

12 MILLENIA OF PERISHABLE TECHNOLOGIES AT COUGAR MOUNTAIN CAVE, OREGON

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COUGAR MOUNTAIN CAVE



Photo by Brent McGregor



JOHN COWLES EXCAVATIONS - 1958



COUGAR MOUNTAIN CAVE

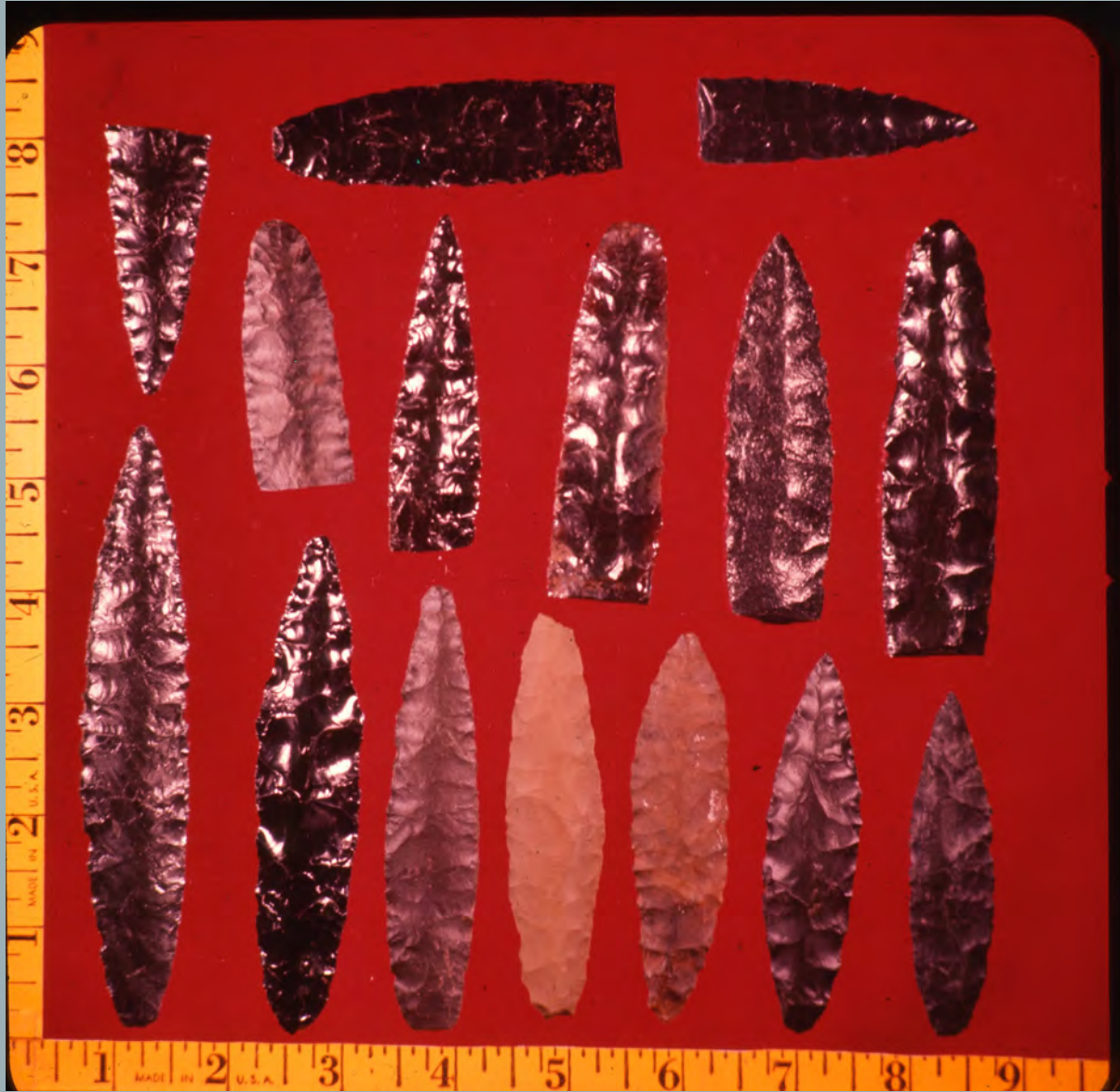
IN SOUTH CENTRAL OREGON

By JOHN COWLES

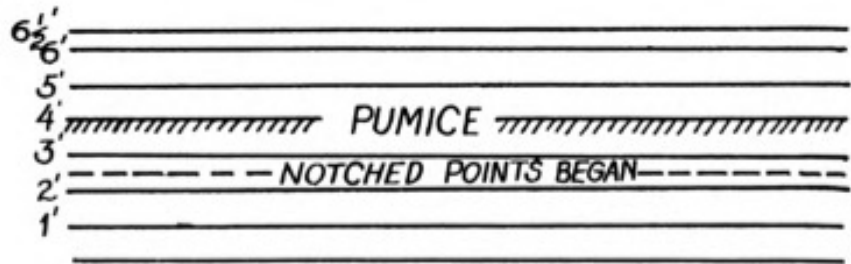
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COWLES STRATIGRAPHIC NOTES



"All three were in a small crevice 12 inches from the top of the diggings."

"All buffalo bones were located in the bottom two feet of earth."

"Leather, most plentiful in the bottom two and one-half feet..."

"All were found below pumice."



COLLABORATORS



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Pam Endzweig



TOM CONNOLLY



NOTE ON METHODS



UNR
Human Paleoecology
and Archaeometry Lab



1.3 mg of charcoal
1.8 mg of sagebrush



Cougar Mountain Cave Sum

n=210

Radiocarbon determination (BP)

