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Journal of California and Great Basin Anthropology

Title

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Permalink

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Journal

Journal of California and Great Basin Anthropology, 36(1)

ISSN

0191-3557

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Publication Date

2016

Peer reviewed

REPORTS

A Collection of Fiber Artifacts from Southcentral Oregon

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The Great Basin is well known for its rich record of prehistoric basketry. Although uncommon, sandals, like other types of basketry, can be directly dated and offer data regarding technology and, potentially, ethnicity. Here we report on the contents of a storage pit from a rockshelter in Warner Valley, southcentral Oregon. Its contents, which included fiber sandals, a piece of a basket or bowl, and a bundle of shredded sagebrush bark, were directly dated. These dates and the techniques used to manufacture the artifacts provide information about the spatial and temporal distribution of sandals and other basketry types in the northern Great Basin. Furthermore, they suggest that the Klamath, whose ethnographic territory did not include Warner Valley, occupied that area until relatively recently.

The Great Basin is well known for its rich record of prehistoric basketry, including mats, bowls, trays, and baskets (Adovasio 1986a; Connolly and Barker 2004; Fowler and Hattori 2008). Such artifacts, which are most often recovered from dry caves and rockshelters,

offer glimpses of technology and style rarely preserved in a region whose archaeological record is primarily characterized by open-air lithic scatters. Because basketry can be directly dated using Accelerator Mass Spectrometry (AMS) dating, it provides information about technological and stylistic changes across both space and time. While baskets and trays have been relatively well-studied, sandals have received less attention, perhaps because they are less common in the archaeological record (but see Andrews et al. 1986; Connolly 1994; Cressman 1942). While Loud and Harrington (1929) described twined sandals from Lovelock Cave early on, Cressman (1942) developed a sandal typology for the northern Great Basin, which is still widely used today (Connolly and Barker 2004). This typology includes types labeled Fort Rock, Multiple Warp, and Spiral Weft (Fig. 1). A fourth type, called V-Twined, was added later (Connolly and Barker 2004). With the exception of Spiral Weft sandals, which were started in their center, all types were started at the heel and twined to the toe, with shredded warp or open-twined toe covers and weft-loop bindings. Woven sandals show continuity across time, with the age ranges of most types spanning many millennia (Barker et al. 2012; Connolly and Barker 2004, 2008). This kind of continuity is rare among diagnostic lithic artifacts (e.g., projectile points), and sandals, along with other basketry types, offer an opportunity to investigate ethnicity and population movements (Adovasio 1986b; Adovasio and Peddler 1994; Barker 2009; Eiselt 1997). For example, V-twined sandals, all of which date to the last 400 years, are associated with Numic peoples in the Humboldt Sink, and could be used as an ethnic marker (Connolly and Barker 2004).

In this paper, we present details about the recent discovery of a pit feature filled with five sandals/sandal fragments, one basketry fragment likely representing part of a bowl, and a bundle of shredded sagebrush bark at a site in southcentral Oregon. We describe the techniques used to manufacture these items, present radiocarbon dates associated with them, speculate about how and when the pit was excavated, and situate our findings

