z-twist), and decorative elements are done in overlay and false embroidery. Catlow twined basketry has been recovered at numerous dry cave sites in the northern Great Basin and is attributed to prehistoric Penutian-speaking groups (Adovasio and Andrews 1986; Connolly 1994; Cressman 1986). Historically, Klamath speakers, part of the Penutian language family, have made baskets in this fashion (Connolly 1994; Cressman 1942; Jolie and Burgett 2003). In contrast, Numic-speaking Northern Paiute groups usually made coiled baskets (Adovasio and Andrews 1986; Connolly 1994).

The first basket, a tray (1-31273), is 49 cm. in diameter and 9 cm. high, and is decorated with three horizontal bands (Fig. 2). The three bands consist of two weft rows with overlay, two undecorated rows, and two of overlay alternating every other warp. The basket is complete, but has several small holes and tears, including a large tear along the rim, and one hole repaired with a square 7 by 7 cm. patch of tanned hide (Fig. 3). The patch has been attached with an under- and over-stitch of s-twist cordage. The rim finish consists of warps folded over and tucked through the backside. This is evident only on a small segment of undamaged rim. The damaged portion of the rim looks like a clipped finish due to the missing folded over warps (Fig. 4).

The other basket is a globular-shaped storage basket (1-31272) decorated with six horizontal bands of yellow overlay (Fig. 5a). This large basket is missing about half of its wall, and has several large tears. The bands of overlay are similar to those on the tray, but consist of three weft rows with overlay, three undecorated, and another three with overlay. There is a dark horizontal band 2 cm. thick and 17 cm. from the rim which resembles mud dye. However, the band is not as clearly defined on the exterior of the basket, nor across the entire interior, suggesting the banding may have been unintentional (Fig. 5b). The basket is 50.8 cm. in diameter at the opening, and 30.5 cm. high. Z-twist hemp cordage is attached to the basket wall just below the rim in at least three locations; the function of this is unclear. The



**Figure 1. Large grass bag, MNCH catalog 1-31267.**

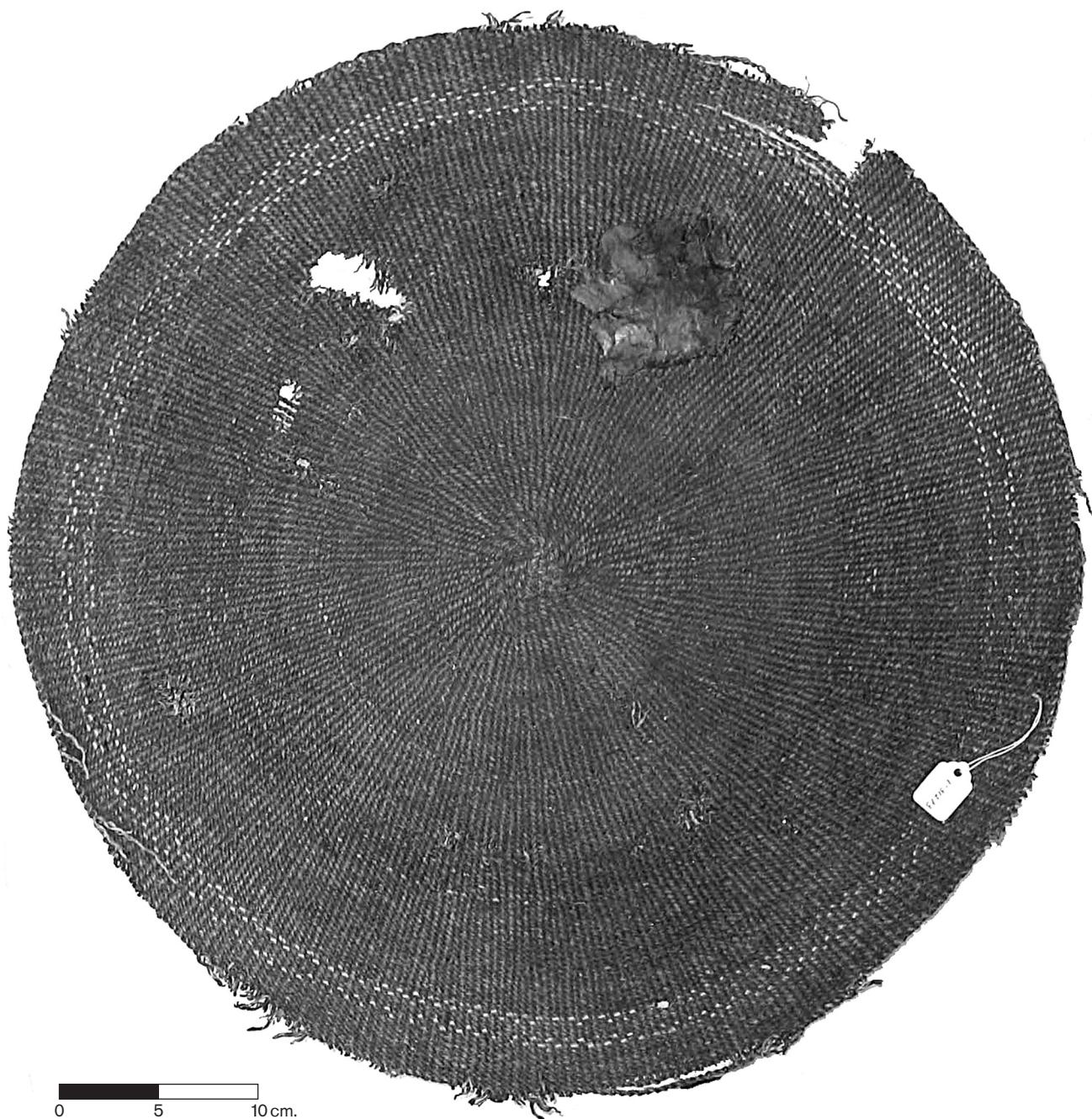
rim is finished with warp ends folded over and tucked under one of the weft cords, with warp ends visible on the interior of the basket (Fig. 6).

