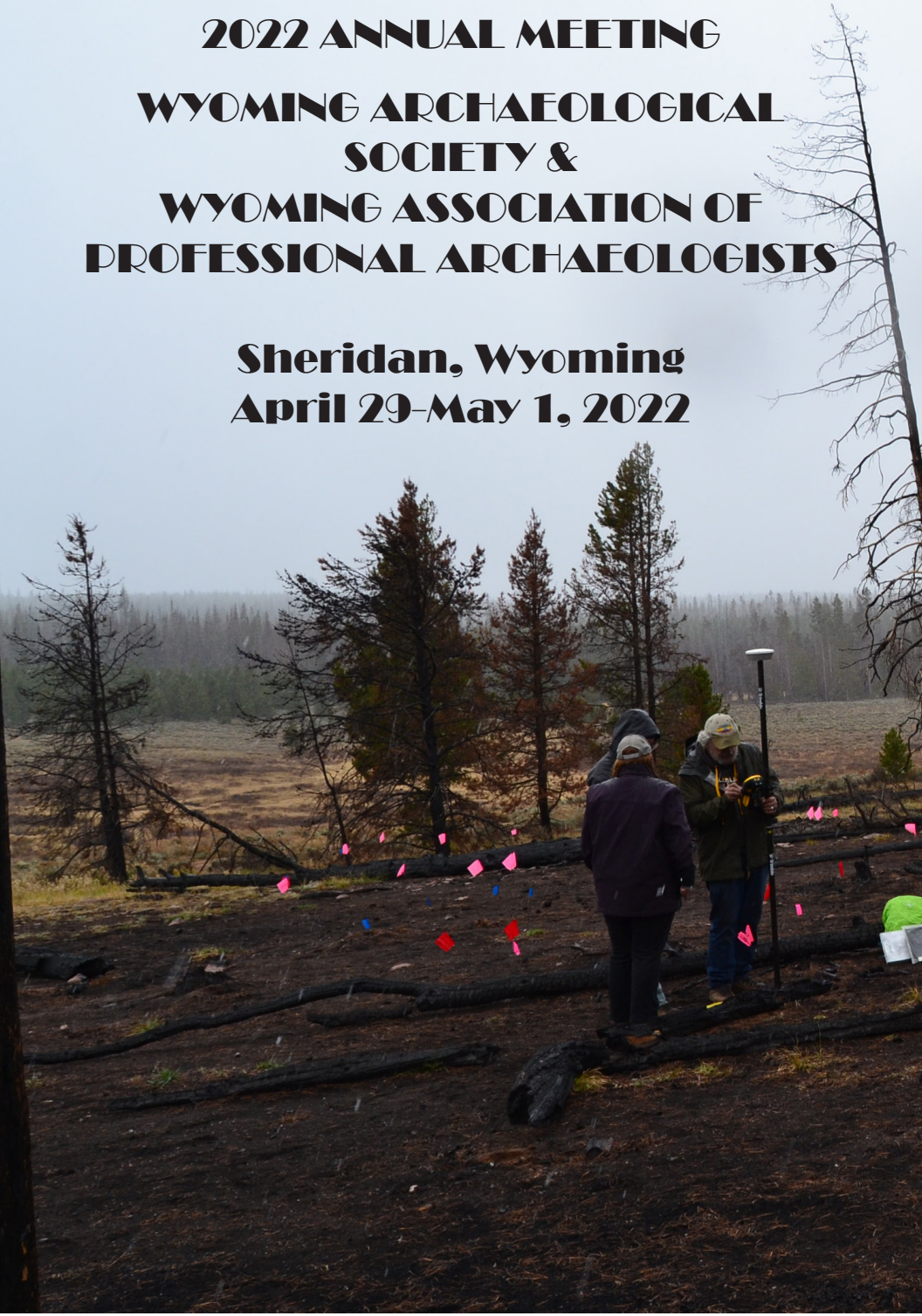
PROGRAM & ABSTRACTS

2022 ANNUAL MEETING

WYOMING ARCHAEOLOGICAL SOCIETY & WYOMING ASSOCIATION OF PROFESSIONAL ARCHAEOLOGISTS

Sheridan, Wyoming
April 29-May 1, 2022



HOSTED BY

The Sheridan Chapter of the Wyoming Archaeological Society is pleased to host the 2022 Spring Meeting of the Wyoming Archaeological Society (WAS) and Wyoming Association of Professional Archaeologists (WAPA) at the Ramada Plaza by Wyndham Sheridan Hotel & Convention Center.

2022 SPRING MEETING
April 29-May 1, 2022
SCHEDULE OF EVENTS

Friday, April 29, 2022

Registration & Booth Set-Up (Foyer)	6:45-7:30 am
Silent Auction Set-Up (Sibley/Diamond Rooms)	7:15-8:15 am
Registration (Foyer)	7:30 am-6:00 pm
Silent Auction (Sibley/Diamond Rooms)	8:15 am-6:00 pm

SHPO Workshop (Sibley/Diamond Rooms) 8:15-9:15 am
Tax Credits: Tax Incentive Programs and Private Investment in the Rehabilitation of Historic Buildings-Brian Beadles, Deputy SHPO
Sponsored by the Wyoming State Historic Preservation Office

Morning Snack Break (Foyer) 9:15-9:35 am
Sponsored by Metcalf Archaeological Consultants, Inc.

SHPO Workshop (Sibley/Diamond Rooms) 9:35-10:35 am
Completing a National Register Nomination: Criteria and Benefits for Listing Historic Properties-Brian Beadles, Deputy SHPO
Sponsored by the Wyoming State Historic Preservation Office

Short Break (Foyer) 10:35-10:45 am

SHPO Workshop (Sibley/Diamond Rooms) 10:45-11:45 am
Historic Preservation Grants: What's Available and How to Apply (via Zoom)-Renee Bovee, Wyoming Cultural Trust Fund Program Coordinator
Sponsored by the Wyoming State Historic Preservation Office

Sheridan's Red-Light District Walking Tour 12:15-1:15 pm
Meet at the corner of E. Alger and N. Gould St. by the "Dare to Dream Big" sculpture

WAPA Meeting (Sibley/Diamond Rooms) 2:00-5:00 pm

Poster Set-up (Foyer) 5:00-6:00 pm

Welcome Social (Geneva/Solitude Rooms) 6:00-9:00 pm
Sponsored by KC Harvey Environmental, LLC

