THE ARCHAEOLOGICAL SOCIETY OF ALBERTA ANNUAL CONFERENCE 2019

APRIL 12TH – 14TH, 2019

UNIVERSITY OF LETHBRIDGE

Celebrating 50 years!

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The Executives of the Archaeological Society of Alberta – Lethbridge Centre would like to acknowledge that the 2019 Archaeological Society of Alberta (ASA) Conference and Annual General Meeting is taking place on the traditional territories of the people of the Treaty 7 region in Southern Alberta, which includes the Blackfoot Confederacy (comprising the Siksika, Piikani, and Kainai First Nations), the Tsuut'ina First Nation, and the Stoney Nakoda (including the Chiniki, Bearspaw, and Wesley First Nations). The City of Lethbridge is also home to the Métis Nation of Alberta, Region III.

The Archaeological Society of Alberta – Lethbridge Centre would like to acknowledge the work of the following people who helped make this 2019 ASA Conference and Annual General Meeting possible:

Wendy Aitkens
Sydney Atkinson
Meg Berry
Shawn Bubel
James Carnahan
Belinda Crowson
Tara Collett
John Easton
Tatyanna Ewald
Rachel Lindemann
Alyssa Hamza
Sheldon Harmacy
James McMurchy
Mariah Miller
Elsa Perry
Kelsey Peterson
Diane Rossetti
Alanna Shockley
Shaylene Wall
Rob Wondrasek

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Letter of Welcome

On behalf of the Archaeological Society of Alberta – Lethbridge Centre we would like to welcome everyone to the 44th Archaeological Society of Alberta Conference and Annual General Meeting (AGM). We are proud to be hosting this event, and are thrilled to share our local culture and the history of our city.

The past year marks the 50th Anniversary of the ASA Lethbridge Centre. ASA Lethbridge was incorporated by the Province of Alberta on the 21st of November 1968. Our centre was established as an effort to protect local archaeological resources and to bring together avocational and professional archaeologists. Over the years, we have strived to emphasize public outreach, education, and exposure of local archaeology, and to provide opportunities for members to engage with their peers and to pursue their interests in archaeology. Hosting the 2019 ASA Conference and AGM does just that, and allows us to celebrate our 50th anniversary with all of you!

This conference features a diverse array of topics. Presenters have come from across the country to talk about archaeological sites and research being done locally, throughout Alberta, in northern Canada, and internationally. They will also showcase exciting new techniques used in documenting and understanding these valued archaeological resources.

We would like to thank everyone for participating in this conference. This event would not be possible without your interest and engagement. We hope that you will gain valuable insights from this year's presenters. We would also like to thank our sponsors. Their donations helped make the event accessible to everyone. And finally, we would like to thank our volunteers for their commitment to making this conference a success. Their dedication, hard work, and enthusiasm were instrumental in making this event possible. We hope that you enjoy the 2019 ASA Conference and Annual General Meeting as well as your time in our beautiful city!

Sincerely,

Shawn Bubel

President
Archaeological Society of Alberta

Rachel Lindemann

President
ASA – Lethbridge Centre

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Conference Events

Friday, April 12th

1:00 – 4:00 pm: Afternoon Workshop: *Understanding and Interpreting Radiocarbon Dates* with Tara Collett.
University of Lethbridge Penny Building, 324 5th St S

5:00 – 8:00 pm: Conference Registration
University of Lethbridge Penny Building, 324 5th St S

6:30 – 8:00 pm: *Walking Tour of Historic Downtown Lethbridge* with Belinda Crowson
Meet: University of Lethbridge Penny Building, 324 5th St S

8:30 pm: Welcome Reception
Owl Acoustic Lounge, 411 3rd Ave S

Saturday, April 13th

Students' Union Ballroom, University of Lethbridge, 4401 University Dr W

8:30 am – 6:00 pm: Conference papers and posters (see the Presentation Summary)

6:00 – 10:00 pm: Banquet & Keynote Address:

New insights into ancient Dene hunting technologies from the Yukon Ice Patch Project
by **Christian D. Thomas** on behalf of **The Yukon Ice Patch Research Group: Carcross/Tagish First Nation, Champagne and Aishihik First Nations, Kluane First Nation, Kwanlin Dün First Nation, Ta'an Kwäch'än Council, Teslin Tlingit Council and Cultural Services Branch, Yukon Government.**

Every year, Dän and Tagish hunters engaged in the annual late summer and fall harvest known as *Shakat*. In the mountainscapes of the southern Yukon, hunting groups set out into their traditional hunting territories to harvest mountain caribou and thinhorn sheep. These animals provided First Nations peoples with an abundance of resources needed to prepare for winter, including food and the materials for clothing, shelter and tools. These hunting territories are dotted with elusive evidence of the cultural maintenance of this landscape. It is also interspersed by hundreds of ice patches, where hunting weapons lost over the duration of this nine millennia long tradition, are now melting out in response to climatic warming. In this talk the Yukon Ice Patch Research group discusses the many layered insights these discoveries have evidenced about the materials and crafting techniques used to sustain this outstanding hunting tradition for over 300 generations.