#### Netting

Two large linear nets (*Apocynum* sp.) were discovered bundled inside one of the Catlow twined baskets. At the time of discovery, both nets were bound together in bundles measuring a little over two feet in length. Cressman's notes state that the longer of the nets, when unfolded, measured 80 feet in length by four feet in width, though his notes do not state which specimen was the longer net. One of the nets (1-31283a) is currently on exhibit at the University of Oregon Museum of Natural and Cultural History, and was given only a cursory examination. A small net fragment (1-31283b) included in the assemblage is presumably part of this net. The other net (1-31284) was examined in greater detail and measured again; this net is approximately

18 meters in length by 0.9 meters in width (Fig. 7). Due to conservation concerns, the length was determined by measuring along the lengths of each fold in the net, which produced a measurement of 24 meters. However, when the net is stretched open along the width, the total length is reduced by about one quarter, for an estimated total length of 18 meters.

Both nets are made with knotted z-spun, s-twist, two-ply cordage. Knotted netting or looping refers to "a single-element looped structure in which the loops are secured by knots" rather than loose interconnected loops (Emery 1980:34). The knot type is a sheet bend (or reversing weaver's knot), which was widely used throughout the Great Basin, and is still a common fixed knot used in netting (Fig. 8). The weaver's knot is asymmetrical, and has dissimilar faces (Emery 1980:38). The consecutive rows of knots alternate faces, meaning that one row of knots exhibits the front face of the knot; the next row exhibits the alternate face (Fig. 9).



**Figure 2. Basket tray, MNCH catalog 1-31273.**

Knotted netting has great time depth; one net fragment from Danger Cave in Utah dates to 10,000 B.P. (Adovasio et al. 2009). Knotted netting has been found at numerous sites throughout the Great Basin, including at nearby Catlow Cave and Roaring Springs Cave. However, much of the netting found in archaeological contexts is fragmentary, making the original function

difficult to determine (Jolie 2005). Linear nets were used by the Klamath and Northern Paiute for catching rabbits, fish, and waterfowl. In Christmas Valley, Oetting's (1994) work at Buffalo Flat documents archaeological pit features filled with significant quantities of jackrabbit bone, which are interpreted as the result of rabbit drives or hunts, arguably done with linear nets. Ethnographic



**Figure 3. Basket tray with patch, MNCH catalog 1-31273.**

accounts of net hunting with long nets describe this effort as often communal, though the number of people or families involved, the length of netting (nets could be tied together), and the time of year vary across cultural regions (Adovasio et al. 2009).

Fowler's (1992:117) ethnographic accounts of net making by the Northern Paiute of Stillwater Marsh report that "Cordage in a ball or on a carved shuttle was passed around the fingers and the knot was tied at the top of the index finger. A second loop and knot followed, and the process continued. When the finger or fingers were full, the knots were slipped off and a new set started." The rows were made along the short length (the shorter dimension), until the desired length of net was reached.

Both fingers and wooden spacers were used as net gauges. Fowler reports that the gauge was three fingers



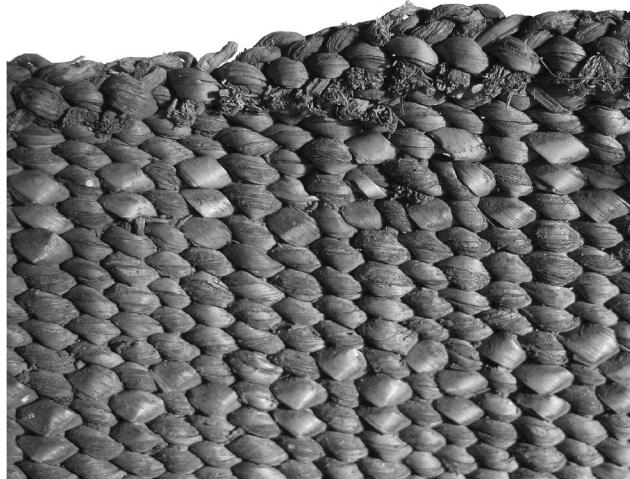
**Figure 4. Basket tray rim, MNCH catalog 1-31273.**