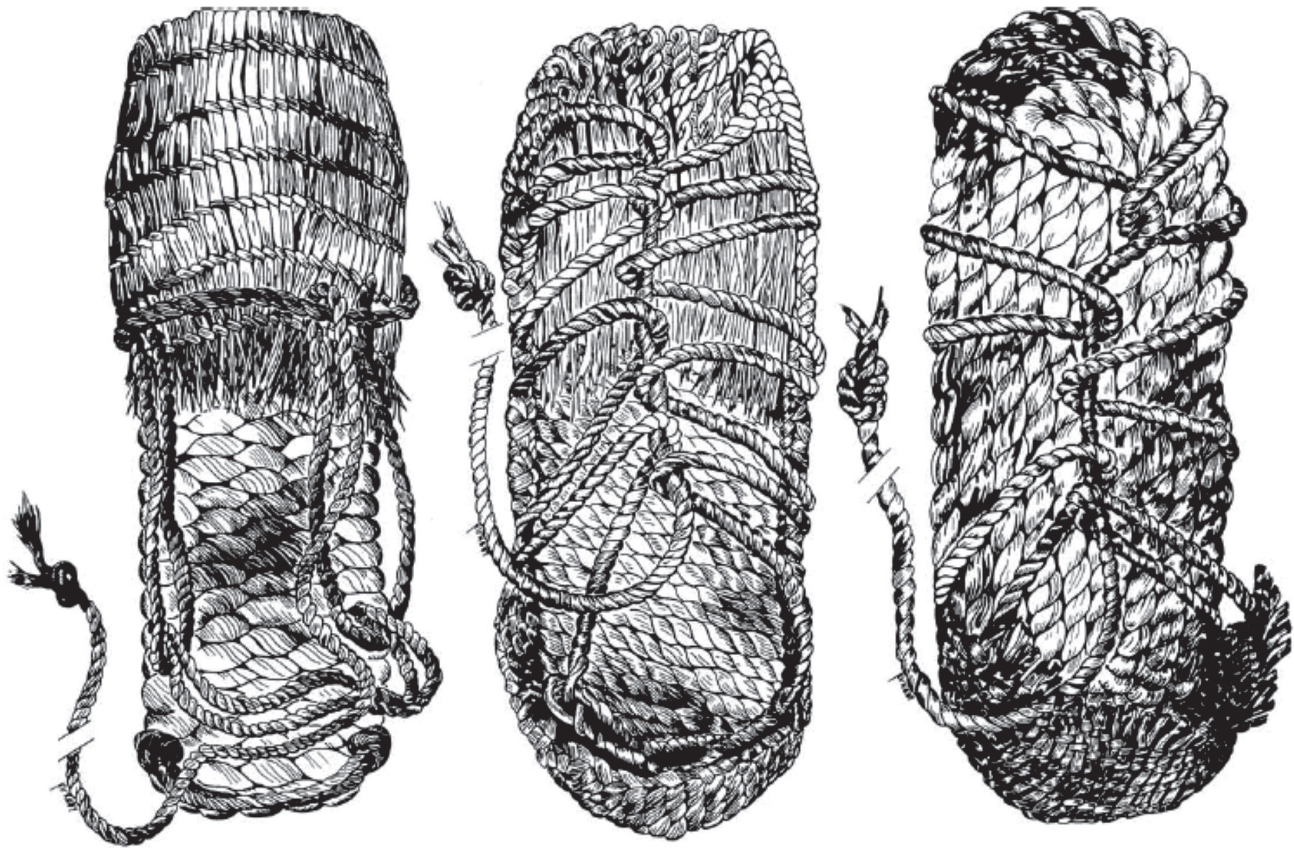


Figure 1. Fort Rock (left), Multiple Warp (center), and Spiral Weft (right) sandal types (redrawn from Connolly and Barker 2004 with permission of authors; image credit: University of Oregon Museum of Natural and Cultural History).

within our current understanding of basketry in the northern Great Basin.

LSP-1: SITE DESCRIPTION AND HISTORY OF WORK

LSP-1 is a modest rockshelter located in Warner Valley in southcentral Oregon. The site was cut into a welded tuff formation by pluvial Lake Warner during the Late Pleistocene and subsequently infilled with alluvial and aeolian sediments mixed with roof fall (Smith et al. 2014). Crews from the University of Nevada, Reno (UNR) excavated the site from 2010 to 2014, removing ~24 m.² of deposits to depths up to ~2 m. below the surface. The excavations recovered a wide range of lithic artifacts, including projectile points, bifaces, and unifaces, an extensive faunal assemblage dominated by leporids (Pellegrini 2014), and abundant ground stone artifacts. Although a few small basketry and cordage fragments

had also been recovered, no substantial perishable artifacts were encountered until 2014. Radiocarbon dates suggest that LSP-1 was intensively used during two periods: (1) the terminal Early Holocene, when occupation began ~9,650–9,300 calendar years ago (cal yr B.P.); and (2) after ~4,500 cal yr B.P. (Smith et al. 2014). A paucity of Middle Holocene radiocarbon dates suggests that LSP-1 was largely abandoned during that period, an interpretation supported by a lack of diagnostic Middle Holocene projectile points (e.g., Northern Side-notched) at the site and a paucity of Middle Holocene sites in the surrounding area (Pattee 2014).

THE F.14.10 PIT

Analyses of materials from LSP-1 are ongoing and will be reported in future publications. Here, we report on a single feature from the site—F.14.10—a pit encountered

during the 2014 field season. Careful excavation of the pit revealed a variety of basketry artifacts. Previous radiocarbon dates on features and isolated charcoal and bone fragments, as well as the site's depositional history, provide an understanding of the age of the deposits into which F.14.10 was excavated, and radiocarbon dates on six artifacts within the pit provide information on how and when the feature was constructed.