Sunday, April 14th

9:00 am – 12:00 pm: Fieldtrip to Galt No. 8 Historic Mine Site
Meet: Parking Lot G, University of Lethbridge, 4401 University Dr W

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Presentations Summary

Saturday, April 13th, 2019

**All presentations will take place in the Students' Union Ballroom at the University of Lethbridge (4401 University Drive W)*

	8:30 am	Welcome and Opening Remarks
	8:45 am	Blessing by First Nations Elder
General Session	9:15 am	*Some Recent Thoughts about Medicine Wheels of the Plains and Rocky Mountains Part 1* Margaret Kennedy
	9:45 am	*Some Recent Thoughts about Medicine Wheels of the Plains and Rocky Mountains Part 2* Barney Reeves
	10:15 am	Coffee Break
	10:30 am	*Exploring the Mysteries and 'Vagaries' of the Forts Vermilion* Shawn Bubel and Heinz Pyszczyk (University of Lethbridge)
	11:00 am	*A Positively Final Appearance: A new Fur Trade period cultural deposit at FjPi-63 near the Walterdale Bridge, Edmonton, Alberta* Gareth Spicer (Turtle Island CRM)
	11:30 am	*Lessons from the Field: Five Years of the Cluny Public Archaeology Program* Alyssa Haggard[1], Margaret Patton[1], Matthew Abtosway[1], Kelsey Pennanen[1], Tatyanna Ewald[1], Shalcey Dowkes[1], Amy Leedham[1], Ashley Cameron[2], and Shawn Morton[3] ([1] University of Calgary, [2] Memorial University, [3] Northern Arizona University)
	12:00 pm	Lunch
	1:00 pm	*Subsurface Testing and Drone Mapping at Wally's Beach* Gabriel Yanicki (Canadian Museum of History)
	1:30 pm	*Mammoths and the Last Glacial Maximum on the Canadian Plains: The Value of Isolated Finds and Archival Searches* Mike C. Wilson (Douglas College)
	2:00 pm	*New Discoveries of Vertical Series Rock Art at Writing-on-Stone, Southern Alberta* Michael Turney[1], Landon Bendiak[1], and Jack Brink[2] ([1] Golder Associates, [2] Royal Alberta Museum)

Presentations Summary Continued

Saturday, April 13th, 2019

**All presentations will take place in the Students' Union Ballroom at the University of Lethbridge (4401 University Drive W)*

	2:30 pm	Coffee Break
Student Session	2:50 pm	*The Use of Reality Capture Technologies to Mediate Relocation Impacts at the Perrenoud Homestead* Madisen Hvidberg (University of Calgary)
	3:10 pm	*Heritage, Risk, and Industrial Archaeology: The Case Study of Brooks Aqueduct* Christina Robinson (University of Calgary)
	3:30 pm	*Magnetometry and Ground Penetrating Radar at the Junction Site (DkPi-2): Late Prehistoric Campsite Spatial Organization* Margaret Patton (University of Calgary)
	3:50 pm	*Rethinking the Anthropocene* Gillian Taylor (University of Calgary)
	4:15 pm	Provincial Annual General Meeting
	5:15 pm	Wine Reception & Poster Session
	6:00 pm	Banquet Dinner
	7:30 pm	Keynote Address: *New insights into ancient Dene hunting technologies from the Yukon Ice Patch Project* Christian D. Thomas (The Yukon Ice Patch Research Group/Yukon Government)

Understanding and Interpreting Radiocarbon Dates Workshop

By Tara Collett (MSc University of Oxford)
Date: April 12th, 2019
Time: 1:00 – 4:00 pm
Location: University of Lethbridge Penny Building, 324 5th St S

You do not need to be an archaeologist or a scientist in order to attend this workshop. In fact, Tara Collett will show that radiocarbon dating does not need to exist in a black box. It is important that we understand the context of dates and have increased conversations between archaeologists and dating labs.

Specifically, Tara will discuss radiocarbon dating of bone as this is likely to be the most readily preserved and archaeologically relevant sample type for radiocarbon dating. She will also illustrate the need to think about the context of our samples and the relationship to the burial environment. Tara will describe how to select and prepare a sample for radiocarbon dating and how that sample is then processed in a radiocarbon lab and input into an Accelerator Mass Spectrometer (AMS). Different laboratory methods for processing (acid-base-acid, ultrafiltration) will be discussed. Calibration curves and C/N ratios will be covered. This will not be a specific method-based presentation, instead, this workshop is intended as an informative overview and open-conversation on exactly *what* radiocarbon dates mean, *how* they are produced, and *how* we as archaeologists can interpret them.

Radiocarbon dating exists as a powerful dating technique that when used properly can give us concrete windows of time to understand periods of occupation at archaeological sites. Tara will inform you on this technique and clearly explain how to understand published dates that are presented in research.

<u>Workshop Outline</u>

1. **Foundations of Radioactive Decay**
    a. *What a C14 date is* (probability density function)
    b. Calibration curves
    c. Overarching premise that underlies the foundation of the radiocarbon dating method in archaeological science
2. **Burial Environment, Taphonomy, Bone Diagenesis**
    a. Samples existing in thermodynamic disequilibrium in the burial matrix
    b. Endogenous and exogenous carbon - *how do we account for the degree of sample contamination?*
3. **Context of Sample**
    a. *What chronological question am I wanting to answer?*
        i. Outlining of various scenarios (in-class examples to follow)
    b. Selecting a sample
4. **The Radiocarbon Dating Method**
    a. Pre-treatment methods and what happens to your sample in a radiocarbon lab
    b. C/N ratios and *why your samples fail*
    c. C14 date interpretation
    d. How to properly report radiocarbon dates

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Fieldtrip to Galt No. 8 Historic Mine Site

Location: Galt No. 8 Mine Site
Date: April 14th, 2019
Time: 9:00am – 12:00pm
Meeting Place: Parking Lot G,
University of Lethbridge

Aerial view of the Galt Mine No. 8, January 26, 1936 (Galt Museum and Archives, #19760210063).

The Sunday, April 14th fieldtrip will be to the historic Galt No. 8 Mine site on the west side of Lethbridge, overlooking the Oldman River. The mine was in operation from 1935 to 1957 and is an iconic part of the Lethbridge skyline. The majority of the tour is on level ground (with the exception of wandering towards the coulee edge), and is easily accessed from the parking area, so those with some mobility concerns should not find it too strenuous.