**Figure 5a. Storage basket, MNCH catalog 1-31272.**

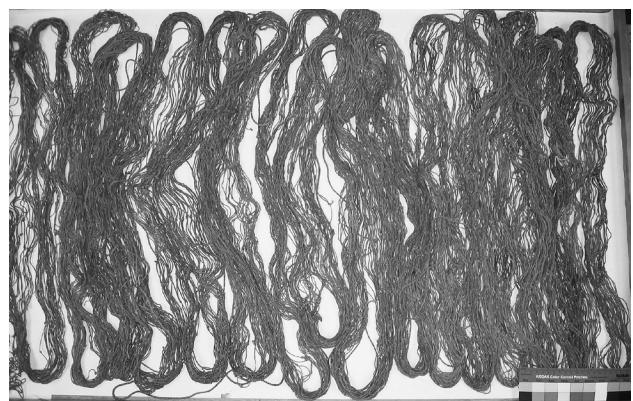


**Figure 5b.** Storage basket detail, MNCH catalog 1-31272.

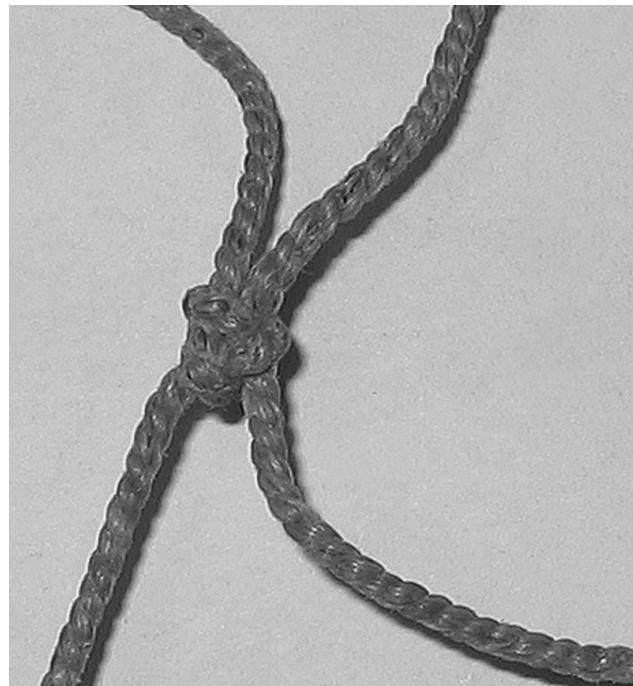


**Figure 6.** Storage basket rim, MNCH catalog 1-31272.

for a duck net (ca. 2.5 inches or 6 cm.) and four for a rabbit net (3 inches or 7–8 cm. mesh), though she also reported that the same size gauge could be used for rabbit, duck, and fish (Fowler 1992:117). The Chewaucan Cave net has a 2.0 to 2.25-inch mesh (each quarter diamond is 5 to 5.7 cm. in size). In other words, they are



**Figure 7.** Net, MNCH catalog 1-31284.



**Figure 8.** Net knot, MNCH catalog 1-31284.



**Figure 9.** Net detail, MNCH catalog 1-31284.

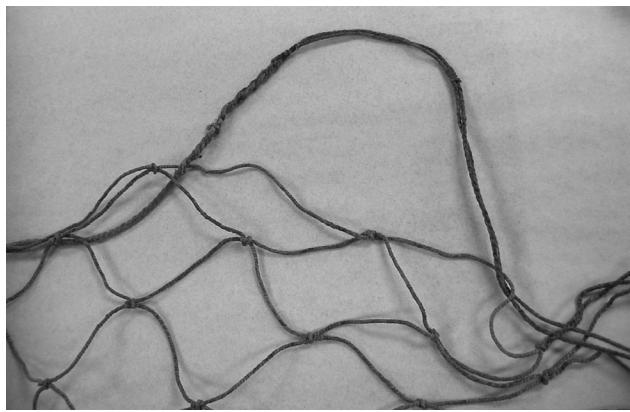


Figure 10. Net tie cords, MNCH catalog 1-31284.

three fingers in size, suggesting the net could have been used for both waterfowl and rabbits. Oetting (1989:296) suggests the nets were probably used for waterfowl (and perhaps rabbits as well), due to the cave's close proximity to two extensive marshes and their Late Archaic II date.

The net cordage is relatively fine (1.32 to 1.80 mm. in diameter, with 7–8 twists per cm.), compared to the more robust tie cords that run the length of the net on both edges. These tie cords (s-twist, z-spun) were presumably for bundling and hanging while in use. They begin and end about 4.5 meters from the ends of the net, though if pulled taut, may have stretched its full length (Fig. 10). Both cords loop sporadically along the edges, and vary in cord diameter where new cordage has been spliced in, but generally the cordage measures 2.3 to 2.6 mm. in diameter, with 3–4 twists per cm. One tie cord splits into two cords for about 2.5 meters, ending with a loop and wrapped with a leather thong. The net selvages are intact; the net was started with a chain link (Fig. 11).

The net exhibits heavy use-wear. Seven and a half meters of netting was examined by unfolding 1.5 meter sections at a time. In each section, the number of breaks and the number of repairs or cordage splices were