SCHEDULE OF EVENTS, CONT'D

Saturday, April 30, 2022

Registration (Foyer)	7:30 am-7:00 pm
Silent Auction (Sibley/Diamond Rooms)	7:30 am-4:45 pm
WAS Business Meeting (Sibley/Diamond Rooms)	8:00-10:00 am
Morning Snack Break (Foyer) Sponsored by SWCA Environmental Consultants	10:00-10:30 am
Paper Presentations (Sibley/Diamond Rooms)	10:20-12:00 am
Lunch (On Own)	12:00 am-1:40 pm
Scholarship Committee Meeting (Le Gourmet Room)	12:00-1:30 pm
Paper Presentations (Sibley/Diamond Rooms)	1:40-3:20 pm
Afternoon Snack Break (Foyer) Sponsored by Western Archaeological Services, Inc.	3:20-3:40 pm
Paper Presentations (Sibley/Diamond Rooms)	3:40-4:40 pm
Poster Presentations (Foyer) *and during scheduled breaks	4:40-5:40 pm*
WAF Meeting (Chaparral Room)	4:45-6:00 pm
Close of Silent Auction (Sibley/Diamond Rooms)	4:45 pm
Silent Auction Item Pick-Up (Sibley/Diamond Rooms)	5:15 pm
Evening Social (Atrium) Sponsored by Barron Cultural Resource Consultants and KLJ	6:00-7:00 pm
BANQUET (Geneva/Solitude Rooms) Mining Paint at the Powars II Site Dr. Spencer Pelton, Wyoming State Archaeologist	7:00-9:00 pm

Sunday, May 1, 2022

Field Trip Historic Firearms Wookshop at Fort Phil Kearny Historic Site	9:00-11:00 am

WYOMING ARCHAEOLOGICAL SOCIETY, INC.

Executive Committee

President-John Laughlin
2301 Central Avenue
Cheyenne, WY 82001
john.laughlinwy@gmail.com

1st Vice President-Rachael Shimek
1115 E Gibbon St.
Laramie, WY 82072-7018
rachael.shimek@wyo.gov

2nd Vice President-Sarah Allaun
Dept. 3431, 1000 E University Ave.
Laramie, WY 82071
sallaun@uwyo.edu

Executive Secretary/Treasurer-Carolyn M. Buff
1617 Westridge Terrace
Casper, WY 82604-3305
jcbuff@bresnan.net

Journal Editor-Dr. Danny Walker
1687 Coughlin St.
Laramie, WY 82072
dnwalker@uwyo.edu

Book Review Editor-Dave Vlcek
P.O. Box 184
Pinedale, WY 82941-0184
davev69@live.com.mx

Librarian-Chase Mahan
1067 N 9th St.
Laramie, WY 82072-2706
cmahan@uwyo.edu

Immediate Past President-Dr. Mavis Greer
2599 Paradise Dr.
Casper, WY 82604
mavis@greerservices.com

WYOMING ASSOCIATION OF PROFESSIONAL ARCHAEOLOGISTS

Executive Committee

President-John Laughlin
2301 Central Avenue
Cheyenne, WY 82001
john.laughlinwy@gmail.com

Vice President-Ken Cannon
1015 E 100 N
Logan, UT 84321
ken@cannonheritage.com

Treasurer-Michael Page
Dept. 3431, 1000 E University Ave.
Laramie, WY 82071
michael.page@wyo.gov

Secretary-Leanna Flaherty
1825 Park Ave.
Laramie, WY 82070
leannaflaherty@gmail.com

Members at Large
Richard Currit
2301 Central Ave.
Cheyenne, WY 82002
richard.currit@wyo.gov

Rachael Shimek
1115 E Gibbon St.
Laramie, WY 82072-7018
rachael.shimek@wyo.gov

Ex Officio (Past President)
Becca Mashak
760 West Fetterman St.
Buffalo, WY 82834
bmashak@gmecwy.com

WYOMING ARCHAEOLOGICAL FOUNDATION

Members

President
Dr. Mavis Greer
2599 Paradise Dr.
Casper, WY 82604
mavis@greerservices.com

Treasurer
Marcia Peterson
Dept. 3431
1000 E University Ave.
Laramie, WY 82071
marcia.peterson@wyo.gov

WAS President
John Lauglin
2301 Central Avenue
Cheyenne, WY 82001
john.laughlinwy@gmail.com

WAS Immediate Past President
Dr. Mavis Greer
2599 Paradise Dr.
Casper, WY 82604
mavis@greerservices.com

State Archaeologist
Dr. Spencer Pelton
Dept. 3431
1000 E University Ave.
Laramie, WY 82071
spencer.pelton@wyo.gov

Hell Gap Site Manager
Dr. Marcel Kornfeld
Dept. 3431, 1000 E University Ave.
Laramie, WY 82071
anpro1@uwyo.edu

Secretary
Sylvia Huber
P.O. Box 522
Cody, WY 82414-0522
sylviapro.dconsult@gmail.com

WAS Members at Large
Sylvia Huber
P.O. Box 522
Cody, WY 82414-0522
sylviapro.dconsult@gmail.com

Jenny Aiello
1222 Woodwind Dr.
Sheridan, WY 82801
jennyaiello1117@gmail.com

Tyson Arnold
P.O. Box 145
Granby, CO 80446-0145
tyson@middleparkagency.com

George C. Frison Institute Director
Dr. Jason Toohey
Dept. 3431, 1000 E University Ave.
Laramie, WY 82071
jtoohey2@uwyo.edu

MEETING SPONSORS

- The Sheridan Chapter of the Wyoming Archaeological Society-Conference Host
- Wyoming State Historic Preservation Office-Workshops
- Metcalf Archaeological Consultants, Inc.-Break sponsor
- KC Harvey Environmental, LLC-Break sponsor
- SWCA Environmental Consultants-Break sponsor
- Western Archaeological Services-Break sponsor
- Barron Cultural Resource Consultants-Saturday evening social
- KLJ-Saturday evening social
- Office of the Wyoming State Archaeologist-Meeting Programs

WYOMING ARCHAEOLOGICAL SOCIETY

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GENERAL INFORMATION

Meeting Headquarters
All meeting events will be held at the Ramada Plaza by Wyndham Sheridan Hotel & Convention Center (formerly the Holiday Inn) located at 1809 Sugarland Drive. For more information, call 1-888-465-4329 or 307-672-8931.