Sir Alexander Galt and his son, Elliot Galt formed eight companies between 1882 and 1904; these companies were amalgamated as the Alberta Railway and Irrigation Company (AR & I). In 1912, the AR & I Company was purchased by the Canadian Pacific Railway which retained the AR & I name. All the Galt mines, which included 9 drift mines and 7 shaft mines, were all covered under the Mine No. 0003 issued by the North West Territories and then by the Government of Alberta once it established Provincial designation. When AR & I began construction of the Galt No. 8 mine, the Provincial government issued it Mine No. 1464. As the Galt No. 6 mine, (located to the northeast of what is now Galt No. 8) became exhausted, construction of the Galt No. 8 began in 1934. When the Galt No. 6 closed down in 1935, equipment and material (including the tipple) were moved to the new Galt No. 8 mine.

At the start of mine operations in 1935 the mine operated for four days a week, producing 1,100 tonnes per day. Improvements were made to the mine operations, including electrification and the addition of modern machinery; however, the start of World War II saw a shortage of workers. Work was increased to six days a week and the addition of the new machinery helped offset the lack of miners and output stayed steady at 1,100 tonnes per day.

The tour will loop around the various buildings, allowing you to see the different architectural styles and evolutions of the buildings through subsequent reuse and repurposing. The coulee edge also provides a panoramic vista to talk about the last major battle between the Cree and the Blackfoot Confederacy in 1870.

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Silent Auction

Item #	Item	Donor
1	Gift Basket (with a mug, bag of beans, and $10 gift card)	Sonder Coffee Bar
2	Gift Basket	Galt Museum & Archives
3	Painting by **Wendy Aitkens**[1]	Wendy Aitkens
4	Painting by **Sharon Shuttleworth**[2]	Sharon Shuttleworth
5	Handmade leather bag and mirror	Dave Hastie
6	Quilt	Diane Rossetti
7	Flint Knapping Kit	Terry Quinn
8,9,10	Framed "Owl" pencil sketch print by Canadian artist J. Sharkley Thomas	Terry Quinn
11	Barbieri Barber tote bag	Terry Quinn
12	Derek Alexander purse	Terry Quinn
13	Latico purse	Terry Quinn
14	"Travelogues" by Burton Holmes (photos of world travels from 1892 to 1952)	Terry Quinn
15	"The Sacred Earth" by Canadian photographer Courtney Milne	Terry Quinn
16	Writing-on-Stone Rock Art Tour Tickets (four vouchers)	Writing-on-Stone
17	Drive Lane Hike Tickets (two tickets)	Head-Smashed-In-Buffalo Jump
18	Wine basket & 3D printed projectile point	James Carnahan
19	Wolf/cougar necklace in an elk buckskin pouch	Dave Hastie
20	Green River knife in a sheath made of brain-tanned bison hide	Dave Hastie
21	Animal vertebra with a stone projectile point embedded in it	Dave Hastie

[1] **Wendy Aitkens** participated in her first volunteer dig at Head-Smashed-In-Buffalo Jump in 1988 and was hooked on the joy of digging in the dirt. She also volunteered at several digs in the Calgary area. As Curator at the Galt Museum, Wendy led the development of an exhibition on archaeological sites in southern Alberta with assistance from members of the ASA Lethbridge Centre and archaeologists across the province. In 2012, she joined the ASA to further her interest in archaeology. Her involvement in art began soon she could hold a pencil. Her art over the years has included sketching, painting, ceramics, and photography, but these days she focuses on watercolour paintings which she creates outdoors while sitting within the landscape.

[2] **Sharon Shuttleworth** is an artist from Balzac, Alberta. She has been painting for 10 years and is largely self-taught. Sharon was raised on a farm near Iron Springs, not too far north of Lethbridge. Her second connection to Lethbridge is through her daughter, Laura, who is pursuing her Masters in Archaeology. Laura has invited Sharon on several digs, the latest one being at Fort Vermilion in northern Alberta. Sharon finds archaeology fascinating and is pleased to be able to create a special piece of art for this conference. You can see Sharon's art on her website www.caffeinendiesel.com, on Facebook @caffeinendiesel, and on Facebook @Studio52Project.

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Abstracts

General Paper Session

Exploring the Mysteries and 'Vagaries' of the Forts Vermilion
Shawn Bubel (bubest@uleth.ca) and **Heinz Pyszczyk** (hpyszczyk@gmail.com)
University of Lethbridge, Lethbridge, Alberta

During our 2018 investigations at the Hudson's Bay Company (HBC) Fort Vermilion II (occupied from 1830-1930), and then the earlier North West Company NWC Boyer River posts, we once again ran up against some challenges. We excavated 13, 50x50 cm test units around the Old Bay House, which was constructed in c. 1906. We had hoped to confirm the establishment of the fort in this particular location in c.1830, but the cultural remains unearthed dated to the latter part of the 19th century up to the mid-1900s. This evidence left us baffled and begs the question: Was this the original site of the 1830 Fort Vermilion? Later we moved the field school to the Boyer River posts; the first fur trade sites established in the region, as early as 1788, by NWC employee, Charles Boyer. After excavating 46 square meters, we recovered a faunal assemblage that potentially reflects the diet of these early fur traders, and an artifact assemblage that denotes the activities of the NWC and the First Nations groups they were trading with. But the site still remains a mystery as to who built what, and where. As many as four fur trade enterprises built at this spot near the confluence of the Boyer and Peace Rivers, including the famous explorer, Simon Fraser for the NWC. And perhaps most baffling of all was where the name Fort 'Vermilion' came from. As we pondered this question, and gathered the evidence, the answers become more conflicting.