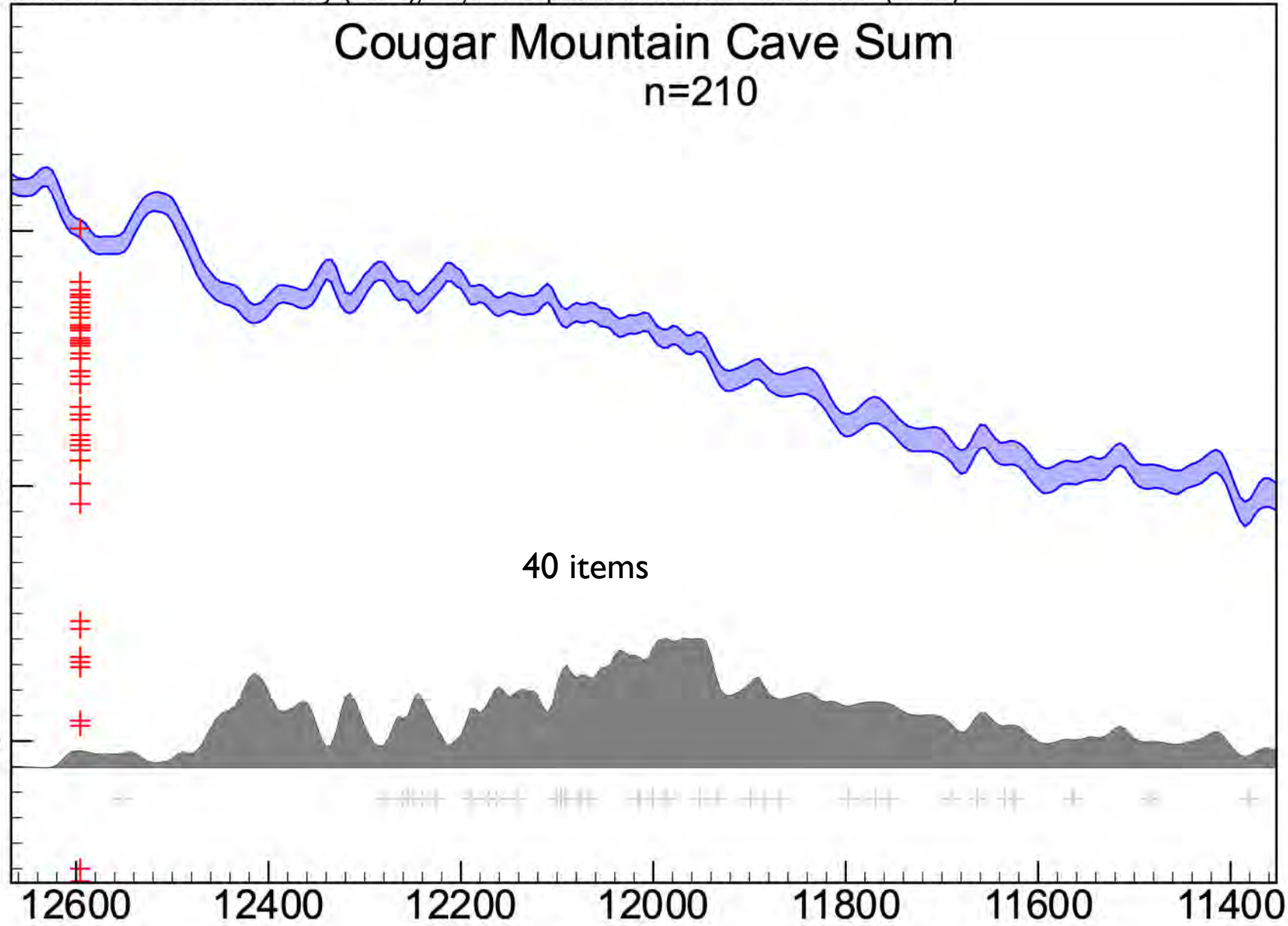
10500
10000
9500

40 items

12600 12400 12200 12000 11800 11600 11400

Calendar date (BP)

Median points



Selected Papers from the 24th Radiocarbon and 10th Radiocarbon & Archaeology International Conferences, Zurich, Switzerland, 11–16 Sept. 2022

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EXPERIMENTAL OBSERVATIONS ON PROCESSING LEATHER, SKIN, AND PARCHMENT FOR RADIOCARBON DATING

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ABSTRACT. Skin-based samples (leather, skin, and parchment) in archaeological, historic and museum settings are among the most challenging materials to radiocarbon (¹⁴C) date in terms of removing exogenous carbon sources—comparable to bone collagen in many respects but with much less empirical study to guide pretreatment approaches. In the case of leather, the ¹⁴C content of materials used in manufacturing the leather can vary greatly. The presence of leather manufacturing chemicals before pretreatment and their absence afterward is difficult to demonstrate, and the accuracy of dates depends upon isolating the original animal proteins and removing exogenous carbon. Parchments differ in production technique from leather but include similar unknowns. It is not clear that lessons learned in