Registration
Meeting registration and packet pickup will begin as early as 7:30 am on Friday, April 29, in the foyer of the Convention Center entrance.

Workshop
The Wyoming SHPO is sponsoring a free workshop on Friday, April 29 from 8:15-11:45 am. Brian Beadles, Deputy SHPO at the Wyoming SHPO, will present, *Tax Credits: Learn How the Tax Incentive Program Encourages Private Investment in the Rehabilitation of Historic Buildings* and *Completing a National Register Nomination: Criteria and Benefits for Listing Historic Properties*. Renee Bovee, Wyoming Cultural Trust Fund Program Coordinator, will give a live Zoom presentation on *Historic Preservation Grants: What's Available and How to Apply*. A suggested donation of $25.00 will benefit the host chapter.

Welcome Social
The Welcome Social is Friday, April 29, from 6:00-9:00 pm in the Geneva/Solitude Rooms. There will be complimentary appetizers and a cash bar. Please come mingle with the group!

WAS, WAPA, and WAF Meetings
The WAPA and WAS business meetings will be held in the Sibley/Diamond Rooms, the Scholarship Committee Meeting will be in he Le Gourmet Room, and the Wyoming Archaeological Foundation (WAF) meeting will be held in the Chaparral Room. Please refer to the Schedule of Events for dates and times.

Paper and Poster Presentations
Paper presentations are Saturday, April 30, from 10:30 am-4:20 pm in the Sibley/Diamond Rooms. Posters will be in the foyer near the registration table and will be available for viewing during meeting breaks and from 4:30-5:30 pm on April 30.

Silent Auction
The annual silent auction is on Friday from 8:15 am-6:00 pm and Saturday from 7:30 am-4:45 pm. Bidding will close on Saturday at 4:45 pm, and winning bidders are invited to pick up and pay for items by cash or check at 5:15 pm. If you would like to donate items to the auction, please bring them to the registration rable when you arrive. Contact Jenny Aiello at 406-579-6832 or jennyaiello1117@gmail.com for more information.

BANQUET

The banquet will be on Saturday, April 30, in the Geneva/Solitude Rooms of the Convention Center. Cocktails start in the Convention Center Atrium at 6:00 pm, and the banquet starts at 7:00 pm. The keynote speaker for the banquet is Dr. Spencer Pelton, Wyoming State Archaeologist, who will speak on the Powars II site.

Dr. Spencer Pelton

Mining Paint at the Powars II Site

The Powars II site (48PL330) is the oldest of only five prehistoric hematite quarries known in the western hemisphere. Previous salvage excavations demonstrated a remarkable quantity of Paleoindian artifacts, but until recently, it was unknown if the site contained intact archaeological deposits. Excavations conducted during the last several years demonstrate the presence of intact quarry features and associated artifacts dating to ca. 11,600 to 12,700 BP. Most use occurred between ca. 12,100 and 12,600 years BP by early Paleoindian foragers using a diversity of Younger Dryas-aged spear point styles. This presentation will summariz the status of major findings at this important early American site.

FIELD TRIPS

Friday-Sunday, April 29th-May 1st: Self-Guided Historic Downtown Sheridan Walking Tour
Download Downtown Sheridan Association's digital brochure (https://downtownsheridan.org/explore/walking-tour/) and enjoy Sheridan's rich history and significant buildings at your own leisure on this self-guided tour.

Friday, April 29th, 12:15-1:15 pm: Sheridan's Red-Light District Walking Tour
Join us for a guided walking tour to explore the history of "the world's oldest profession" in the heart of downtown Sheridan. The Museum of the Bighorns staff will share stories about the town's notorious madams and the hotels frequented by ladies of ill repute. This hour-long tour will mention sensitive topics and is not recommended for anyone under 16 years of age. *Please meet at the corner of E. Alger and N. Gould Street by the "Dare to Dream Big" sculpture in the northwest corner of the public parking lot*. The cost of the tour is $12.00 and the maximum participant allowance is 15 people. Proceeds go to the museum's operation budget.

Sunday, May 1st, 9:00-11:00 am: Historic Firearms Workshop, Fort Phil Kearny Historic Site
Historian Bob Wilson and Interpretive Ranger Linley Mayer will provide an overview of the evolution of firearms technology in Wyoming during the late 19th century. The workshop will discuss components of numerous guns and ammunition and provide diagnostic attributes of each cartridge for use in archaeological identification. Participants are welcome to stay after the workshop for additional questions and a more in-depth look at the weapons. *Please meet at the fort (528 Wagon Box Road, Banner, WY) at 9:00 am, a 25-minute drive from Sheridan*. The cost of the workshop is offered free of charge; however, donations to the fort are greatly appreciated. Feel free to bring a sack lunch for a picnic after the workshop!

ORAL PRESENTATIONS
Saturday, April 30, 2022
10:20 am-12:00 pm

MORNING SCHEDULE

10:20 am **Molly Herron et al. (student presenter)**

10:40 am **Katie Anderson (student presenter)**

11:00 am **Paris Franklin (student presenter)**

11:20 am **Ken Hladek (student presenter)**

11:40 am **McKenna Litynski (student presenter)**

12:00 am-1:40 pm **LUNCH (on own)**

12:00-1:30 pm **Scholarship Committee Meeting**
Le Gourmet Room

ORAL PRESENTATIONS
Saturday, April 30, 2022
1:40 pm-3:20 pm

AFTERNOON SCHEDULE

1:40 pm **Chase Mahan (student presenter)**

2:00 pm **Haley Purifoy (student presenter)**

2:20 pm **Molly Herron (student presenter)**

2:40 pm **Todd Surovell**

3:00 pm **Anne-Marie Card**

3:20-3:40 pm **BREAK**

ORAL PRESENTATIONS
Saturday, April 30, 2022
3:40 pm-4:40 pm

AFTERNOON SCHEDULE, CONT'D

3:40 pm **Alexandra Kelly**

4:00 pm **Erin Kelley**

4:20 pm **Morgan Robins**

ORAL PRESENTATION ABSTRACTS

Anderson, Kathryn (University of Wyoming)

Variation of cutmarks on bison ribs from the Vore Buffalo Jump

Cutmarks on bone indicate several things that can happen to an animal during the butchering process. A combination of tools can be used to remove the carcass of its meat, but can we tell what tools are being used for processing? Before that question can be answered, it is important to ask if and how cutmarks are different from various tools used during the butchering process. This research seeks to analyze the variation of cutmarks on ribs recovered from the Vore Bison Jump (CK302). What is the variation of the cutmarks on bison ribs from the Vore Bison Jump? Width and lengths of 40 different cutmarks were recorded and compared using a microscopic camera called Dino-lite. After analyzing the cutmarks recorded, it was determined that the cutmarks have many similarities and differences based on size, type, and location.

