



# **NORTHWEST ANTHROPOLOGICAL CONFERENCE PROCEEDINGS 2021**

*Journal of Northwest Anthropology*  
Special Publication #5

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2021



*Journal of Northwest Anthropology Special Publication #5*

Edited by Victoria M. Boozer and Darby C. Stapp



NORTHWEST ANTHROPOLOGY

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## ***JONA* EDITORS' PREFACE**

Darby C. Stapp and Deward E. Walker, Jr.

The *Journal of Northwest Anthropology (JONA)* is pleased to sponsor and publish the first-ever proceedings of the Northwest Anthropological Conference (NWAC). This effort continues *JONA*'s longstanding relationship with NWAC, a relationship that began in 1967 when we first began publishing NWAC abstracts in the journal. The relationship expanded the next year when we started publishing NWAC student award winning papers. Thanks to our joint efforts, researchers today have access to over 5,000 NWAC abstracts and 50 student winning papers within the 55,000 pages of *JONA*, all of which are available electronically.

We join the Northwest Anthropological Association Board in our expectation that NWAC attendees will support future proceedings by submitting their papers and poster presentations for inclusion. Participation in 2021 was modest, not surprising given that this was the first year the Board and *JONA* agreed to produce a conference proceeding. With the plan to distribute the 2021 proceedings electronically to all 2021 and 2022 conference participants, awareness will increase, and the number of submittals should improve. We will all benefit from greater access to the research presented at the annual conferences that will be made possible by this new annual publication.

The annual NWAC has been an important factor in *JONA*'s success over the past 55 years, so we are more than happy to sponsor this new publication. The *JONA* table in the NWAC bookroom provides a setting where we can meet prospective authors and discuss their article ideas. The NWAC is always our biggest sale day, where colleagues renew their subscriptions, students and others new to the region can learn about the journal, and where we release our newest journal

and latest memoir. We are pleased to give back to NWAC, in particular, and Northwest anthropology in general by helping sponsor a new era of research publication for the Northwest. Conference proceedings are common in the engineering, science, and technology fields, but not so common in the social sciences. It is time to change this situation.

Darby C. Stapp  
Richland, WA

Deward E. Walker, Jr.  
Boulder, CO

August 2021

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## INTRODUCTION

### **74<sup>th</sup> Northwest Anthropological Conference: Celebrating Diverse Perspectives in Anthropology**

Bethany K. Mathews (2021 Conference Chair)

Christopher D. Noll (President, Northwest Anthropological Association)

In 2021, the 74<sup>th</sup> Northwest Anthropological Conference (NWAC) marked the first virtual event in the history of our annual meeting. The decision to hold a virtual NWAC was born from the uncertainty surrounding the safety of holding an in-person conference during the COVID-19 pandemic, and the sense of significant need for the conference after the cancellation of the 2020 NWAC. The Northwest Anthropological Association Board of Directors determined that our community needed to find a way to meet and called for volunteers to propose their vision of a virtual NWAC. The shift to a new virtual environment required a great deal of work in a short period of time. While we hope to return to in-person meetings in the near future, the virtual conference yielded new developments in our conference that we look forward to carrying forward as part of our future meetings. One important development is the publication of the NWAC Proceedings, which was implemented for the 2021 NWAC.

The 2021 planning committee built upon the cancelled 2020 conference theme “Inclusive Partnerships in Anthropology” to establish the 2021 conference theme “Listen, Learn, Change: Celebrating Diverse Perspectives in Anthropology.” This year, we continued the work that began at the cancelled 2020 NWAC, asking our colleagues to forge spaces for inclusive dialogue. The conference was held Wednesday, 7 April to Friday, 9 April, and included an inaugural invitation-only Tribal Caucus event on Wednesday followed by a public summary of the Tribal Caucus on



Friday; a Thursday morning keynote address in place of a banquet; four social hours; three association meetings; two full days of presentations for new professionals; ten organized sessions or panels; four general presentation sessions; and three general poster sessions. The conference was held primarily on the Socio Event Platform, with some support from Zoom Meetings.