Stratigraphy and Age of the Surrounding Deposits

The LSP-1 stratigraphy has been described in detail elsewhere (Smith et al. 2014). Here, we summarize the strata most relevant to reconstructing the history of F.14.10 (Fig. 2). Stratum I (cattle manure) caps the deposits. Strata II and IV (coarse- and fine-grained facies) entered the shelter as fan deposits emanating from sediment chutes forming at the base of the formation into which LSP-1 was cut. Elsewhere in the site, strata II and IV are separated by a thin layer of aeolian sand (Stratum III) but that stratum was absent in the vicinity of F.14.10. Smith et al. (2014) grouped strata I–IV together as the “upper sediment package,” which has consistently returned dates of post-3,200 cal yr B.P. The “middle sediment package,” which is the primary artifact bearing stratum at LSP-1, consists of Stratum V (a massive unit of poorly-sorted fan gravels mixed with fine to very fine sand) and Stratum VI (a massive, silty, very fine aeolian sand), the latter of which was absent near F.14.10. Previously reported radiocarbon dates indicate that the middle sediment package started to accumulate ~9,650 cal yr B.P. and stopped accumulating ~3,200 cal yr B.P. (Smith et al. 2014). Near F.14.10, we recorded one additional middle package unit (Stratum V'—gravelly sand) not encountered elsewhere in the rockshelter. Finally, the “lower sediment package” consists of alternating sets of coarse gravel (strata VII and IX) and black sand (strata VIII and X) and is generally devoid of artifacts. It spans the period from when pluvial Lake Warner retreated from the shelter to ~9,650 cal yr B.P. The F.14.10 pit was excavated exclusively into upper-package (strata I, II, and IV) deposits against the shelter wall. As noted, those deposits consistently postdate ~3,200 cal yr B.P. elsewhere in the shelter and a fragment of willow (*Salix* sp.) charcoal from a nearby hearth, F.14.06 (see Fig. 2), returned a date of 3,160±30 radiocarbon years ago (¹⁴C B.P.) (3,448–3,340 cal yr B.P.).¹

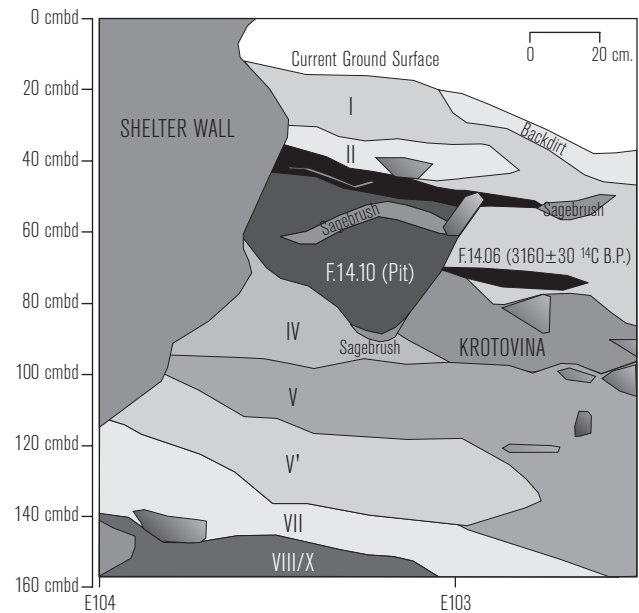


Figure 2. South profile of excavation block showing cross-section of pit feature F.14.10.

Construction of the F.14.10 Pit

F.14.10 was encountered ~35–50 cm. below datum (cmbd), or 22–38 cm. below surface. Its maximum diameter in planview was ~60 cm. and it was ~48 cm. deep at its lowest point. The pit was capped with a dark lens of ash, charcoal, and shredded sagebrush bark; it is unknown if this is part of the pit or an unrelated feature. F.14.10 sloped gently downward to the west, which is generally the case for the deposits in that portion of the shelter. In cross-section, the feature rose sharply on its western edge and more gradually on its eastern edge (see Fig. 2), suggesting that it was excavated against the shelter wall in an east-to-west direction. Small fragments of shredded sagebrush found along the contact between the pit's edges and surrounding deposits suggest that it may have been lined with sagebrush bark before being infilled. Sediment removed from the interior of the pit was variable but consisted predominantly of dark gray sandy gravel. Concentrations and isolated fragments of sagebrush bark were found within the pit fill. A large krotovina extended westward from the pit's western edge and disturbances noted within the pit during excavation suggest that the burrow penetrated the feature after it was constructed.