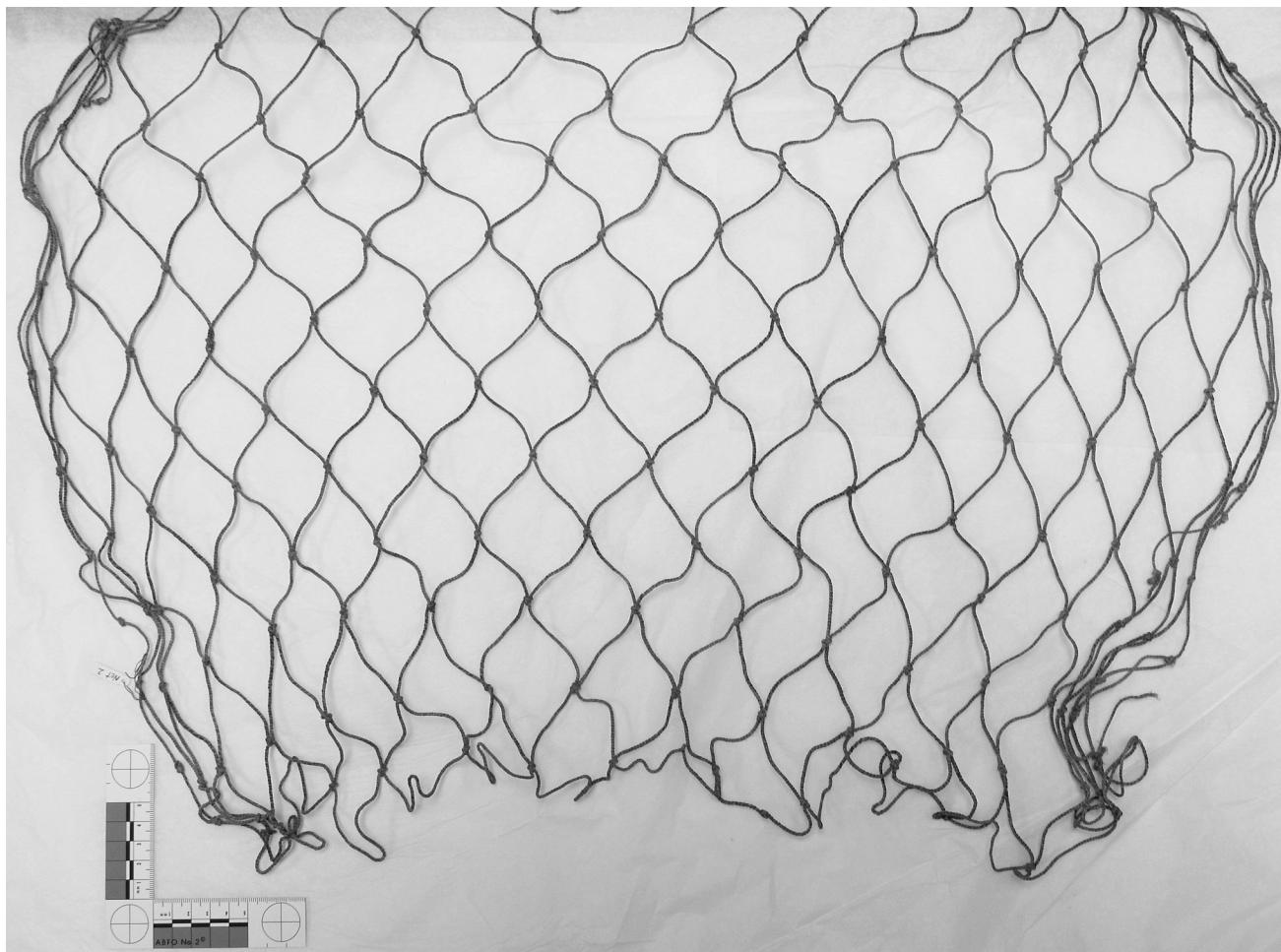


Figure 11. Net selvedge, MNCH catalog 1-31284.



Figure 12. Net repairs, MNCH catalog 1-31284.

counted, and any unique features were noted. For this 7.5 meter section, there are a total of 19 breaks and 27 repairs, or areas where cordage was either spliced in using knotting, or where a break in the existing cordage was tied together (Fig. 12). In addition, there are several areas of darker brown staining (Fig. 9).

#### Cordage

Three pieces of thick cordage or rope, all two-ply, s-spun, z-twist, were present in the large grass bag. The s-spun, z-twist rope is notable because the finer cordage spools and netting in the rest of the assemblage are z-spun, s-twist. The thickest rope (1-31271) is made of sagebrush bark with a mean cord diameter of 19 mm., with 3–4 twists per cm. The other thick tule and grass rope (1-31268) varies in diameter from 10–20 mm., and has a large knot (Fig. 13a). The other small fragment (1-31269) has a mean cord diameter of 15 mm.

One cordage is in three parts (1-31282), including two spools or bundles and one fragment (Fig. 13b). The cordage could have been used to make repairs to the net as needed, though cordage and rope were used ethnographically by the Klamath and Paiute for numerous purposes, such as bundling, lashing, and tying. This z-spun, s-twist cordage measures 2.1 to 2.8 mm. in diameter, with 3–5 twists per centimeter. The bundle pictured is spooled approximately 20 times, and is approximately 457 cm. (15 feet) long. This bundle has one cord end that has a loosely tied simple overhand knot. The other bundle appears to be of comparable length.

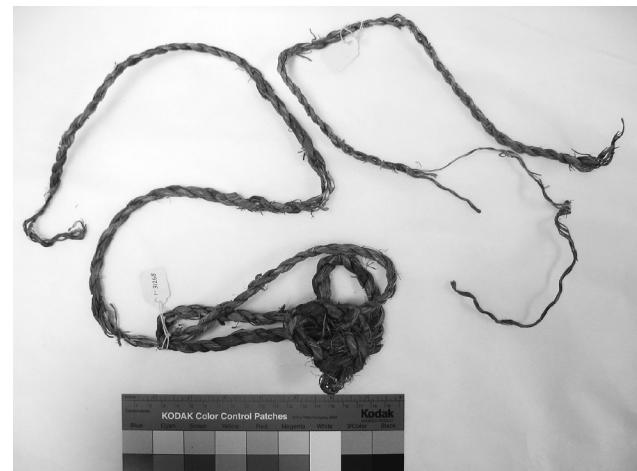


Figure 13a. Z-twist rope, MNCH catalog 1-31268.



Figure 13b. Cordage spool, MNCH catalog 1-31282.