Although virtual meetings cannot replace what many in our community view as an annual reunion, the 2021 NWAC was the most accessible event in the 74 years of the conference, reaching a record number of participants. This year, 727 people registered to attend the conference. Of the registered attendees, 274 (38%) indicated they were attending NWAC for the first time. While this conference typically gathers people from around the Northwest, this year we reached people around the world. Our presenters and attendees joined us from the Blood Tribe; Confederated Tribes and Bands of the Yakama Nation; Confederated Tribes of the Chehalis Reservation; Confederated Tribes of the Colville Reservation; Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians; Confederated Tribes of Grand Ronde; Confederated Tribes of the Umatilla Indian Reservation; Confederated Tribes of Warm Springs; Coquille Indian Tribe; Cowlitz Indian Tribe; Klamath Tribes; Nez Perce Tribe; Nisqually Indian Tribe; Port Gamble S'Klallam Tribe; Puyallup Tribe of Indians; Quinault Indian Nation; Samish Indian Nation; Shoshone-Bannock Tribes; Spokane Tribe of Indians; Squaxin Island Tribe; Standing Rock Sioux Tribe; Stillaguamish Tribe; Swinomish Indian Tribal Community; Wanapum Tribe; Washington; Oregon; Idaho; Montana; California; Utah; Nevada; British Columbia; Alberta; Alaska; Indiana; Michigan; Massachusetts; Maryland; New York; Rhode Island; Pennsylvania; Georgia; Tennessee; England; Netherlands; Hong Kong; Philippines; Australia; and Paraguay. Attendance was free this year, thanks to record donations from Northwest Tribes, Professional Associations, Historical Societies, Universities and Colleges, Cultural Resource Management Firms, and Archaeological Suppliers.

The geographic breadth and diversity of NWAC highlights the importance of developing a legacy of the conference. The introduction of the NWAC proceedings provides a reference that people can return to in the future to continue to benefit from NWAC. We have also developed committees that have only begun the work to strengthen inclusivity within our community. In 2021, the New Professional Subcommittee organized two full days of events to support professional development of new anthropologists. The Justice, Equity, Diversity, and Inclusivity (JEDI) Subcommittee accepted the challenge of creating inclusive spaces for under-represented perspectives that ultimately strengthen our field of practice. We look forward to building on these actions in future conferences. Thank you to all those who helped to organize NWAC 2021 and everyone who attended.

## **Conscious Conservation in an Era of Catastrophe: Lessons Learned in Enterprise Cultural Resources Management**

Eve Dewan (Principal Investigator, Warm Springs Geo Visions, edewan@wsgeovisions.com) and Angelina Howell (Director, Warm Springs Geo Visions, ahowell@wsgeovisions.com)

### **Tribally-owned Cultural Resources Management**

Since its founding in 2002, Warm Springs Geo Visions has been an independent, tribally-owned enterprise committed to providing holistic, multi-modal, and multi-vocal environmental compliance and cultural resources management products and services to a wide range of clients around the Pacific Northwest. We are headquartered at the Warm Springs Reservation in central Oregon, with a client services and community outreach office in the heart of Portland's Central Eastside Industrial District. The firm provides a wide range of environmental and cultural compliance services, including cultural and natural resource studies and evaluations, ethnographic research, geospatial data gathering and analyses, and oral historical research using a unique suite of staff strengths and interdisciplinary perspectives.

The Northwest and the wider world have faced challenging issues over the past year, most prominently the COVID-19 pandemic and impacts of accelerated climate change. Despite these obstacles - and in some ways, spurred by the need to adapt to them – Geo Visions has recently experienced unprecedented growth. We have opened a second office to better serve our clients, hired new professional and technical staff, and continued our ongoing transition to more sustainable work practices that better demonstrate our commitment to conscious conservation.