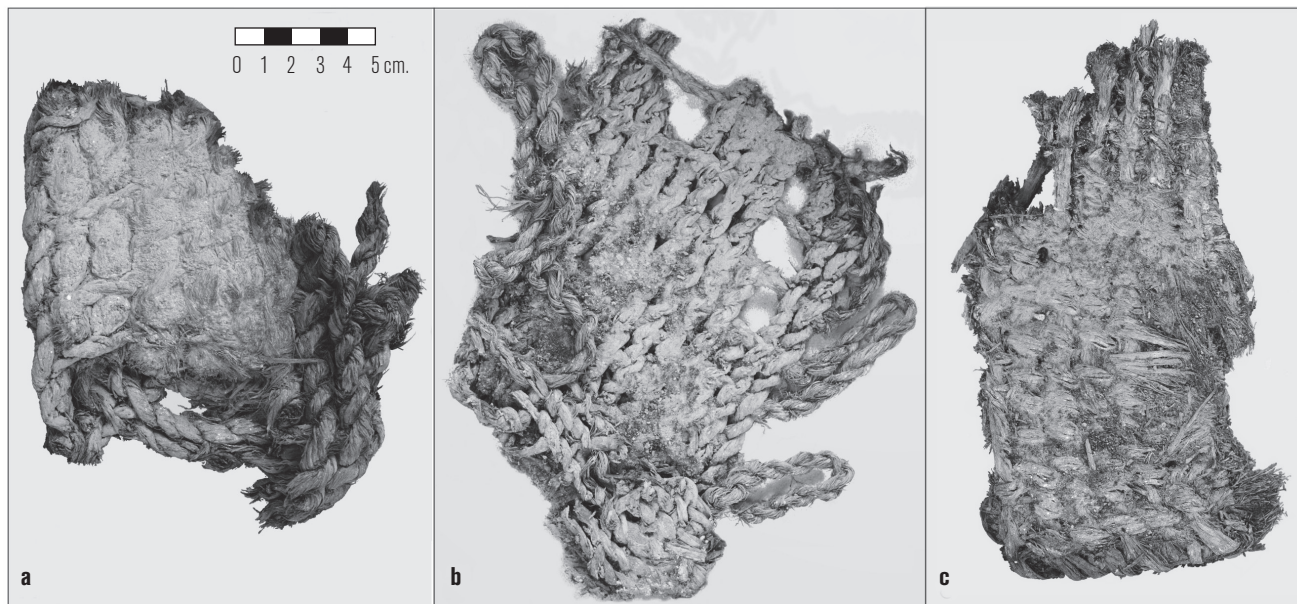


Figure 3. Sandals and sandal fragments from F.14.10: (a) FS 1297 (Spiral Weft sandal); (b) FS 1302 (Klamath style sandal); and (c) FS 1309 (Multiple Warp sandal). Images courtesy of Andrea Catacora.

Table 1

SUMMARY OF CONSTRUCTION AND CHRONOLOGICAL DATA FOR SANDALS

Construction and Chronological Data	Sandal Specimen				
	FS 1297	FS 1302	FS 1309	FS 1311	FS 1310
Figure Number	3a	3b	3c	—	—
Type	Spiral Weft	Klamath Style	Multiple Warp	Unknown	Unknown
Construction Techniques					
Twining	Closed Simple	Open Simple	Open Simple	Unknown Simple	Open Simple
Number of Warps	5	12	6+	10+	3+
Heel Pocket Construction	Present	Present	Unknown	Unknown	Unknown
Toe Flap Construction	Absent	Unknown	Absent	Unknown	Unknown
Location of Start	Center of Sole	Heel	Heel	Unknown	Unknown
Dimensions (cm.)	13 x 8 x 2	19 x 11 x 1	18 x 8 x 1	—	—
Depth (cm below datum)	62	66	62	76	76
¹⁴ C Lab Number	18236	18238	18239	18240	—
¹⁴ C Date	1,860 ± 20	1,300 ± 20	1,760 ± 20	1,880 ± 20	—
2σ cal yr B.P. Range (midpoint)	1,729–1866 (1,798)	1,179–1,288 (1,234)	1,607–1,727 (1,667)	1,736–1,879 (1,808)	—

Basketry from F.14.10

Seven fiber artifacts—five sandals/sandal fragments (Fig. 3 and Table 1), one fragment of twined basketry (Fig. 4a), and one bundle of shredded sagebrush bark (Fig. 4b)—were recovered from F.14.10. The sandals were constructed using shredded sagebrush bark while the twined basket was made of what appears to be tule. These items are described individually below.

Sandals. Various attributes related to construction technique were recorded for each sandal/sandal fragment using descriptive terminology developed by Adovasio (2010) and Hurley (1979). In turn, these data were used to assign each specimen to sandal types defined by Cressman (1942) and described in detail by Connolly and Barker (2004) (see Fig. 1). In terms of construction



Figure 4. Additional fiber artifacts from F.14.10: Catlow Twine basketry fragment (a) and sagebrush bark bundle (b).

technique, all five sandal specimens are twined, and three can be assigned to particular types.

FS 1297 is a Spiral Weft sandal. It is a sole fragment with a heel pocket and bindings. The specimen is plain twining over single warps; both warps and wefts are 2-ply, Z-twists cords. Side selvages are present. The warps at the final weft crossing are twined out to form binding loops and are then rewoven back into the sole. The specimen is undecorated and no repair or mending is evident. A portion of the heel pocket is intact. The obverse side of the sole is stuffed with grass. Use wear is present on both obverse and reverse sides of the specimen. The fragment measures 13 cm. × 8 cm. × 2 cm.

FS 1309 is a sole fragment of a Multiple Warp sandal. It is plain twining over single warps. It has unspun warps but the wefts are 2-ply with Z-twists. Side composite selvages are present: an additional unspun structural component was added to the right side of the sandal running parallel to the warps. The wefts were wrapped

around this and then woven back into the sole. The specimen is undecorated and no repair or mending is evident. No toe flap is present. Use wear is present on both the obverse and reverse sides. The fragment measures 18 cm. × 8 cm. × 1 cm.