Card, Anne-Marie (Natural Resources Conservation Service, WY)

A Spatial and Temporal Analysis of Environmental Variables Important to Prehistoric Site Use and Reuse in Wyoming

Settlement pattern analysis seeks to understand the larger patterns of site locations and there is an ever-increasing amount of archaeological, environmental, and topographic datasets available for this research. While some smaller scale studies of site location examined resource availability or specific regions, I compare archaeological sites in Wyoming to topographic and environmental information, including elevation, slope, aspect, watershed data, and new wildlife migration corridor data. I examine 2,071 archaeological sites in Wyoming, separated into single and multi-component sites based on radiocarbon dates. Correlating these sites with radiocarbon dates shows specific environmental preferences for site location within the state and whether these preferences changed over time. By comparing environmental variables of single and multi-component sites I investigate why multi-component sites are "persistent places" places on the landscape. For both site location preference and site reuse preference, this study demonstrates that an area is more attractive because of multiple variables rather than one particular factor.

ORAL PRESENTATION ABSTRACTS

Franklin, Paris M. (University of Wyoming)

A Technological Analysis of the Bachner Debitage

The Bachner (XBD-155) and Klein (XBD-362) archaeological sites are both late Holocene occupations in Interior Alaska. The sites are situated approximately 1 kilometer apart from one another on the north shore of Quartz Lake. Both the Bachner and Klein sites are characteristic of sites in Subarctic lowland ecological settings near lakes. Test excavations at the Bachner site in the 2021 field season provided a high density of lithic debitage and tools relative to square meters excavated. This paper presents a summary of a novel analysis of the Bachner debitage as well as a comparison to the use of lithics at the Klein site during the same time period. The results of this comparison show a significant difference between the diagnostic artifacts at the two sites.

Hladek, Ken (University of Wyoming)

An Experimental Investigation of Hearth Features: Is Oxidation a Proxy for Time and Temperature?

All life on planet earth relies on the invisible processes of oxidation and reduction. In laypeople's terms, oxidation is the loss of an electron or ion from one atom to another, whereas reduction is the addition of an electron or ion to an atom. In chemistry, this process is called a topotactic transition, where the exchange of electrons changes the structure of individual atoms, sometimes affecting the entire substance of which these atoms comprise. These changes at the atomic level can eventually become observable to the human eye. For example, the heat-induced oxidation of a ground-built fire produces a reddening appearance of the sediment and is visible evidence of the oxidation process. Heating sediments results in the predictable topotactic transition of minerals present within the parent material, such as the minerals goethite and lepidocrocite transitioning to hematite (Pilling and Bedworth, 1925; Wagner, 1952). The temperatures at which the oxidation and reduction processes occur in these minerals are known and tracking these changes in sediments through experimentation may prove a proxy for the time and temperature a fire has burned. My experimental research uses an X-rite RM 200QC Imaging Spectrocolorimeter to quantify color and map soil color change over time heated to a given temperature. I conduct kiln and real-world experiments where sediments are heated in the lab to record and document the oxidation process. Experiment results show proof of concept for quantifying oxidized sediments' color and achieving results observed in real-world, actual wood-fueled fires. Quantifying oxidation in this manner can contribute to understanding how long and hot fires burned in hearth features used in prehistory.

ORAL PRESENTATION ABSTRACTS

Herron, Molly A.[1], Jacqueline Wyatt[2], Megan E. Reel[3], Erin R. Kelley[3], Jolie M. Magelky[3], Shira M. Hayes[1], Blake V. Griffin[3], Grace G. Stanford[1], Dave A. Kolkema[1], and Daniel R. Garner[1] ([1]University of Wyoming, [2]Vore Buffalo Jump Foundation, [3]OWSA/UWAR)

Content Marketing of a Bison Jump – Perfecting Weekly Social Media Outreach of a Single Legacy Collection

It has become clear that academic journals and gray literature are limited in their impact on the public and avocational archaeologists in the past decade. Therefore, it has become increasingly popular for institutions to utilize social media to increase their content's reach. As a form of public outreach, social media posts are some of the most effective and efficient ways of connecting with the public and drawing attention to your institution. However, without variety in the posts, the public quickly loses interest. This paper discusses the challenges of public media engagement using a single legacy collection — the Vore Bison Jump (48CK302) — and some of the solutions that the curation technicians at the University of Wyoming Archaeological Repository (UWAR) use and adapt to ensure consistent interest in the site. This paper demonstrates, through Facebook algorithms, which posts garner the most attention, the proper time of the week to post, and how comments from members of the public act as an informal peer-review process, ensuring that these posts remain as accurate and engaging as possible.

Herron, Molly A. (University of Wyoming) *Scanning Electron Microscopy (SEM) and Microscopic Morphology of Ivory -Identifying Sub-Centimeter Pieces of Proboscidean Ivory in Archaeological Sites*

Recovered remains of killed or scavenged extinct proboscideans are of great interest to North American archaeology, as they have been associated with colonizing events during the Pleistocene. However, proboscidean kill/scavenge sites can present ephemeral evidence of human association if artifacts are not found in direct context with the faunal remains – leading some sites to be relegated to a paleontological designation (Olsen and Shipman 1988; Krasinski 2010). One aspect of proboscidean remains – ivory – can be considered a more reliable indicator of human interaction than subjective marks of butchering (Miller 1989; Johnson 2006; Morlan 1983). Therefore, the presence of ivory at proboscidean kill/scavenge localities with indices of human manipulation should be considered an additional line of evidence to prove human association with those remains. Although mammoth ivory appears distinctive from other organic faunal material when found in large pieces, many morphological characteristics that distinguish ivory – such as Schreger lines and annual rings – cannot be used with small fragments. Therefore, identifying very fragmentary (sub-centimeter) proboscidean ivory requires a Scanning Electron Microscope (SEM) to analyze the microscopic structure of ivory.