the treatment of one are always salient for treating the other. We measured the ¹⁴C content of variously pretreated leather, parchment skin samples, and extracts, producing apparent ages that varied by hundreds or occasionally thousands of years depending upon sample pretreatment. Fourier Transform Infrared Spectroscopy (FTIR) and C:N ratios provided insight into the chemical composition of carbon reservoirs contributing to age differences. The results of these analyses demonstrated that XAD column chromatography resulted in the most accurate ¹⁴C dates for leather and samples of unknown tannage, and FTIR allowed for the detection of contamination that might have otherwise been overlooked.

KEYWORDS: AMS dating, FTIR, hide, leather, pretreatment.



Sewn
12,

cm



fish wrapped a/ hide strip
12,225

LATE PLEISTOCENE CORDAGE



12,000



12,000



12,400



11,600



12,000



11,700



12,600



11,900



12,000



12,400



11,100

11,900



12,400



11,200



12,000



11,800

OTHER LATE PLEISTOCENE ORGANIC ITEMS



Bundle of Sagebrush Bark
12,065



Open Simple Twined Mat
11,950



Knotted sagebrush bark
11,900



Open simple twine
11,400



Open simple twine
11,500



Split, shaped wood
12,100



Cordage knot
12,000



Foreshaft?
12,000



LATE PLEISTOCENE TRAPS?