Other cordage includes one s-spun, z-twist tule cordage fragment (1-31270) 2.70 to 3.15 mm. in diameter, with a strand diameter of 1.63 mm. The cordage has three twists per centimeter, and it is knotted at one end.

#### Leather and Hide

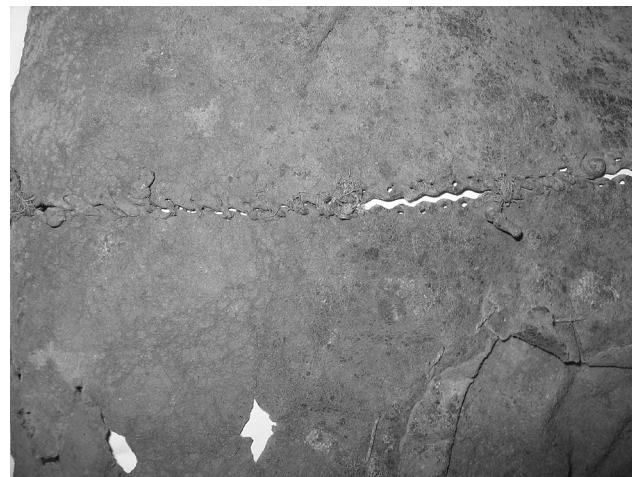
A worn leather bag (Fig. 14) containing snares, a maul, a badger-head pouch, and a strip of fur (1-31274) was also



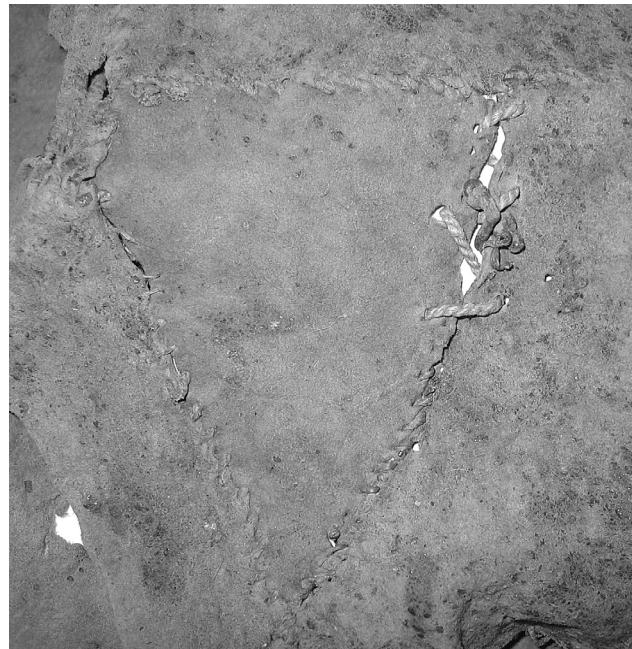
**Figure 14. Leather bag, MNCH catalog 1-31274.**

found in the large grass bag. The leather bag is roughly square in shape with rounded corners at the bottom and a cord handle. There appear to be at least three original pieces from which the bag was made, sewn vertically together from the opening to the bottom. The pieces are joined by a zigzag cut in the leather, with perforated holes through which sinew has been sewn (Fig. 15). There are three main patches where a new piece of hide has been patched over a hole by sewing under and over through both layers.

The leather bag has been repaired numerous times using various techniques and materials. Sewing materials include sinew, leather thongs, and cordage (Figs. 16 and 17). Some holes and tears have been loosely sewn with cordage (*Apocynum* sp.), looped back and forth, while other repairs have been sewn tightly with sinew. Sinew was often used for finer sewing of clothing. The cordage, including the handle, is all z-spun, s-twist. Cord diameter



**Figure 15. Leather bag showing stitching, MNCH catalog 1-31274.**



**Figure 16. Leather bag showing repair detail, MNCH catalog 1-31274.**

varies greatly; the finest has a 1.0 mm. diameter and seven twists per centimeter, while the handle is 1.23 to 1.73 mm. in diameter with 6 twists per centimeter. The handle has been attached by looping through a hole in the leather at each end. The bag opening does not appear to be finished in any particular way, and has numerous unmended small tears and holes. The numerous repairs, heavy use, and the variation in repairs suggest this bag was valued, and was repaired either by different people, or by using whatever materials were available at the time. Some repairs seem



**Figure 17. Leather bag showing repair detail, MNCH catalog 1-31274.**

to have been made in haste, while others exhibit finer sewing techniques.

The badger-head pouch (1-31275) has been made by sewing the eyes and mouth of the animal shut (Fig. 18). There are remnants of red pigment, possibly iron oxide, both inside and outside. The pouch is 16.5 cm. long, 10.2 cm. wide, and 3.17 cm. thick.

The strip of fur (1-31278) was documented as mink in the accession record, though this has yet to be verified (Fig. 19a). The fur was also described as a breech clout in the museum record, but this is speculative. The strip is 78.74 cm. long and 5.71 cm. wide. It consists of two pieces, which have been sewn together roughly in the middle. There are remnants of red pigment, which appears to be iron oxide. The ends are frayed and include leather thongs, or ties. Each thong has a knot and is looped through one of the score marks. A design element is present consisting of quarter-inch-long scored parallel lines, running along the length of the hide (Fig. 19b).