ORAL PRESENTATION ABSTRACTS

Kelly, Alexandra, and Jason Toohey (University of Wyoming)
Consumption, Spatial Organization, and Identity in Carbon City, Wyoming
Carbon City was the first coal mining town along the UPRR in 1868, in what was then Wyoming Territory. A company town from the start, Carbon offers an alternative way of understanding frontiers in the context of capitalist expansion and settler colonialism that differs from other histories of European and American Western expansion (the fur trade, overland wagon trails, cattle drives and lawlessness of the "Wild West"). This paper will explore how various immigrant groups working in the Carbon mines, hailing from places such as Lancashire, England and Finland, performed and negotiated identity through commodity consumption, settlement patterns, coal mining, changing last names, labor strikes, and burial practices. While in its early stages, this project hopes to examine the commodity consumption (both licit and illicit) of Carbon communities, the development of ethnic neighborhoods and satellite mining communities, cemetery spatial organization and religious practice to explore how various communities negotiated and performed an emerging American West identity.

Kelley, Erin R. (Office of the Wyoming State Archaeologist)
Findings of the Marquette Mammoth Salvage Excavation
In 2018, OWSA responded to a report of exposed remains of a mammoth below the high water stand of Buffalo Bill Reservoir, Cody, Wyoming. Given the potential for human-fauna associations at such sites, OWSA conducted a survey of the exposed beach surrounding the reported bones and a small excavation around an articulated mammoth vertebral column to determine if evidence for human interaction with the animal exists at the site. OWSA recovered 198 bones or bone fragments and these remains were studied by a University of Wyoming faunal analysis class, OWSA and academic interns. Eight different species were identified, including mammoth, camelid, bison, elk, deer, pronghorn, horse, and rodent, and one historic rifle cartridge (ISOPA286). None of the bones exhibit evidence of human butchering or processing, and OWSA did not locate any cultural material in association with the faunal remains. It appears from our investigations that the bones represent the remains of Pleistocene to modern species that died naturally in the vicinity of where we documented them and were subsequently buried, exposed, and dispersed across a 40,468 m2 (10 acres) area on the eastern side of Buffalo Bill Reservoir. Since OWSA determined that the Pleistocene remains are not part of an archaeological site, we did not get a Smithsonian site number for the area, and we transferred the collection to the Wyoming Geological Museum for permanent housing in their paleontological comparative collection.

ORAL PRESENTATION ABSTRACTS

Litynski, McKenna Lynn (University of Wyoming)

Experimental Research into Rockfall Damage and Its Implications for Human-Induced Cutmarks at Bluefish Caves, Canada

Abstract: Researchers argue cutmarks can be observed on horse and caribou bones recovered from Bluefish Caves. While these cutmarks may indeed have been the result of human modification, Krasinski and Blong (2020:13) critiqued this inference and instead argued three major taphonomic processes including carnivore activity, trampling, and rockfall produce bone surface modifications (BSMs) that mimic cutmarks. Through an experimental approach, this study considered one of these taphonomic agents, rockfall, and its effects on faunal remains compared to cutmarks. By dropping limestone spalls onto bone simulating rockfall events at Bluefish Caves, these rockfall BSMs were compared to the same skeletal specimens that had been culturally modified using chert flake tools. The results of this experiment demonstrate that cutmarks produced with chert flake tools can be distinguished with certainty from the BSMs created when limestone between 12.5 and 2322.5 grams fall from a height of 3.5 m onto Bovidae long bones lying on sand. This sheds light on the cutmarks debate at Bluefish Caves and implies that it is rare to find a mark produced by rockfall that mimics the appearance of cutmarks in an environment similar to Bluefish Caves.

Mahan, Chase M., Sarah A. Allaun, Todd A. Surovell, and Jessi Halligan (University of Wyoming)

The Weathering and Scavenging of Keratin

The keratin protein, in the form of hair, hooves, nails, and horns, appears occasionally in archaeological settings around the world, but it is generally scarce. Like most organic materials, keratin can rapidly deteriorate if not preserved via conditions that favor organic preservation (e.g, dry, saturated, or frozen). Such is the case at the Wold Bison Jump (48JO966) where approximately 500-year-old bison horn and hoof sheaths remain preserved in a dry microenvironment under a large colluvial boulder. However, the decomposition rate of keratin ecofacts is not well understood. For instance, bison remains are frequently encountered at archaeological sites in Wyoming dating to the last 1,200 years, and yet it is uncommon to find keratin in these contexts. Knowing the rate of decay can allow us to estimate, for example, how long the bison remains at the Wold Buffalo Jump and similar sites were exposed to the elements prior to being situated in a more preferential preservation environment. Such knowledge can also inform archaeologists as to where keratinous materials might be expected to occur, and perhaps more importantly tell us something about the preservation environment. In this study, we estimate how quickly keratin is lost due to weathering and scavenging, and when keratin should be expected in archaeological sites.

ORAL PRESENTATION ABSTRACTS

Purifoy, Haley (University of Wyoming)

Analysis of Charcoal Densities of Flotation Samples and Piece-Plotted Carbon from La Prele Mammoth Site (48CO1401)

Using charcoal (from flotation samples and piece-plotted) from La Prele Mammoth site (48CO1401), I analyze the spatial distribution of the charcoal to determine if it is randomly or non-randomly distributed to assess the location of a hearth. The goal of my research is to identify the location of the hearth using the density of the floated charcoal per quad and the count of piece-plotted charcoal per quad. A non-random distribution of the charcoal with a higher concentration of charcoal in one area would indicate a hearth feature. The density of the floated charcoal was determined by counting the individual charcoal pieces and dividing by the total mass of the sample before flotation. My analysis demonstrates the charcoal was distributed non-randomly across the whole of the excavation plot with a higher concentration of charcoal where the hearth is located.

Surovell, Todd A.[1], Sarah A. Allaun[1], Barbara A. Crass[2], Joseph A. M. Gingerich[3, 4], Charles E. Holmes[5], Robert L. Kelly[1], Marcel Kornfeld[1], Kathryn E. Krasinski[6], Mary Lou Larson[1], Spencer R. Pelton[7], and Brian T. Wygal[6] ([1]University of Wyoming, [2]Museum of the North, University of Alaska Fairbanks, [3]Ohio University, [4]National Museum of Natural History, [5]University of Alaska Fairbanks, [6]Adelphi University, [7]Office of the Wyoming State Archaeologist)

Continental Scale Differences in Stratigraphic Integrity of pre-13,000 BP Archaeological Sites Supports a Late Date of Human Arrival to North America

By 13,000 BP human populations were present across North America, but the exact date of arrival to the continent, especially areas south of the continental ice sheets, remains unclear. Here we examine patterns in the stratigraphic integrity of early North American sites to gain insight into the timing of first colonization. We begin by modeling stratigraphic mixing of multicomponent archaeological sites to identify signatures of stratigraphic integrity in vertical artifact distributions. From those simulations, we develop a statistic we call the Apparent Stratigraphic Integrity Index (ASI), which we apply to pre- and post-13,000 BP archaeological sites north and south of the continental ice sheets. We find that multiple early Beringian sites dating between 13,000 and 14,200 BP show excellent stratigraphic integrity. Clear signs of discrete and minimally disturbed archaeological components do not appear south of the ice sheets until the Clovis period. These results provide support for a relatively late date of human arrival to the Americas.