Lessons from the Field: Five Years of the Cluny Public Archaeology Program
Alyssa Haggard (alyssa.haggard@ucalgary.ca)[1], **Margaret Patton** (mpatton@ucalgary.ca)[1], **Matthew Abtosway** (mdabtosw@ucalgary.ca)[1], **Kelsey Pennanen** (kelsey.pennanen1@ucalgary.ca)[1], **Tatyanna Ewald** (tdewald@ucalgary.ca)[1], **Shalcey Dowkes** (sadowkes@ucalgary.ca)[1], **Amy Leedham** (amy.leedham@sparkscience.ca)[1], **Ashley Cameron**[2], and **Shawn Morton** (shawn.morton@nau.edu)[3]
[1] University of Calgary, Calgary, Alberta; [2] Memorial University, St. John's, Newfoundland and Labrador; [3] Northern Arizona University, Flagstaff, Arizona, United States

Since its establishment in 2014, the University of Calgary Public Archaeology program at the Cluny Fortified Village Site (EePf-1) has provided members of the public an opportunity to participate in an active archaeological research project. This initiative has succeeded in bridging public knowledge and cultural heritage through education and hands-on interaction. In addition to the public program, other programs emerged to increase public participation: a laboratory program and an Aboriginal Youth Engagement (AYE) program for First Nations' youth. Throughout the past five years, the public program has received 295 volunteer participants who

contributed over 3,800 hours towards our understanding of the Cluny site. Since the public program's inception, social media platforms became vital for outreach. Public input was also sought through participant surveys to improve and enrich participant experience, presenting insight into public expectations and knowledge of archaeology in the province. This presentation is a reflective assessment of five years of the successes of the program as well as lessons learned in promoting public interaction with archaeology in Alberta.

Some Recent Thoughts about Medicine Wheels of the Plains and Rocky Mountains

Margaret Kennedy (mak107@mail.usask.ca) and **Barney Reeves** (bokr@telusplanet.net)

In a recent volume of the ASA Occasional Paper series (#15, 2018), the authors brought together not only a number of mostly previously unpublished papers on medicine wheels by researchers such as John Brumley, Trevor Peck, Ted Birnie, Rebecca Kallevig, Barry Dau, Trevor Peck and Dean Wetzel but also presented a geographically wide-ranging and exhaustive review of these enigmatic features as found across the Plains and Rocky Mountains. This type of synthesis provides new insights into medicine wheel construction and diversity. In our paper we will review the different types of medicine wheels as identified in our study and the senior author will then offer some thoughts on the evolution of some types of medicine wheels and what that might mean in ethnographic terms.

A Positively Final Appearance: A New Fur Trade Period Cultural Deposit at FjPi-63 near the Walterdale Bridge, Edmonton, Alberta

Gareth Spicer (gareth@turtleislandcrm.com)
Turtle Island Cultural Resource Management Inc., Calgary, Alberta

FjPi-63 is an extensive archaeological site which includes Prehistoric, Fur Trade and Historic period components. The site includes the remains of Fort Edmonton IV (1813-1830 CE) and a Fur Trade period cemetery. Archaeological monitoring under permit 18-001 related to the installation of landscaping features, shared use path and access stairs west of the new Walterdale Bridge resulted in the identification of a new preserved cultural deposit related to the site. A portion of the deposit impacted was subject to a program of controlled excavation with significant results. The deposit consists of Fur Trade Period and Prehistoric Period cultural components located beneath 1-1.5 m of historic / contemporary overburden. The Fur Trade component is represented by a surface hearth and a diverse assemblage of associated artefacts. Butchered animal bone includes beaver, wild cat, a variety of birds, large ungulate such as bison, moose or elk, and fish. Other artefacts recovered include gun flints, a single percussion cap, fragments of clay tobacco pipe, and glass trade beads. The site represents a camp, dating to the mid-19th century, likely used by resident contractors and their families who provided goods and services to the Hudson's Bay Company facility (Fort Edmonton V, 1830-1915 CE) located upslope on the current Alberta Legislative Grounds.

New Discoveries of Vertical Series Rock Art at Writing-on-Stone, Southern Alberta

Michael Turney[1] (michael_turney@golder.com), **Landon Bendiak**[1] (lbendiak@golder.com), and **Jack Brink**[2] (jwbrink@telus.net)
[1] Golder Associates, Calgary, Alberta; [2] Royal Alberta Museum, Edmonton, Alberta

Writing-on-Stone (WOS), in southern Alberta is home to one of the largest and densest concentrations of rock art in western North America. The provincial park of the same name is home to more than 150 rock art sites featuring thousands of petroglyphs and pictographs, and has come to be closely associated with the established Plains Biographic and Plains Ceremonial rock art traditions. However, it is also home to other more enigmatic traditions of Plains rock art. In field analysis of photographs utilizing the DStretch application downloaded on a mobile device has led to the discovery of one of these enigmatic rock art traditions, known as Vertical Series (VS). This paper reports on the discovery of several unambiguous panels of VS rock art located in the very heart of the WOS rock art complex. These panels are illustrated and described, and placed within the wider dialogue on Great Plains rock art.

Mammoths and the Last Glacial Maximum on the Canadian Plains: The Value of Isolated Finds and Archival Searches

Mike C. Wilson (wilsonm@emeriti.douglascollege.ca)
Douglas College, New Westminster, British Columbia

Upon first impression there have been comparatively few finds of mammoth remains from the southern Alberta and Saskatchewan plains, mostly of isolated teeth, tusks, or bones from gravel deposits. Many had been transported and redeposited. The semi-articulated Kyle Mammoth (Saskatchewan) was associated with upland late-glacial lake deposits. Upland mammoth occurrences hold particular interest because their ages can help to clarify the chronologies of both advance and retreat of Last Glacial Maximum (LGM) ice. Limiting dates based upon wood are of questionable value if treeless steppe-tundra was present, so dating of bones of cold-tolerant vertebrates, especially mammoths, can enrich our understanding. Yet isolated finds are generally taken to be less valuable than articulated material. Archival studies show that many finds have been made in this region yet only a few have found their way into museums. Of those, even fewer have been dated. Several case histories are discussed, including southern Alberta finds from Onefour, Lethbridge, Calgary, Seebe and Callum Creek, to illustrate their potential. The Lethbridge tusk was found in 1958 during urban construction, was photographed, was examined by a vertebrate palaeontologist, and may have been sent to a museum. As yet, only newspaper accounts and the photograph have been located, but they provide important contextual information about its geologic setting. Late-LGM mammoths may have been accompanied in this region by human populations and therefore have clear archaeological relevance. Given still-debated evidence for pre-LGM archaeological occurrences in the Americas, clarification of LGM advance chronology is also important for archaeologists.