Trap component?
12,000



Trap component?
12,200



Trap component
12,200



Stake
12,100



Stake
12,000

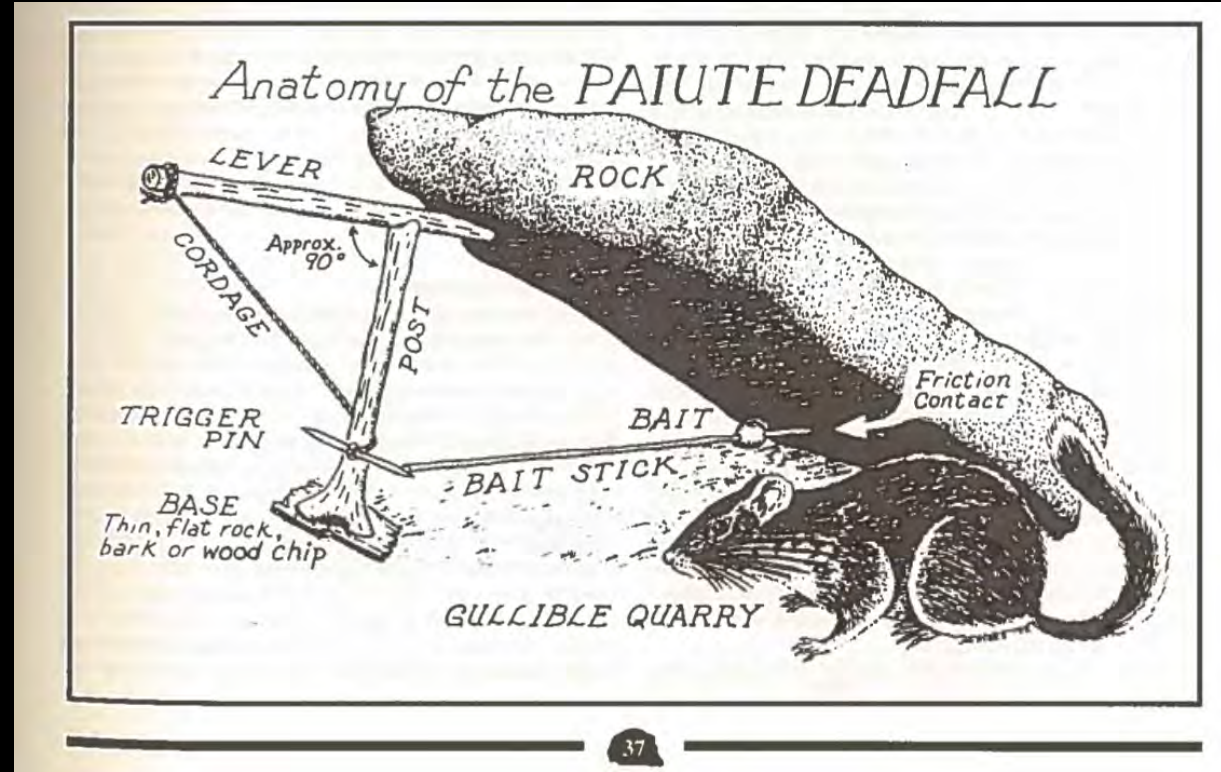


Stake
12,100



Shaped vine
12,100

Trap component?
12,250



Bison sp. 3rd phalanx
12,090

Cougar Mountain Cave Sum

n=210

Probability density

0.15
0.1
0.05
0

18 items

24 items

10000 9750 9500 9250 9000 8750 8500

Calendar date (BP)