FS 1302 is also technically a Multiple Warp sandal although it is markedly different from FS 1309, described above. It is a sole fragment retaining a portion of the heel pocket whose construction displays open simple twining with Z-twist wefts. The warps and wefts are 2-ply, Z-twist cordage. Side selvages are present and the wefts at the final warp crossing are twined out to form binding loops and are then rewoven back into the sole. The specimen is undecorated and no repair or mending is evident. No toe flap is present. Use wear is present on both obverse and reverse sides of the specimen. It measures 19 cm. × 11 cm. × 1 cm. The sandal's bindings and loose style of the twining, in which both the warps and the wefts have space between them, is more like that of ethnographic

Klamath sandals (Barrett 1910) than other Multiple Warp sandals recovered from archaeological contexts—a topic we return to below.

Finally, two smaller sandal fragments in very poor condition were recovered from F.14.10. The first fragment (FS 1311) consists of part of a single weft row with wear patterns consistent with a sandal. It is simple twining (probably open) with 2-ply Z-twist wefts. The twining is plain over single warps, the warps are unspun, and the intact weft is 2-ply Z-twist cordage. No selvages, decoration, repair/mending, or toe flap and heel pocket are evident. The second (FS 1310) is open simple twining with Z-twist wefts. It is also a very small fragment with wear patterns consistent with a sandal. This sole fragment has three unspun warps and two partial weft rows attached by a binding loop.

Catlow Twine Basketry Fragment. A large fragment (7 cm. × 5.5 cm.) of twined basketry, likely representing a piece of a large bowl or tray, was also recovered ~52 cmbd in F.14.10 (Fig. 4a). The construction technique indicates that it is a piece of semi-flexible Catlow Twine basketry: (1) it is closed, simple twining with a cordage warp; (2) the weft is Z-twist (i.e., down and to the right); and (3) the warp is S-spun, Z-twist cordage. Catlow Twine basketry is predominantly found in the northern and western Great Basin and has been dated at sites from ~9,400 to 1,050 cal yr B.P. in the western region and ~7,500 cal yr B.P. to the ethnographic period in the northern region (Camp and Barker 2014). Archaeologically, Catlow Twine is the dominant basketry type in the northern Great Basin and has been associated with ethnographic Klamath/Modoc groups (Cressman 1942; Fowler and Hattori 2012). We directly dated the basketry fragment to $1,790 \pm 20$ ^{14}C B.P. (1,814–1,627 cal yr B.P.), which overlaps with three of the four dated sandals/sandal fragments. Two other small fragments of Catlow Twine basketry were recovered from an organic-rich midden in the same general area as F.14.10, although they were not closely associated with the pit. These fragments were directly dated to $1,160 \pm 20$ ^{14}C B.P. (1,171–987 cal yr B.P.) and $1,200 \pm 20$ ^{14}C B.P. (1,177–1,062 cal yr B.P.), respectively (Camp and Barker 2014). As such, they are not from the same vessel or time period as the larger fragment recovered from F.14.10.

Sagebrush Bark Bundle. Finally, a bundle of shredded sagebrush bark measuring 8.5 cm. × 2.5 cm. × 2.5 cm. was recovered ~59 cmbd in F.14.10 (Fig. 4b). It

was directly dated to $1,340 \pm 20$ ^{14}C B.P. (1,303–1,188 cal yr B.P.), which overlaps with one of the dated sandals (FS 1302). It is difficult to know with any certainty what the function of the bundle was; we assume it served as a source of raw material for fiber artifacts.

DISCUSSION

The shape, size, and contents of F.14.10 suggest that the pit was excavated into the deposits against the shelter's wall and filled with basketry artifacts, perhaps with the intention of recovering them at a later date; however, radiocarbon dates obtained on six of the seven artifacts suggests that the feature had a more complex history. The dated items do not reflect a single moment in time as one might expect of a storage pit. Instead, when the dates are calibrated to two sigma, they fall into two distinct groups separated by at least ~300 calendar years. Furthermore, there is no clear temporal relationship between the two groups of artifacts (e.g., younger items at the top of the pit and older items at the bottom of the pit) as might be expected if the pit was dug, filled, reopened at a later date, and then refilled with additional items. Instead, the two youngest items (the sagebrush bark bundle and one of the sandals) were found with older items both above and below them (Fig. 5). There are at least two possible explanations for this fact: (1) the six items originated from different systemic and/or archaeological contexts (*sensu* Schiffer 1987) but were buried together ~1,300–1,200 cal yr B.P.; and (2) the contents of the pit were buried in two events separated by ~300 calendar years. Regarding the first possibility, the artifacts may have been collected from LSP-1 and/or other sites and placed in the pit as refuse or stored as a source of raw material for future use. Regarding the second possibility, F.14.10 may have been reopened by later visitors to LSP-1, who added additional items to it and in doing so disturbed the original contents of the pit. Alternatively, the pit may have been used twice and its contents were once in a correct vertical sequence (i.e., older items on the bottom and younger items on the top), but natural processes (e.g., animal burrowing) subsequently mixed them. At this point, we do not know which possibility is correct.