ORAL PRESENTATION ABSTRACTS

Robins, Morgan (Central Wyoming College/University of Wyoming)
Where is the Bone? The Use of Phosphorus Analysis to Determine Evidence of Bone on a High Elevation Bison Jump, Wind River Mountain, Wyoming
The results presented here are the outcomes of my master thesis research at the University of Wyoming. The Dinwoody Bison Jump (48FR7682) is located in an alpine tundra environment at 3,350m/11,000ft in the Wind River Mountains near the southeast corner of the Greater Yellowstone Ecosystem. Winter is the dominant season at this site which is 730m/2,400ft higher than the next highest recorded jump in Wyoming. The site consists of an 8km2 grazing area, a 1.6km long system of three converging drivelines comprised of stacked stone cairns and blinds with doglegs near the jump, an obscuring ridge, a scarp/kill site, a butchering area with thousands of pieces of debitage, and a shaman structure. Optically stimulated luminescence dating of built features in the drivelines indicates that the site was used between about A.D. 1310 - 1870. The jump is associated with a 5km2 complex of lodge pad villages and campsites which, even in this age of global warming, are located beneath large ice patches. Some of the camps may have been used during the winter months. Cold-adapted human hunters were not alone through the long winters: in spite of the harsh weather there is little snow accumulation and team members have observed bighorn sheep, moose, elk, deer, coyotes, and wolves at the site during all months of the year. Diagnostic artifacts from Folsom through Late Prehistoric and into the Protohistoric have been documented in those sites. The jump complex has all the key characteristics of what Kornfeld et. al, define as a bison jump. Faunal remains, however, are absent because only about 15cm of acidic soil exists above bedrock in the butchering area at the foot of the jump, and the jump faces southwest toward the prevailing winds so is heavily impacted by weather. Consequently, there is no bone preservation. Soil analysis for sporormiella failed to produce evidence of herbivore decomposition. Because the site is extraordinarily high and lacks a bone bed some have questioned its interpretation as a bison jump. However, CWC researchers have documented the presence of prehistoric bison skeletal remains at multiple locations above 3,050m/10,000ft. over the entire length of the Wind River Mountains. More recently, phosphate analyses of soil samples collected from the butchering area produced results similar to soil analyses from the extensive, well-preserved bonebeds at the nearby Wiggins Fork Bison Jump. Elevated calcium phosphate levels in soils from the butchering areas at both sites, compared to control samples from surrounding areas, suggests decomposition of discarded bone in the Dinwoody jump butchering area.

POSTER PRESENTATIONS
Saturday, April 30, 2022
During Meeting Breaks & 4:40-5:40 pm

Bies, Michael T.[1], Danny N. Walker[2], Dave Vlcek[3], Stacey Whitman-Moore[4], Hillary Jones[5] ([1]OW Heritage Research, LLC, [2]University of Wyoming, [3]Bonneville Archaeology, [4]Bureau of Land Management, [5]ACR Consultants, Inc.)

Ochre Processing at Legend Rock State Petroglyph Site, Wyoming

Archaeological investigations at Legend Rock in 1988 identified two ephemeral features 1.8 m deep in a backhoe trench as potential hearths. 2007 investigations 15 m away identified a similar feature as an ochre roasting pit, probably for pigment use at the site. The 1988 features were relocated in 2020 and found to be a continuous basin feature two by three meters in size. Feature fill analysis yielded reasonable mineral evidence for mixing/blending pigments in the 2020 features. The high content of titanium, within the black pigment was a surprise. OxCal calibration yields the following: the 2007 feature dated to 1065 to 922 BP at the 95.4% level (BETA 276821). Two dates were derived from the 2020 excavations of 5024 to 4846 BP at the 95.4% level (Direct AMS 39225) and 5028 to 4963 BP at the 95.4% level (Direct AMS 29227). Several pictograph elements and petroglyphs with pigment have been recorded at the site. These dates indicate there was long-term use of pigments, suggesting that additional pictographs and/or pigments applied to petroglyphs have faded from view.

Cervantes, Mark (University of Wyoming)

Cortex Consensus not Kosher: The Vortex of Cortex

Analyzing lithic material has been thought to hold some subjectivity when using certain terminology and measurement techniques. This subjectivity may lead to less accurate and inconsistent data. This poster presents the results of an experiment performed at the University of Wyoming that examined how different observers measure cortex on lithic material. Although other researchers have tested the accuracy of cortex analyses, and while some have concluded that it is inconsistent, there is no standardized form of measuring this attribute. The results of this experiment show that archaeologists can take some simple steps towards improving consistency when recording this attribute. This poster demonstrates that cortex is an important part of lithic analysis, and that standardization of recording techniques can result in more useful comparative data sets.

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Garner, Daniel R.[1, 2], Spencer R. Pelton[2], Michael Page[2], and Daniel Eakin[3] ([1]University of Wyoming, [2]Office of the Wyoming State Archaeologist, [3]Office of the Wyoming State Archaeologist, retired)
Willow Springs Campsite, 48AB302
Willow Springs Campsite (48AB302), is a buried multicomponent archaeological site in the southern Laramie Basin located on a major spring and oasis. The campsite contains artifacts dating from the Folsom to the historic era, but most site artifacts are related to the late prehistoric and historic eras. William Mulloy excavated around 200 square meters in the 1960s and investigations were reopened in 2021 by the Office of the Wyoming State Archaeologist. The purpose of this poster is to summarize previous investigations and provide insights into major site constituents. Indigenous artifacts are comprised of a mixed assemblage spanning Plains Woodlands (ca. A.D. 500-1000) to protohistoric times, including a large ceramic assemblage, obsidian, butchered faunal remains, a diverse assemblage of lithic artifacts and trade goods. Historic artifacts date to the late 1860s and are likely related to the Overland Trail stage system.