9700-9500 YEARS AGO



Foreshaft
9630



Foreshaft
9665



Fine cordage, dogbane
9595



4-ply Zss cordage
9600



Open simple twining
9550



Zss cordage
9585



Baby sandal start?
9695



Child sandal start?
9615



9700-9500 YEARS AGO – FORT ROCK SANDALS



9800



9615

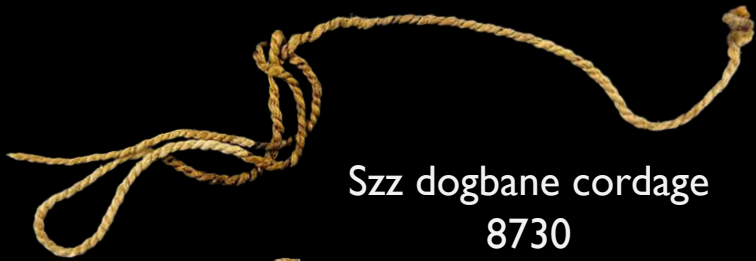


9580

8900-8600 YEARS AGO



Szz dogbane cordage
8805



Szz dogbane cordage
8730



Warp-faced plain weave
8825



Quid x4
8750



Catlow twine, bag corner
8715



Diagonal twine basket wall
8870



Closed diagonal twine
8785



Open diagonal twine
8715



Zss cords, doubled over
Mystery object!
8690



Hafted flake toy