Despite the fact that items from F.14.10 are not in good stratigraphic order and may reflect post-depositional natural or cultural disturbance processes,

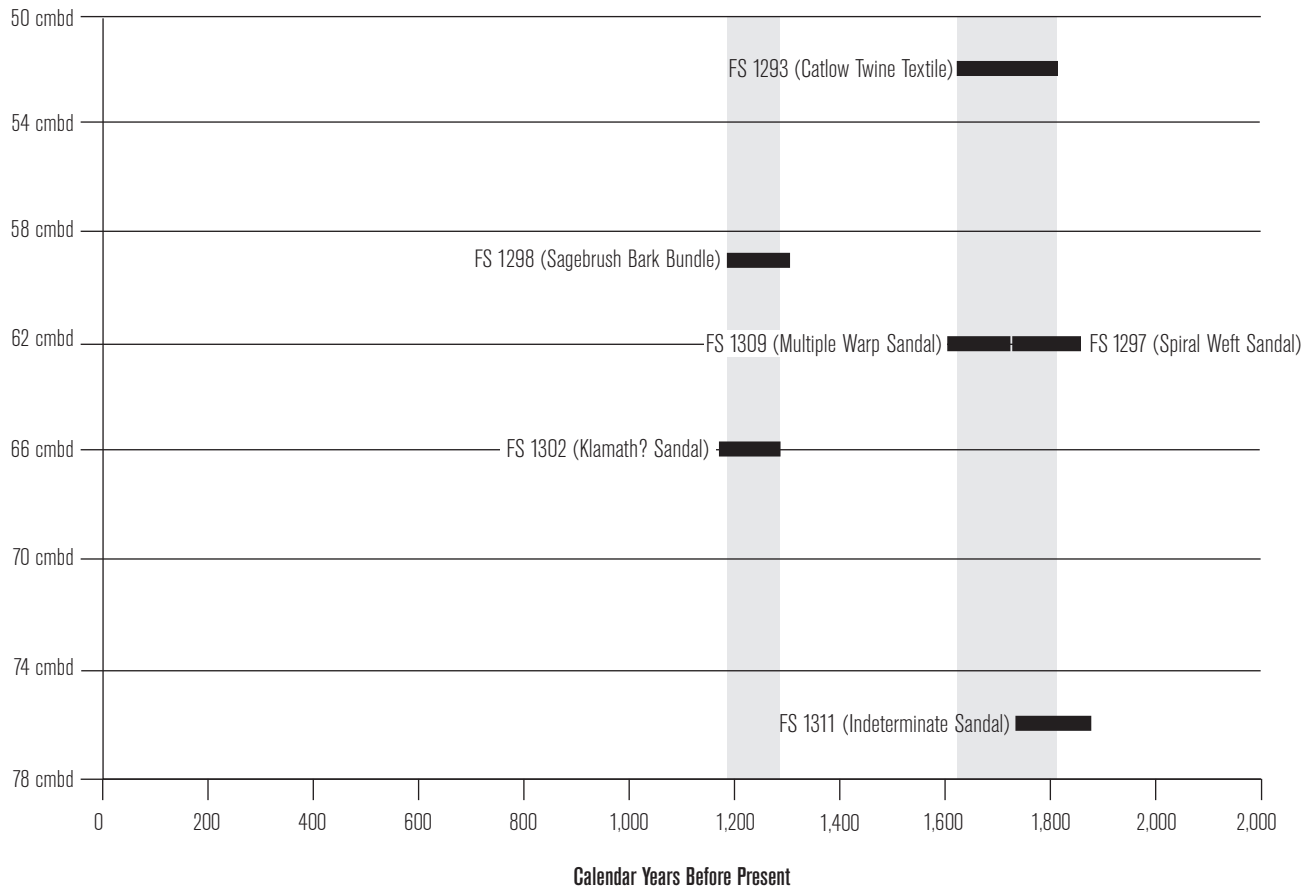


Figure 5. Calibrated age ranges (2σ) and depths below datum (cmbd) of dated textiles from F.14.10. The shaded gray areas show where multiple calibrated dates overlap and suggest the two periods during which the artifacts were manufactured.

they still provide useful information because of their direct AMS dates. First, the Catlow Twine basketry fragment recovered from the pit extends the known age range of that basketry type back ~800 calendar years in Warner Valley. Prior to the pit’s discovery, the earliest known examples in the valley were the two small fragments from LSP-1 dated to ~1,200–1,000 cal yr B.P. that we noted earlier in our paper (Camp and Barker 2014).