Gold, Caroline (Yellowstone National Park)
Archaeological Investigations of Norris Lithic Site (48YE014)
With about half the world's active geysers in one of the largest, nearly intact temperate-zone ecosystems on Earth, Yellowstone National Park has a rich human history that spans more than 11,000 years. Over 2,000 archaeological sites help tell the stories of people and their connections to the park, as their home, hunting grounds, gathering places, transportation routes, and recreational spaces, from Paleoindian Culture through the 20th century.

Located in the north-central portion of Yellowstone National Park, site 48YE014 is a multicomponent stratified site periodically occupied from the Paleoindian Period to the historic period. This poster presents recent results of archaeological test investigations conducted in 2021 by NPS archaeologists examining the prehistoric component of this lithic site. Both formal tools and debitage were recovered, representing occupations of limited duration reflecting opportunistic utilization of local resources. This important prehistoric site provides information about human settlement in Yellowstone National Park.

POSTER PRESENTATIONS
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Koenig, Charles W.[1], Amanda M. Castanada[2], and Chad E. Hutchens[3] ([1]University of Wyoming, [2]Wyoming State Historic Preservation Office, [3]University of Wyoming Libraries)

Digital Reconstruction and Preservation of the Greybull South (48BH92) Rock Art Site

In 1962 at least 10 rock art blocks were removed from the Greybull South (48BH92) petroglyph site located along the Bighorn River in northwest Wyoming. These 10 blocks were transported to what is now the Buffalo Bill Center of the West (BBCW). In 2017 the University of Wyoming Archaeological Repository under the direction of the Office of the Wyoming State Archaeologist partnered with the Draper Natural History Museum (BBCW), the Plains Indian Museum (BBCW), the University of Wyoming Libraries, and the Bureau of Land Management (BLM) to begin digital documentation of the 48BH92 blocks. This poster summarizes the Structure from Motion (SfM) photogrammetry methods and subsequent digital reconstruction and 3D printing efforts. Additionally, we provide a summary of the Plains Ceremonial Tradition, En Toto Pecked, and Plains Biographic Tradition petroglyphs from 48BH92 and present plans for continued documentation efforts by Sacred Sites Research, Inc.

Kolkema, David A. (University of Wyoming)

Paleoindian projectile points in Wyoming: Hunting within the Repository

This poster presents an overview of an internship with the Office of the Wyoming State Archaeologist and the University of Wyoming Archaeological Repository tracking, rehousing, and digitally scanning the known Paleoindian projectile points documented in Wyoming. The Paleoindian period in Wyoming encompassed some 5,000 years from 13,000 to 8,000 years ago. Projectile points are used as relative temporal markers for this period, divided into 12 technocomplexes; Clovis, Goshen, Folsom, Agate Basin, Hell Gap, Alberta/Cody, Fredrick, James Allen, Angostura, Lovell, Pryor Stemmed and Deception Creek. Five hundred forty-seven (547) points have been sorted, scanned, and rehoused together in a special collection for ease of access and future study.

POSTER PRESENTATIONS
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Meese, Emma (University of Wyoming)
Insight into Hunter Gatherer Migration and Mobility from pXRF Obsidian Sourcing of the Bergman Site in Southeast Wyoming
Portable x-ray fluorescence (pXRF) analysis has made it easier to study obsidian conveyance patterns and hunter gatherer mobility. Using spatial collection data of artifacts across a site and between sites theories about transfer and trade of obsidian from source to site can be made. In this study, economic costs of obsidian sourcing and travel patterns of the inhabitants of the site will be discussed. Twenty-seven obsidian artifacts were recovered from the Bergman Site (48AB3122) in southeast Wyoming, and these artifacts were analyzed using pXRF to evaluate where did the obsidian recovered from the Bergman Site originate, and what does the obsidian sourcing indicate about Indigenous mobility and migration in southeastern Wyoming? The expected obsidian sources for the Bergman Site are Bear Gulch (Idaho), Malad (Idaho), and Obsidian Cliff (Wyoming). These speculations are based on obsidian sourcing from the Crystal Cave site in South Dakota as well as other Wyoming sites. Analysis of distance from source to site, where artifacts were found within the site, and comparisons to other sites in southern Wyoming with sourced obsidian are all factors that help illuminate migration and mobility patterns by Indigenous peoples.

Norford, Falon, Clifford White, Lee Olinger, Rachel Shimek, Marcel Kornfeld, and Mary-Lou Larson (University of Wyoming)
Digging Deeper: Discoveries from the Hell Gap 2021 Field Season
More than half a century after Paleoindian artifacts were first discovered at Hell Gap Locality I, the site continues to yield data relevant for interpreting Paleoindian prehistory. In the summer of 2021students and volunteers came from across the United States to excavate Agate Basin, Folsom, and Goshen components of the site. During the 2021 field season, 1436 mapped and recovered artifacts expanded on our previous understanding of activities performed at Hell Gap. Recovered items include bison bone including a concentration of cranium fragments, ochre, chipped stone debitage and tools, and multiple osseous needle fragments. The distribution of these artifacts in the context of previous excavations begins to clarify the use of the site. In this presentation we show the current state of Hell Gap investigations by highlighting various artifacts and archaeological data collected during the 2021 field season.

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Purifoy, Haley (University of Wyoming)
Big Horn Basin Charcoal Identification for Fuel Resources
Using a sample of hearth charcoal from rockshelter 48BH3168 in the Big Horn Mountains, Wyoming, I analyze the sample for fuel resources and compare my results to other macrobotanical fuel resource remains identified from Big Horn Mountain rockshelters. The goal of my research is to identify and to determine the fuel resources that were used. I report the family and genus of the fuel resources identified by using low powered microscopy and by comparing cross sections to comparative collections. This poster demonstrates the value of compiling multiple data across different sites to look at trends in fuel resources in the Big Horn Mountains.

Sanders, Paul H. (Office of the Wyoming State Archaeologist, retired)
Six Years Under the Microscope: Artifacts, Peculiarities and Insights from the La Prele Mammoth Site (48CO1401), Wyoming
This poster paper presents information gathered over the past several years from the preliminary analyses of the lithic and faunal assemblages excavated from the Clovis age, La Prele Mammoth site (48CO1401) near Douglas, Wyoming. These materials number in the thousands, but are most notably characterized by their extremely small size, requiring the use of a microscope for their identification. Insights and revelations from the analyses of these very small cultural remains are provided. These results are updated with the incredible findings from the 2021 excavations.