8700



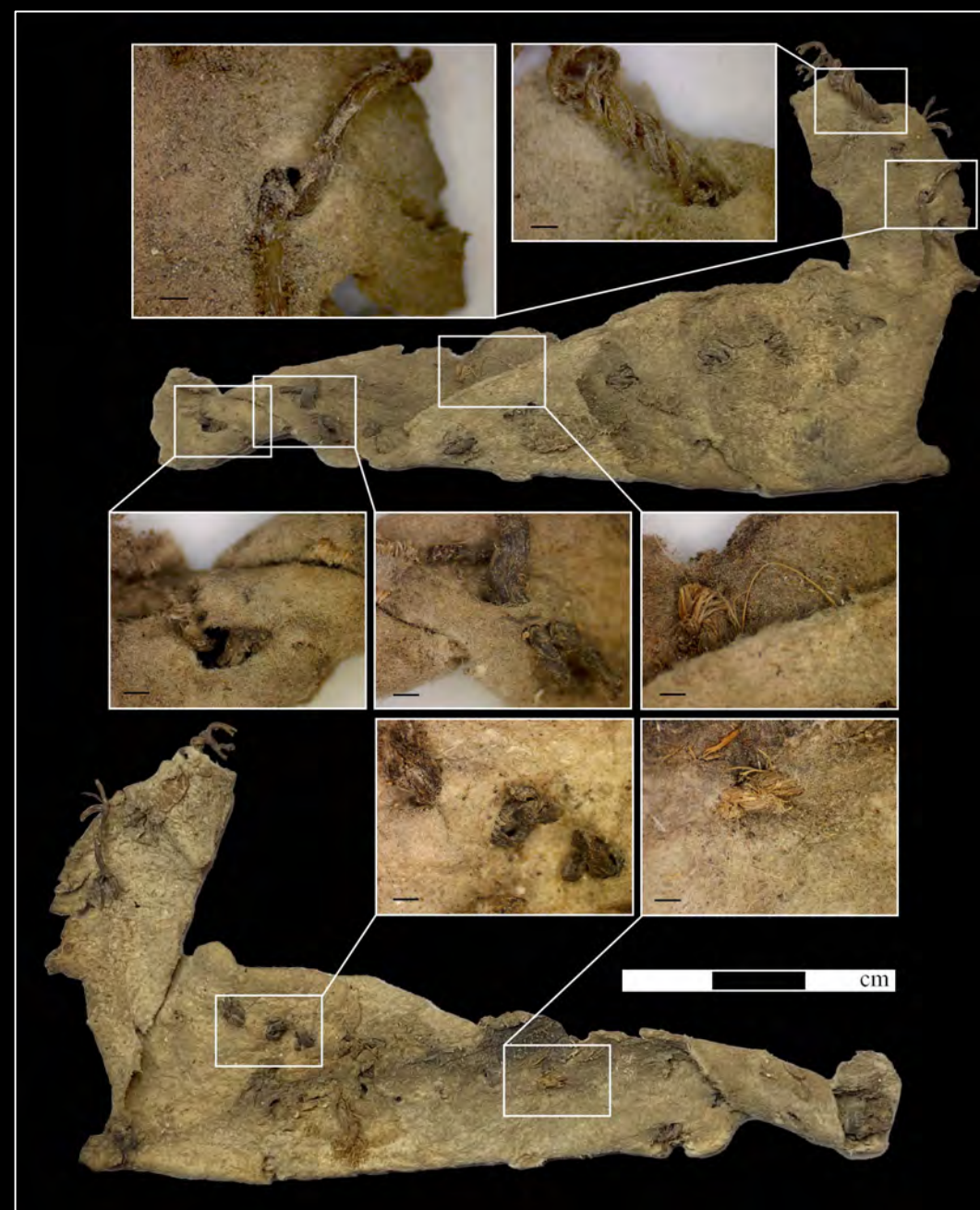
8900-8600 YEARS AGO



Sewn leather with dogbane cord
9020



Bison bison maxilla
8605

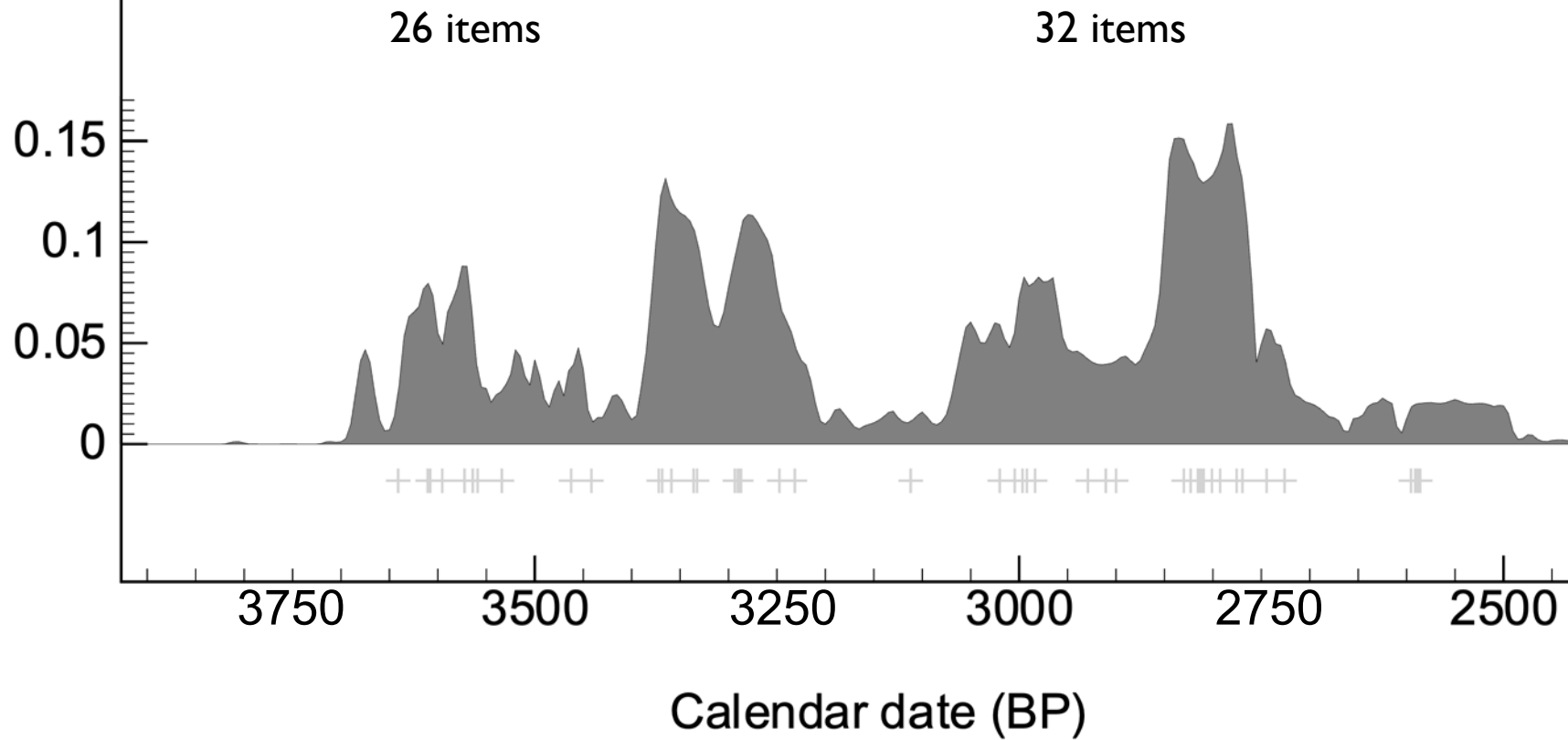


Sewn leather with bast fiber cord
8825

Cougar Mountain Cave Sum

n=210

Probability density



3600-3250 YEARS AGO



3290



3465



Zss cordage w/ feathers
3370



Dart
3285



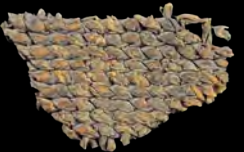
Ringed Sagebrush Bundle
3290



3295



3335



3285



Open diagonal twine
3595



Dogbane net frag
3360



Stake
3560



Rock w/ cordage
3560



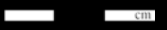
3610



Dogbane cordage
3290



Catlow Twine with overlay