Subsurface Testing and Drone Mapping at Wally's Beach
Gabriel Yanicki (gabriel.yanicki@museedelhistoire.ca)
Canadian Museum of History, Gatineau, Quebec

Wally's Beach (DhPg-8) has cemented a remarkable place in North American archaeology as part of a very small pantheon of sites with well-dated evidence of pre-Clovis human occupation. While tantalizing, the data are themselves modest, consisting for the most part of surface finds and opportunistically excavated wind exposures; the site has long stymied attempts to find in situ culturally diagnostic material. Recent low fall and winter water levels on the St. Mary Reservoir have provided a rare window of opportunity to revisit the site. Field work undertaken in October 2018 set out with two very basic questions: how much have wind and wave erosion impacted the site, and is there any part of it left intact? Findings reviewed here are that, while a broad swathe of the site has eroded down to terminal Pleistocene-aged strata, some sections have undergone very little erosion, while other parts are actively infilling. Considerable potential yet exists for the discovery of intact, deeply buried cultural deposits.

Student Paper Session

The Use of Reality Capture Technologies to Mediate Relocation Impacts at the Perrenoud Homestead
Madisen Hvidberg (madisen.hvidberg@ucalgary.ca) University of Calgary

The disassembly of structurally unsound heritage buildings for the purposes of safety and development is a well-established practice. Oftentimes this removal comes with the intent of moving, reassembling, or rebuilding the structure in the future. Located in southern Alberta, the Perrenoud Homestead is one such site; taken apart and placed in storage in the summer of 2017 to be rebuilt sometime in the future. One of several buildings at the Perrenoud site, the homestead is a heritage building valued for its significance to the establishment of early ranching operations in Western Canada. During its week-long disassembly, the Perrenoud Homestead was digitally documented using terrestrial LiDAR scanning and drone-based photogrammetry. Combining the use of these reality capture technologies with analytical tools, such as change detection analysis, gives us insights into the impacts of the preservation work done at this site. In this paper, I discuss the Perrenoud Homestead project, focusing on the use of these digital methods to help aid in and mediate the heritage building relocation process.

Magnetometry and Ground Penetrating Radar at the Junction Site (DkPi-2): Late Prehistoric Campsite Spatial Organization

Margaret Patton (mpatton@ucalgary.ca) University of Calgary

Magnetometry and ground penetrating radar results at the Junction Site (DkPi-2) indicate a complex suite of activities that extend across large areas of the site. Junction contains multiple Late Prehistoric Period occupations that include bison kills, processing camps, and winter campsites. These occupations date between 300 BP and 1000 BP, indicating continuity of use by Old Women's phase peoples. Geophysical surveys in 2017 and 2018 examined 7.7 hectares with magnetometry and 1 hectare with ground penetrating radar, revealing a broad spatial distribution of anomalies. Excavations by Lifeways of Canada in 2017 and 2018 confirmed several of these anomalies as archaeological, revealing hearths, roasting pits, piles of FBR, and other archaeological features. Matrix samples from archaeological features and exposed profiles provide a geoarchaeological background to the site and features, improving the interpretation of the geophysical surveys. Analysis of spatial patterning shows anomaly clusters, linear groups, and arrangements of anomalies in squares and semicircles. These anomaly patterns at Junction hint at the spatial organization of the site and provide clues to the use of space by Old Women's phase people in winter campsites and processing camps.

Heritage, Risk, and Industrial Archaeology: The Case Study of Brooks Aqueduct

Christina Robinson (christina.robinson2@ucalgary.ca) University of Calgary

Brooks Aqueduct is a unique structure that played a vital role in bringing large-scale agriculture to southern Alberta in the early 20th century. This 3.2 km long structure has a long history of maintenance and repairs, which continues today as 100 years of deterioration takes a noticeable toll on the aqueduct. This multidisciplinary applied research project maps both historical and present-day damages and repairs to monitor and identify patterns of change over time to the aqueduct through a bespoke designed cloud-based database and mobile recording app. This approach allows for information about the design, construction, and maintenance of the aqueduct during its working life to be extracted from the structure, as well as providing information to better maintain the aqueduct for the future. This project will be discussed in the context of those risks that are affecting heritage sites across the globe and how a historical engineering approach can provide another means of understanding the industrial archaeology of Canada.

Rethinking the Anthropocene

Gillian Taylor (gillian.taylor@ucalgary.ca) University of Calgary

According to most contemporaneous research and literature, humans' have only recently begun to significantly alter the Earth. Scientists have labeled this vaguely-defined epoch the Anthropocene, the highly-debated start dates of which could arguably be pushed back thousands of years, based on new archaeological research concerning humans' on-going integral relationship with nature. Few, if any, contemporaneous regions on earth can be characterized as pristine, with changes to the earth caused by humans occurring much earlier than the Industrial Revolution, including mass extinction events, as well as changes to species abundance, composition, community structure, richness and genetic diversity. The intentional use of fire, for example, can be traced back to the Lower Paleolithic sites, and has been used consistently to deter carnivorous animals, cook meat, prepare weapons for hafting, and clear brush. One of these earliest known sites, dating to about 400,000 years ago, is at Schöningen, Germany. In this paper, primarily using the example of anthropogenic fires, I hope to present evidence for a permanently altered 'unnatural nature,' caused by *Homo sapiens'* activity for close to our entire length of occupation. With this, I also propose a significantly earlier date for the Anthropocene, with further distinctions between possible timeframes within it. Knowing the *nature* of humans' relationship with "nature", as it has persisted since the Holocene, will give us insight into our very convoluted relationship with the "natural environment" as it is today, and a framework through which humans can understand their role in the global climate change that is occurring.