Two additional items of hide and cordage were found in the large grass bag. A hide bundle containing

macerated nettle bark (1-31279) is tied with a leather thong. Unfolded, the leather piece is roughly triangular, with one tear repaired by sewing (Fig. 20). The leather is 15.2 cm. long and 10.8 cm. wide on the side that connects to the thong; this is a single piece. Another piece of tanned hide (1-31280) includes some macerated nettle bark which has been looped through a hole in the hide. Both pieces of hide exhibit remnants of red pigment, possibly ferrous oxide.

#### *Other Artifacts*

The bundle of snares (1-31277) found in the leather bag consists of 14 individual hinge-type snares of willow (Fig. 21). Similar U-shaped, or hinge-type snares have also been found at Massacre Lake and Lovelock Cave (Heizer 1942:121; Janetski 1979; Snitker 2008). The cone-shaped maul (1-31276) is made of fine-grained basalt and is highly polished, and has a geometric design around the pointed proximal end. The design consists of a zig-zag or triangular banded design. The maul is 19.5 cm. long and is 6.05 cm. in diameter at the base (Fig. 22).

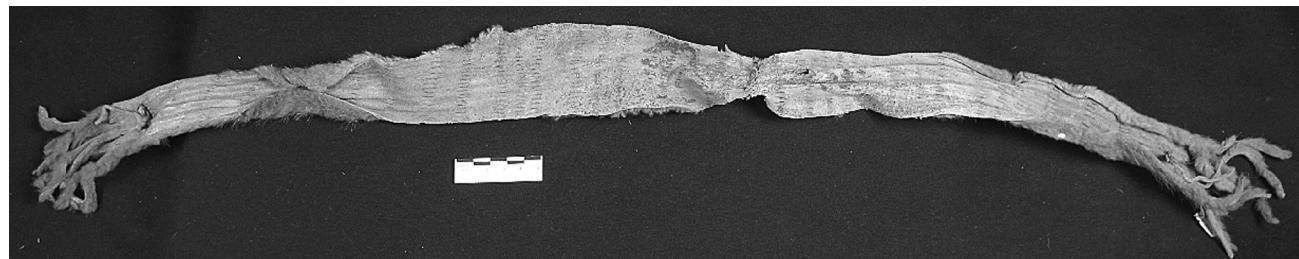
## DISCUSSION

The Chewaucan Cave cache assemblage includes perishable artifacts in excellent condition, most of which warrant further examination (including the net currently on exhibit), a more thorough documentation of the net repairs, an examination of the hide and leather to determine processing methods, and identification of the red pigment present on many of the specimens. The type of knotting used in the net repair should be examined along the entire 18 meters of netting. The heavy use-wear exhibited by the netting, basketry, and leather bag, in conjunction with the evidence of the frequency of varied repairs, is particularly noteworthy.

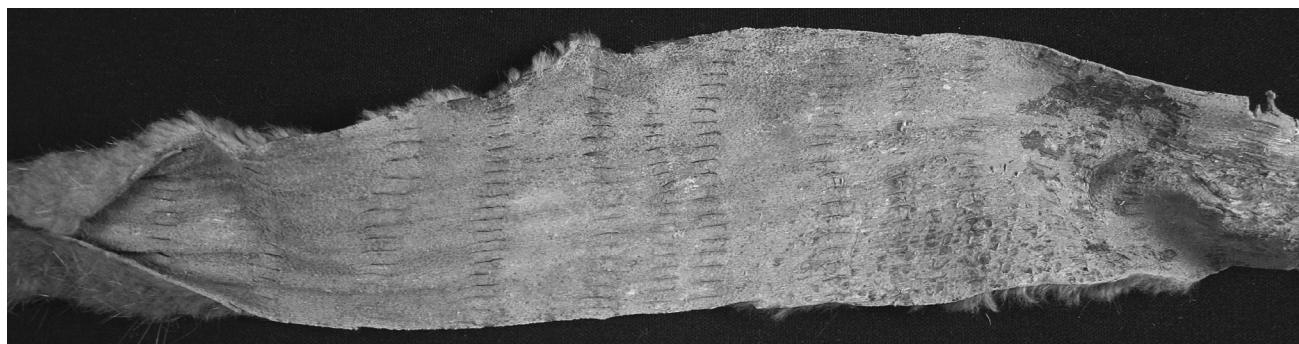
Ethnographic hide processing by the Northern Paiute, Tenino, and Umatilla has been discussed by Endzweig (2001), who outlines the processes of skinning, soaking, scraping, rinsing, drying, and (in some cases) smoking. On the basis of Ray's Culture Element Distribution list (1942), Endzweig (2001:152) notes that the Tenino, after boiling skins with alder bark, colored them with red earth or moss. Most of the hide in the Chewaucan Cave cache exhibits remnants of a red pigment that resembles ferrous oxide;