3295



3000-2600 YEARS AGO

Multiple Warp Sandals



2745



2990

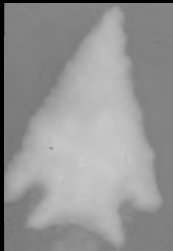


Open simple twine
2810



Catlow Twine 3005

Hafted Elko point
2745



Dart
2725



Dart
2815



Rigid Open Diagonal Twine
Salix sp.
2590



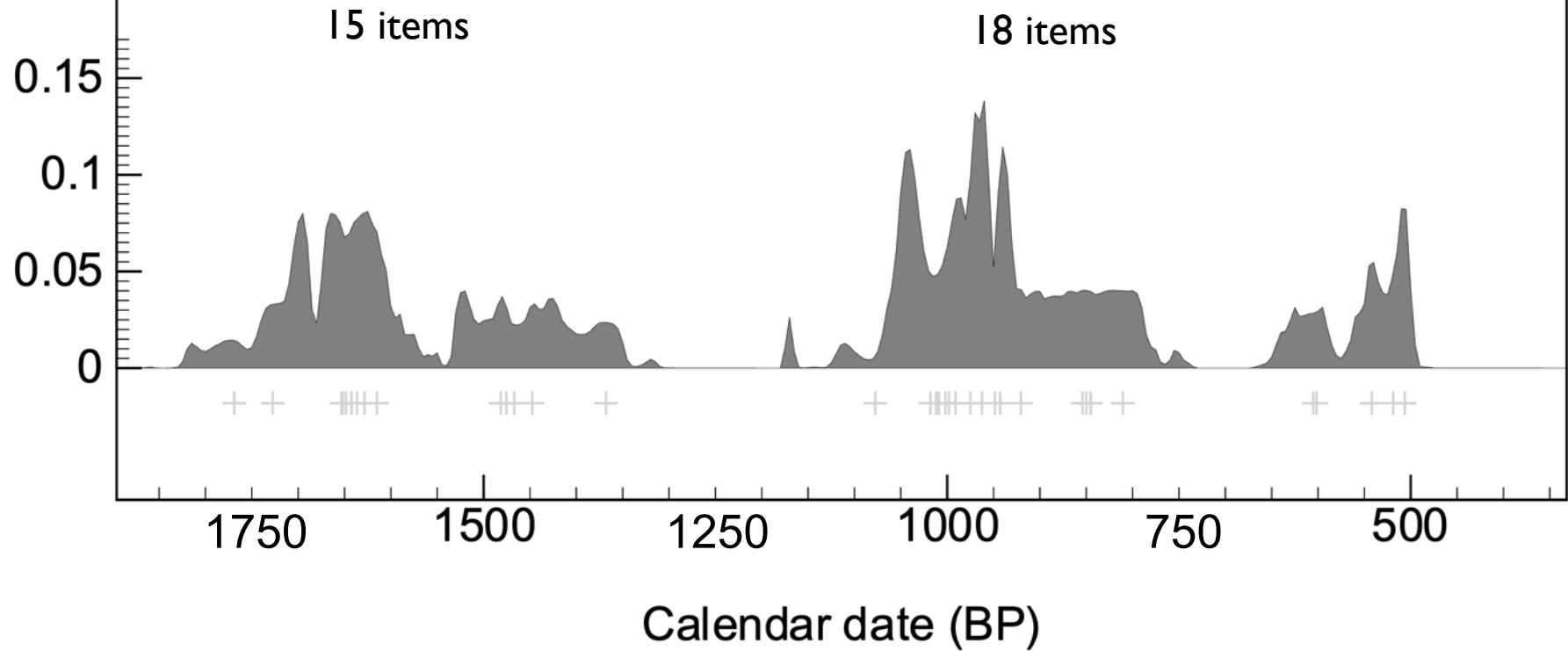
Shaft connector 3020



Cougar Mountain Cave Sum

n=210

Probability density



1700-1400 YEARS AGO



Open simple twine
1650



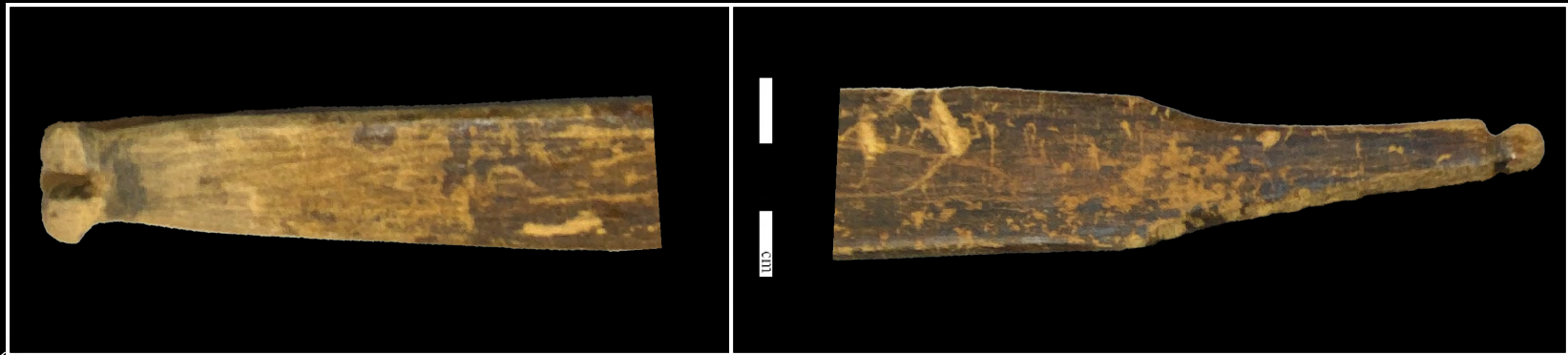
Catlow twine
1730



Foreshaft
1770



Dart or arrow shaft
1630



Bow
Acer sp. (maple)
1655
~130 cm long



Arrow
Acer sp. (maple)
1615 cal BP

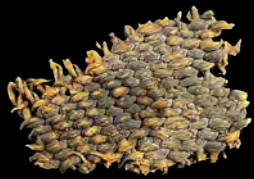
10 cm



1100-800 YEARS AGO



Dogbane Szz fine cordage
945



Catlow Twine
1020



Catlow Twine Basket Start
1080



Zss cordage
965

Multiple Warp Sandal
1010



cm

cm



Digging Stick
80 cm long
975

SUMMARY AND CONCLUSIONS

- Dynamic history of perishable technologies
- Provide extremely rare diachronic windows
- Only began to interpret these data in ways described today
- More cordage and select items to radiocarbon date
- We haven't even started on the lithics!

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OF NATURAL
AND CULTURAL
HISTORY**

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