Poster Session

Calcined Bone: The Effects of Time and Temperature

Sydney Atkinson (syd.atki@gmail.com), **Kelsey Peterson** (kelsey.peterson@uleth.ca)**,** **Jade McNab** (jt.mcnab@uleth.ca), **James Carnahan** (james.carnahan@uelth.ca), **Mariah Miller** (Mariah.miller@uleth.ca), and **Sheldon Harmacy** (sheldon.harmacy@uleth.ca)
University of Lethbridge

The premise of this experiment is centred around understanding how bones become calcined and why they are prevalent within the archaeological record. Research is sparse pertaining to this topic- our experiment was developed in hopes of creating a new discussion on calcined bone. Calcined bone occurs when bone is exposed to fire or a heated context and is scorched, this particular state keeps it cellular structure but changes its appearance. Calcined bone can be identified by it's white/blue appearance or bone ash and waxy in texture. This experiment evaluates how bone becomes calcined by testing three variables; bone dryness (green vs dry), temperature (C°) and the time required to produce the calcined state. This experiment was carried out by two groups working as counterparts, one working with green bone and the other with dry. As counterparts the groups objective was to determine the

relevance of dry or green bone within the process of calcination, in conjunction with the thermal and temporal factors. This poster outlines the results of both groups experiments and their correlation with one another.

Tooth be Told, This Concept Isn't Too Hard to Grass-p: A New Method for Dental Microwear Analysis in Bison

Tatyanna Ewald (t-ewald@hotmail.com) Atlatl Archaeology

The analysis of microwear patterns on teeth has been proven to provide knowledge of an animal's diet immediately before death, and therefore to be useful in the determination of seasonality at death. This type of analysis is based on the recognition that food characterizing general dietary patterns leaves unique signatures on the enamel of teeth; however, this has been limited to broader inferences regarding general diet prior to death, such as seasonal grazing and browsing. This research evaluates polish in archaeological bison as a means of determining season of death for these specimens in order to broaden the application of dental microwear analyses on the Plains. Within this study, dental polish analysis techniques are created and applied to bison teeth to assess polish signatures left by grasses with varying moisture and exogenous grit to infer the season at death for these specimens, as moisture and grit content vary seasonally. Correlations of dental polish with seasonal patterns are identified based on modern observation and collection of local grasses, which identified four distinct seasonal categories within southern Alberta based on these variables. Dental polish of bison from EePf-1 and EgPn-440 are examined, allowing for assessment of seasonality of death for these individuals. These interpretations determined that EePf-1 may have been recurrently used during the spring and summer months, and that the assemblage from EgPn-440 represents at least three, distinct occupations, two in the fall and one in the spring.

Glacial Lake Peace and the Ice Free Corridor: A Least Cost Path Model

Katherine Gadd (beames@ualberta.ca) University of Alberta

This project aimed to shed some light on the question of the accessibility of the Ice Free Corridor through examination of the decisions required to navigate it successfully as it opened. Previous Least Cost Path studies have used "continental scale elevation data" (Anderson and Gillam 2000) to examine how North America came to be populated, but a smaller study area allows for the use of a far more detailed digital elevation model (DEM) data. The focus on the Peace Region is especially useful as it has been shown to be one of the last segments of the ice-free corridor to be deglaciated (Hickin et al. 2015, Pedersen et al. 2016), causing a potentially significant bottle-neck to travel prior to the start of the Holocene.

Several iterations of a Least Cost Path model through the corridor show some remarkable consistencies with the locations of some of the oldest known sites in the Peace Region. The clustering of the paths around the Charlie Lake cave site suggest that this was an

important crossing point and points to some areas that might be good places to look for sites in the future. These models show that the lake may not have been the firm barrier it is often supposed to be, especially in light of the discovery of the bison remains found as part of the Site C Dam surveys.

Iron Age Lithic Tools from Beth Shemesh

Sheldon Harmacy (sheldon.harmacy@uleth.ca) University of Lethbridge

A number of agricultural tools were used during the Iron Age in the ancient Near East, most of which were made of stone. Hundreds of these knapped artifacts have been found at Tel Beth-Shemesh, Israel, most of which have come from Iran Age contexts. Flint sickle segments are the most prevalent tool type and are the focus of this study. The detailed analysis of the raw materials used, the manufactured templates employed, the hafting process, and the usewear present on these artifacts yielded insights into their creation and use. This study resulted in a better understanding of the tools used in the agrarian industry, and a greater appreciation of the importance of the lithic industry during this period.

An Analysis of the Faunal Collection from the Milk River at Writing-on-Stone/Áísínai'pi

Mariah Miller (millermariahm@gmail.com) University of Lethbridge;

Writing-on-Stone/Áísínai'pi (WOS/Á) is an important natural and cultural landscape in southern Alberta. Located on the Milk River, the Provincial Park consists of many archaeological sites but is best known for its beautiful rock art and landscape. The Milk River, which flows through the park, erodes its banks, and at times, exposes and displaces buried cultural remains. In the summer of 2018 a number of artifacts and faunal remains were recovered from the Milk River at WOS/Á. The bone specimens were analyzed at the University of Lethbridge. Special attention was placed on distinguishing between *bison* and *bos* (cow) as these animals share similar morphologies. Bones of both animals are present in the collection, some of which showed evidence of butchering activities. This poster highlights identifying attributes, along with assemblage differences found within the WOS/A material, and focuses on defining a simple and systematic methodology for future analysis.