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Stanford, Grace G. (University of Wyoming)
Mapping Thermal Features at Quartz Lake, Alaska
Few archaeological sites from the Holocene Athabaskan tradition have been studied, leaving many questions about everyday practices unanswered. One such question is the function and spatial distribution of thermal features. Using the spatial distribution of fire-cracked rock (FCR) recovered from the Klein Site and the Bachner sites on the shore of Quartz Lake, Alaska, I determine the vertical positioning of thermal features within multicomponent sites and describe their potential uses. After collecting field data on fire cracked rock (FCR) including total station points, weight, and count, the data will be put into ArcGIS to map the locations of each FCR piece or mini cluster to determine separate archaeological heat features. As this currently is ongoing research, no results are available. Once completed, this research could be compared to other sites in Central Alaska to add to what little is known about what life may have been like at an Athabaskan tradition Holocene camp.

Clifford White, Rachael Shimek, Molly Herron, Marcel Kornfeld, and Mary-Lou Larson (University of Wyoming)
Putting The Pieces Together: Bone Needles, Ochre, and Stone Tool Associations
In the 2021 field season 2131 objects were mapped at Hell Gap's Locality I. Among these objects were 174 chipped stone items, 219 bone items, and 915 pieces of ochre. Post excavation matrix sorting at the Paleoindian Research Laboratory (P.I.R.L.) in Laramie revealed numerous Paleoindian eyed bone needles. The bone needles discovered in 2021 vary in both length and diameter, and at least one bone needle is polished. Hell Gap's first bone needle had an eye and was recovered in 1966 during the University of Wyoming and Harvard's Peabody Museum's collaborative excavations (1962-1966). Since then, twenty more bone needle fragments have been discovered at Hell Gap, 13 in 2021. The last needle fragment recovered in 2021 is also the first fully intact needlepoint recovered at Hell Gap. This research presents numerous artifacts found in the three units where the 2021 bone needles were concentrated.

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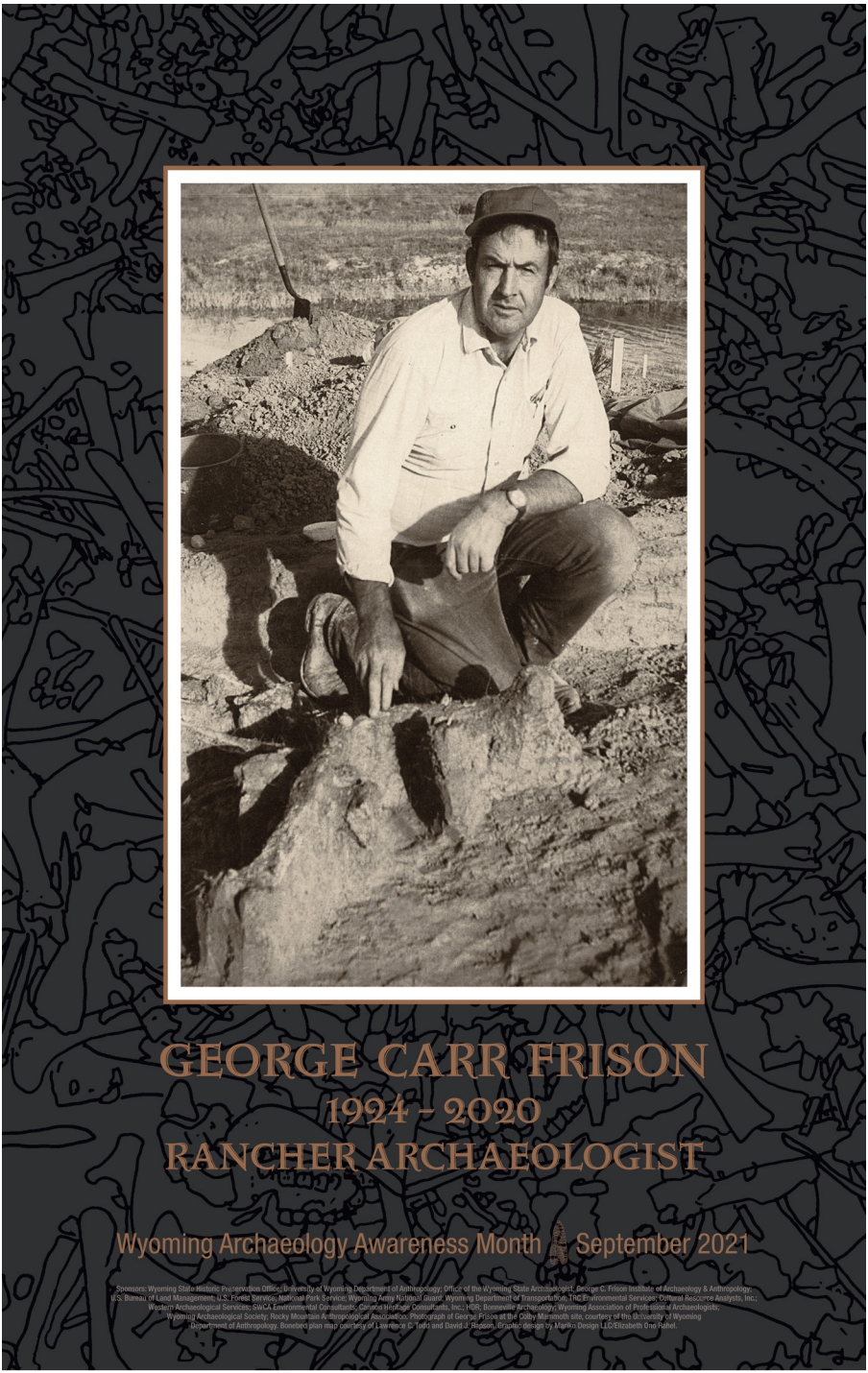

Poster image courtesy of Judy Wolf, Wyoming SHPO. For information on the poster or how to obtain one, go to http://wyoshpo.state.wy.us/AAmonth/Index.aspx.

COVER PHOTO: The cover photo is courtesy of Marcia Peterson, Office of the Wyoming State Archaeologist. The photo shows Dr. Larry Todd instructing us on how to document archaeological sites after forest fires.