**Figure 18.** Badger head pouch, MNCH catalog 1-31275.



**Figure 19a.** Strip of fur, MNCH catalog 1-31278.



**Figure 19b.** Strip of fur showing scored parallel lines, MNCH catalog 1-31278.

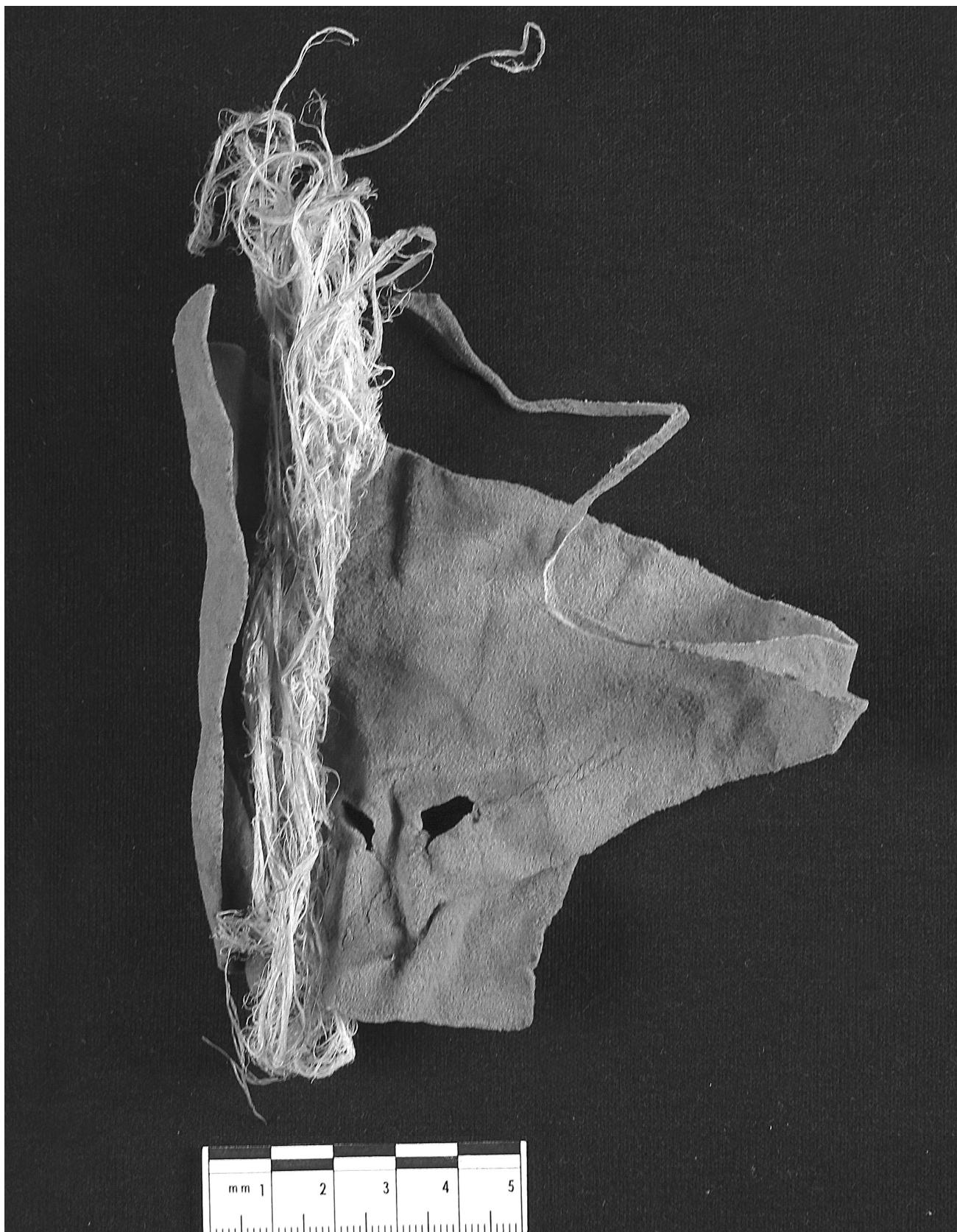


Figure 20. Hide bundle containing macerated nettle bark, MNCH catalog 1-31279.