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Seeing the Light: Using Laser Scanning to Study Erosion Dynamics and Monitor Stream-Bank Retreat at a Threatened Heritage Site in Alberta

Kelsey Pennanen (kelsey.pennanen1@ucalgary.ca) University of Calgary

This poster demonstrates the application of ground-based laser scanning technology which is used to monitor the effects of erosion using the case study of a significant buffalo jump in Alberta. This poster outlines the use of this technology to determine continued impacts of erosion affecting the site and what it can add to current heritage management practices. Remains at the base of the buffalo jump cliff face were exposed and significantly impacted due to the 2013 flooding of the Jumpingpound Creek basin, and these results report on the continued threat of erosion affecting the site, based on data collected 3 and 4 years following the initial flooding event. Information obtained through laser scanning allows for change detection analysis using cloud-to-cloud comparisons to study the dynamics of change occurring at the site, and measure sediment erosion and bank withdrawal. Evaluation of cross-sections along bank exposure allows for instability monitoring; and capture of intensity values can be used for qualitative determinations of presence or absence of features along riverbank exposures. This study provides a proof of concept for the value-added in the digital documentation of heritage sites, especially those threatened by natural processes, thereby making it useful for heritage managers to aid in site monitoring and preservation efforts. The quantity and accuracy of data collected through this process allows in-field data capture methods unparalleled in speed and automation, especially suitable for heritage sites that may have limitations in access, or when time restrictions for field work is limited.

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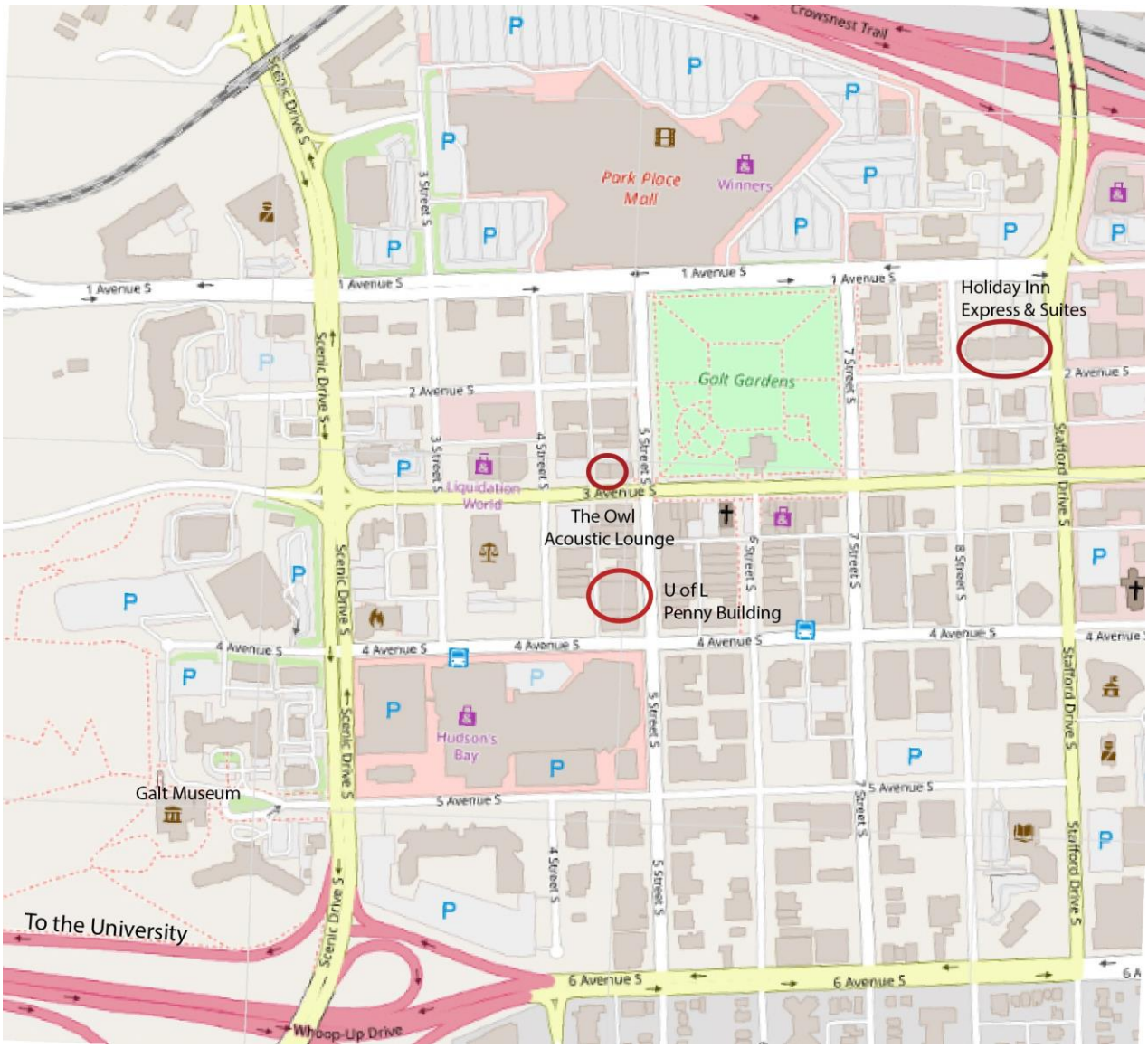
Conference Venue Locations

Friday, April 12th

ASA Conference Workshop and Registration at the U of L Penny Building in downtown Lethbridge (324 5th St S). It is best to park at Park Place Mall (for free).

Reception at the Owl Acoustic Lounge (411 3rd Ave S).

Accommodation at the Holiday Inn Express & Suites.