Second, while two of the five sandals (FS 1310 and FS 1311) were too fragmentary to be assigned to a particular type, three others clearly fall within recognizable types: FS 1297 is a Spiral Weft sandal and FS 1302 and FS 1309 are Multiple Warp sandals. Prior to our excavations at LSP-1, Spiral Weft sandals had been recovered from other caves and rockshelters in far southeastern Oregon but never west of Catlow Valley (Connolly and Barker 2004). Although the sample of dated specimens is

relatively small, Spiral Weft sandals possess a bimodal temporal distribution: (1) ~9,500–8,500 cal yr B.P.; and (2) ~1,900–1,500 cal yr B.P. (Connolly and Barker 2004). The Spiral Weft specimen from LSP-1 falls comfortably within the latter period.

Multiple Warp sandals are the most widely distributed sandal type in the Great Basin, with examples recovered from caves and rockshelters as far north as the Redmond Caves, Oregon and as far south as Winnemucca Lake, Nevada (Connolly and Barker 2004). Like Spiral Weft sandals, Multiple Warp sandals date to the Early Holocene and later times; Late Holocene specimens range in age from ~3,400 cal yr B.P. to ethnographic times (Connolly and Barker 2004). Fowler and Cannon (1992) obtained a date of 820 ± 60 ^{14}C B.P. (~730 cal yr B.P.) on a Multiple Warp sandal from elsewhere in Warner Valley. Both dated specimens from LSP-1 fall roughly in the middle of the Late Holocene age range of Multiple

Warp sandals (Connolly and Barker 2004).

Finally and most significantly, although technically a Multiple Warp type, FS 1302 is more similar to ethnographic Klamath sandals reported by Barrett (1910) than other Multiple Warp sandals recovered from archaeological contexts (Fig. 6). Barrett (1910) noted that although Klamath sandals were often made using tule rather than sagebrush, it is clear that they display the same open twining and running weft binding loops as FS 1302 from LSP-1. What remains of the heel pocket on the LSP-1 sandal also resembles those found on Klamath sandals. Barrett (1910) states that twined tule sandals were worn by the Klamath during the winter, with dry grass placed over the obverse side of the soles to provide extra warmth. Most ethnographic sandals seem to be more like models of “western” shoes than prehistoric sandals in the region; however, the ~1,200 cal yr B.P. date for FS 1302 clearly shows that ethnographic Klamath sandals were made prior to contact and were not modeled after “western” shoes.

The presence of a ~1,200-calendar-year-old sandal similar in design and construction to those worn by the ethnographic Klamath has implications for our understanding of southcentral Oregon prehistory. At the