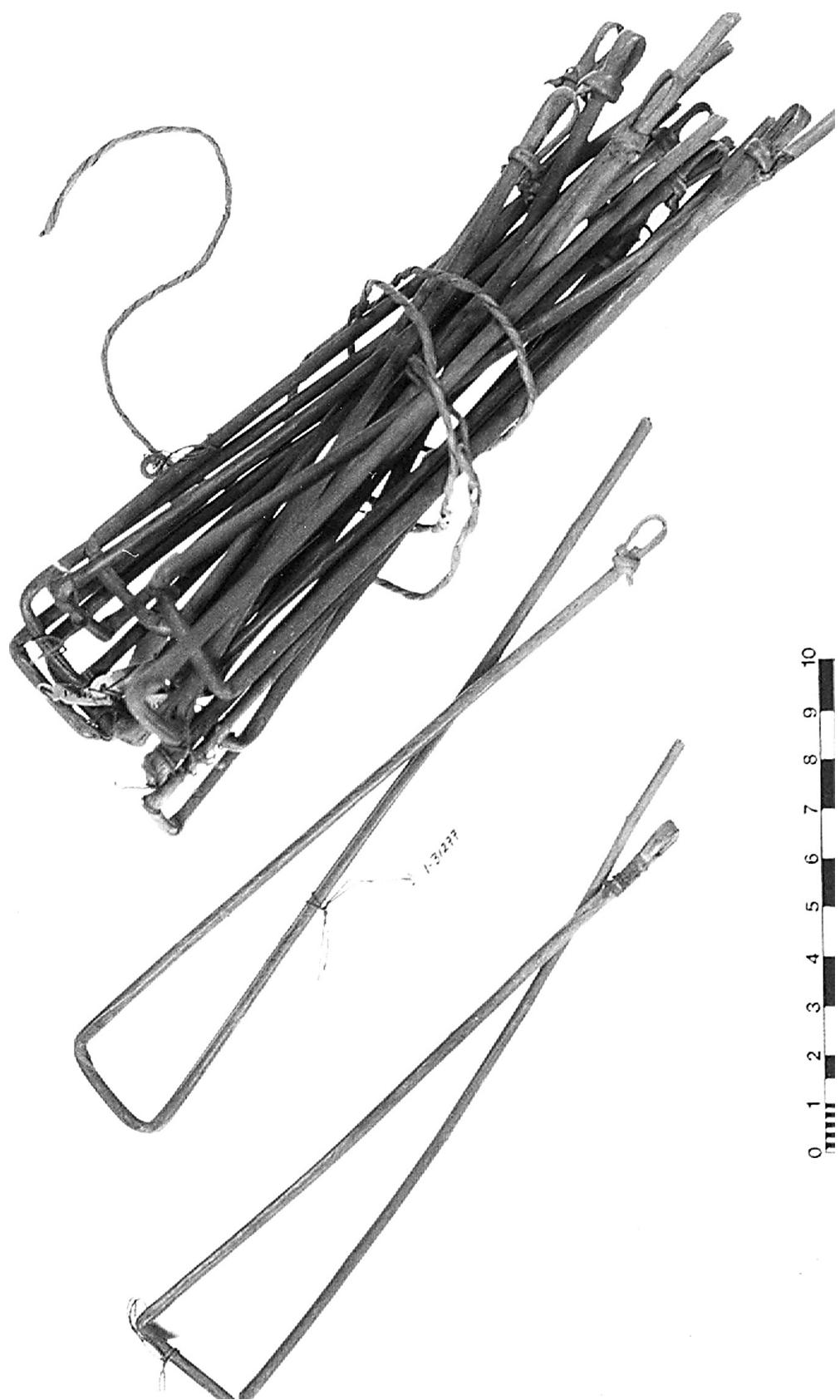


Figure 21. Bundle of snares, MNCH catalog 1-31277.



Figure 22. Maul, MNCH catalog 1-31276.

further examination may reveal whether this is due to treatment of the hide for preservation purposes during processing, or the result of some other activity.

Cross-comparative data with both archaeological and ethnographic Klamath and Northern Paiute specimens could be conducted, specifically with the two complete

nets. For example, ethnographic Northern Paiute nets examined by McCabe and Barker (2008) at the Nevada State Museum are made with s-spun, z-twist cordage, whereas the Chewaucan nets are of s-twist cordage. The metric data in Table 1 illustrate that the thicker cordage and rope is z-twist, while the relatively finer cordage

**Table 1**  
**METRIC DATA FOR CHEWAUCAN CAVE TEXTILES**

Item	Cat. No.	Type*	Mean Cord Diam. (mm.)	Twists per cm.	Length/ht. (cm.)	Width (cm.)
Grass rope	1-31269	two-ply, s-spun, z-twist	15.0	0.6	31.0	—
Sage grass rope	1-31271	two-ply, s-spun, z-twist	19.0	0.4	185.0	—
Tule cord fragment	1-31270	two-ply, s-spun, z-twist	2.9 3.0	18.0	—	—
Tule and grass rope	1-31268	two-ply, s-spun, z-twist	7.2 0.8	157.0	—	—
Apocynum cordage in two spools	1-31282	two-ply, z-spun, s-twist	2.4	4.0	Larger spool 457+	
Apocynum net	1-31284	two-ply, z-spun, s-twist	1.6 7.5		18 meters	0.9 meters
Net tie cord	1-31284	two-ply, z-spun, s-twist	2.4	3.5	—	—
Leather bag handle	1-31274	two-ply, z-spun, s-twist	1.5 6.0	—	—	
Leather bag fine cord repair	1-31274	two-ply, z-spun, s-twist	1.0	7.0	—	—
Large grass bag	1-31287	open simple twine, z-twist	—	—	76.0	43.0 at rim
Grass bag cord	1-31267	Z-twist	3.0	—	—	—
Basket tray	1-31273	Catlow: close simple twine, z-twist	—	—	9.0	49.0 diam.
Cordage sewn into leather patch on basket tray	1-31273	two-ply, s-twist	—	—	—	—
Storage basket	1-31272	Catlow: close simple twine, z-twist	—	—	30.5	50.8 diam.
Tule mat	1-31266	open simple twine, z-twist	—	—	76.2	45.7

\*S twist = down to the left, Z twist = down to the right

used in the nets and leather bag are s-twist. The spool of cordage and the net tie cords share the same mean cord diameter; it is likely this spool of cordage was used for repair, lashing, and bundling. The gauge size and net dimensions suggest the nets' use as waterfowl and perhaps rabbit nets; the staining, if analyzed, may help determine their function. The fact that the cache is in such close proximity to the Chewaucan Marshes and River further supports the argument for their being waterfowl nets.

The Chewaucan people were likely a Penutian-speaking, late Archaic people related to the historic Klamath-Modoc. They were well adapted to a marsh/wetland subsistence environment. Oetting (1989, 1994), in his evaluation of the Chewaucan Culture hypothesis, suggests that the abandonment of the Chewaucan Marsh region by the Klamath people around 500 B.P. can be attributed to Northern Paiute aggression rather than (or in addition to) environmental stress. The cache dates to 320–430 B.P., immediately following this time period of stress and regional abandonment. The chronological placement of the cache suggests that the Chewaucan people continued to use the area for logistical purposes, despite the abandonment of villages.

The Chewaucan Cave cache offers a wonderful opportunity for comparative studies. Because of the presence of well-preserved perishables, and the direct association that the artifacts have with each other as a cache or tool kit, the assemblage serves as an excellent example of late Archaic hunting and textile technology, with basketry consistent with materials produced historically by the Klamath people.

## ACKNOWLEDGMENTS

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