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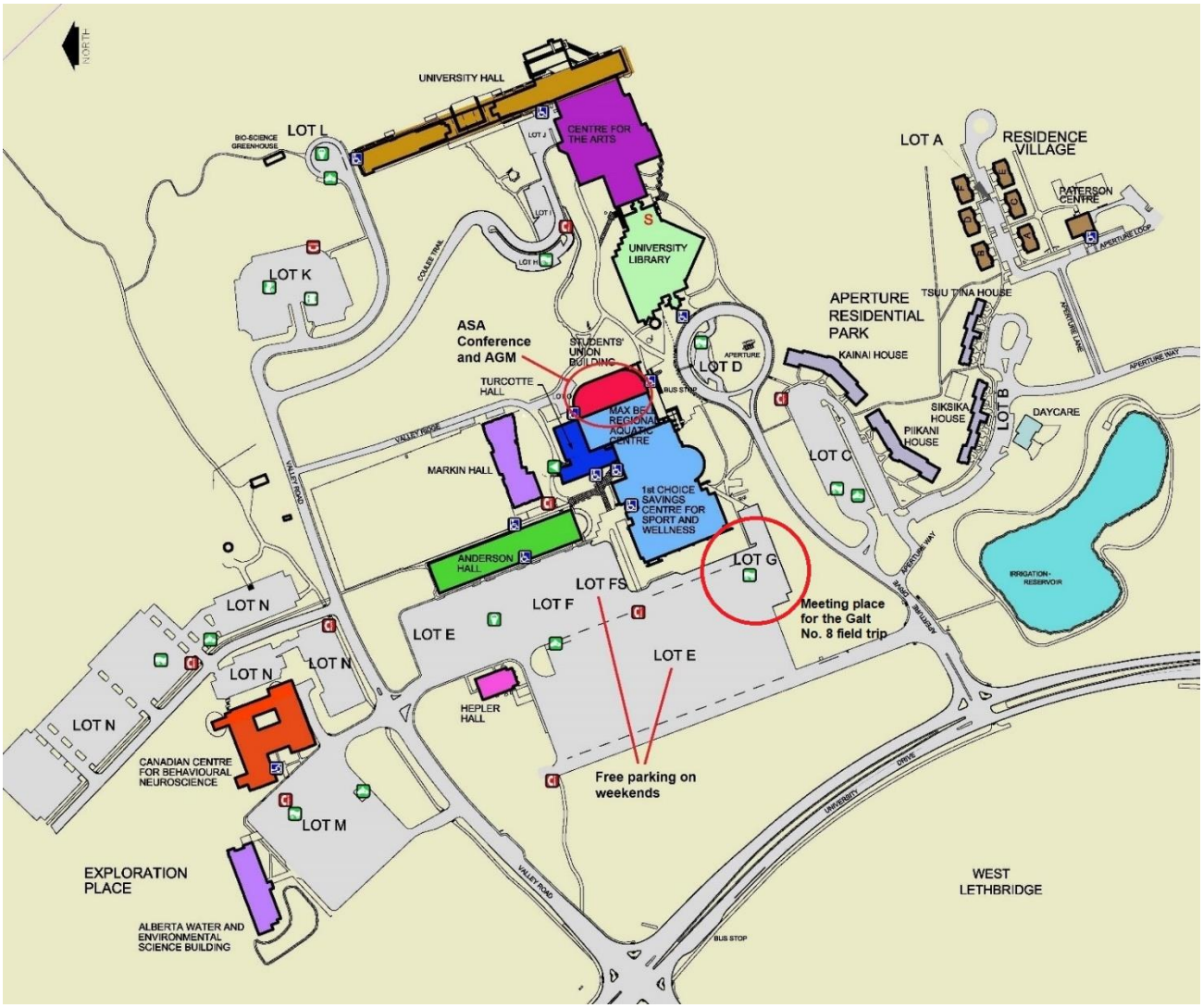
UNIVERSITY OF LETHBRIDGE

Saturday, April 13th

ASA Conference Presentations, Posters, Banquet, and the Annual General Meeting in the Students' Union Ballroom at the University of Lethbridge (4401 University Drive W). Parking is free on the weekends (in non-reserved spots only).

Sunday, April 14th

Morning tour of the Galt No. 8 Historic Mine Site. We will meet in Parking Lot G at the University of Lethbridge (4401 University Drive W). Please note: the site is gated; as such, please try to arrive on time and if you need to leave early, please alert the ASA before the start of the tour.



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Welcome Reception

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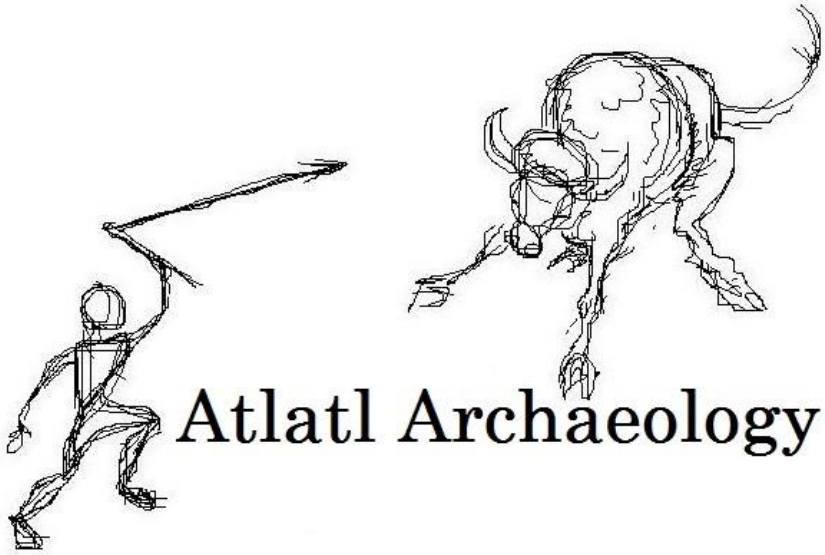
Wine Reception and Poster Session



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