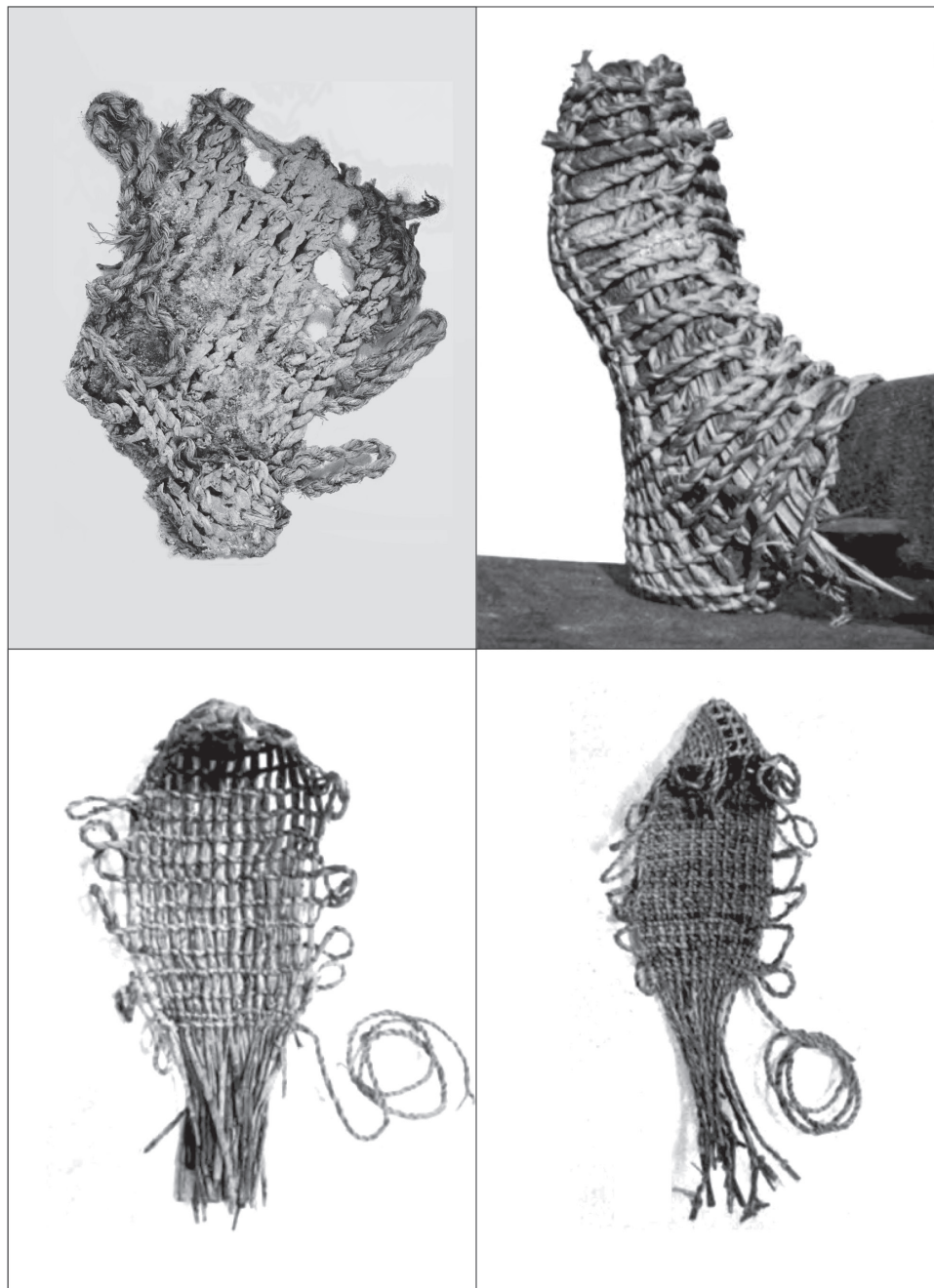


Figure 6. FS 1302 (Klamath style sandal) from F.14.10 (upper left) and three ethnographic Klamath sandals. Klamath sandal images adapted from Barrett (1910).

time of Euroamerican contact, the Klamath used a broad territory that reached within ~60 km. of Warner Valley (Spier 1930), but Warner Valley itself was part of the territory used by the Surprise Valley Paiute (Kelly 1932). Ethnographically, the textiles produced by these groups were distinctly different: Klamath basketry consisted of semi-flexible basketry types characterized by plain

twining often manufactured from tulle with a Z-twist weft slant (i.e., down to the right). Their close twined baskets (e.g., bowls, bags, burden baskets, and hats) were made using a two-ply Z-twist, S-spun tulle cordage warp, but they also manufactured open twined baskets (e.g., mats and leggings). The Northern Paiute also made twined basketry, but their baskets consisted of open simple and diagonal twined forms mostly associated with seed processing (e.g., seed beaters, and winnowing and roasting trays). In contrast to Klamath basketry, Northern Paiute basketry almost always has an S-twist weft direction (i.e., up to the right). Based on her comprehensive study of ethnicity using various elements of Warner Valley's archaeological record (e.g., house form, basketry construction techniques, vessel types), Eiselt (1997) concluded that the Klamath used the valley until just a few hundred years ago and that the Northern Paiute were recent arrivals. While we acknowledge the difficulty of linking ethnographic groups to archaeological cultures, the presence of a ~1,200-calendar-year-old sandal consistent with those worn by the Klamath and a ~1,700-calendar-year-old fragment of Catlow Twine textile similar to Klamath basketry provides additional support for Eiselt's (1997) conclusion that until relatively recently, Warner Valley was part of Klamath territory (also see Aikens 1994; Connolly and Jenkins 1997; Cressman 1942, 1986; and Oetting 1989 for additional discussions of Klamath territory prior to the ethnographic period). At a broader level, this has implications for the timing of the so-called Numic spread (Bettinger and Baumhoff 1982; Lamb 1958; Madsen and Rhode 1994).

ACKNOWLEDGEMENTS

Fieldwork at LSP-1 was made possible through logistical and financial support from the USDO, Bureau of Land Management, Lakeview District, Oregon, Lakeview Resource Area, and the Great Basin Paleoindian Research Unit at the University of Nevada, Reno. Bill Cannon (Lakeview BLM) and Gene Hattori (Nevada State Museum) contributed to the analysis of the LSP-1 textiles, and staff at the Nevada State Museum helped to construct storage boxes for the sandals. Andrea Catacora photographed the LSP-1 sandals. Students and staff from the 2011-2013 UNR field schools and the UNR Department of Anthropology were instrumental in our work at LSP-1. Thanks to Thomas Connolly and Catherine Fowler for their helpful comments on our paper and the staff of the *Journal of California and Great Basin Anthropology* for their assistance throughout the publication process.

NOTE

¹Radiocarbon dates calibrated to 2σ with OxCal v.4.2 online radiocarbon program using IntCal 09 curve. Calendar year equivalents provided for radiocarbon ages were estimated using Appendix 1 in Grayson (2011).

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