In this paper, we reflect on some of the lessons we have learned during the past year in order to provide examples of successful adaptations that carried on the critical work of cultural and natural resources management in a post-COVID world and on the doorstep of the Environmental Century. Successful conduct of our work depends on a wide range of diverse partnerships. We are honored to share our experiences and these insights in hopes of connecting with others who strive to integrate care, compassion, and Indigenous perspectives and modes of knowledge production into their environmental management work.

### **Covid-19 at Warm Springs**

Indigenous communities and other people of color have been disproportionately negatively affected by the novel coronavirus throughout the United States, and the community at Warm Springs is no exception. As of May 2021, approximately one year after the pandemic began, the community had experienced over 765 positive cases and 25 deaths. Several Geo Visions staff members had to quarantine due to exposure to people with positive diagnoses, and many had to care for their own family members as they themselves fought the virus.

There have been six near-total shutdowns of CTWSRO tribal government offices and services during the worst parts of the pandemic and at least two partial but overlapping shutdowns due to extremely dangerous air quality impacts from numerous forest fires around the region. During this time, many tribal employees and enterprises, including Geo Visions, adapted on the fly and under increasingly uncertain circumstances to remote work while adapting office spaces to strategically support research, survey, and monitoring teams working around the region. Office space transitioned from compartmentalized individual task areas, to shared but staggered access points for data sharing and backup, supplies, equipment, temperature checks, rendezvous points, and socially distant collaborations.

## **Adaptations to Office and Fieldwork Practices**

When the extent of the COVID-19 pandemic became clear in late February 2020, the CTWSRO took swift and decisive action to keep its community safe. Geo Visions staff members were deemed essential workers due to one of the enterprise's primary roles that came sharply into focus during the pandemic: the tribal cultural resources enterprise supports, exercises, and helps maintain tribal sovereignty through job creation and as an income source for Tribe members. The ever-changing circumstances posed by concurrent, large-scale crises did not appear to impact the rate at which new proposals and contracts to undertake complex, large scale field and ethnographic research projects materialized, and the adaptations these crises demanded have evolved into critical infrastructure and contributed to the resiliency and agility of the enterprise.

The more that was learned about the virus, the more imperative it became to adopt and integrate stricter hygiene protocols into work areas and methods. Use of masks was voluntary, yet all staff and crew were fully compliant. Flexible schedules and time off for vaccinations and vaccination recovery time helped achieve a 100% vaccination rate for the entire staff, including seasonal and part-time staff. New items on project checklists include sanitizing field equipment, performing daily temperature and symptom checks, and maintaining distance in the field – a practice that was made relatively simple in the field due to the nature of the tasks. The more challenging aspects were trying to figure out how to transport crews to multiple concurrent and geographically disbursed project locations with a limited fleet and resource base, how to share data safely and securely, and even how to take breaks and take meals during harsh weather conditions in small, enclosed areas like crew vehicles.

Enforcement of social distancing guidelines led us to a travel policy that permitted only two staff per vehicle with seating for four, with one staff member in front and one in back, both masked. Limiting crew to two per vehicle resulted in the increased use of personal vehicles, increased costs for mileage and maintenance, and challenges coordinating the use of a limited number of vehicles across multiple projects and large geographic areas.

### **Remote Connections and Collaborative Applications**

The realities of the pandemic have also resulted in a need for flexibility in the roles and availability of each team member, including those not spending time in the field but working and researching from remote home offices. When not conducting fieldwork, Geo Visions staff have adapted to the new realities of work and life with COVID-19 in other ways as well. Prior to the pandemic, staff worked closely together in shared offices with other tribal departments and enterprises. When tribal government and enterprises were shut down multiple times and for months at a time during the height of the pandemic, offices closed, and employees were asked to work remotely. This required rapid transitions to new ways of communicating and collaborating to keep projects on track.

Utilizing Basecamp, an online platform that facilitates project collaboration and communication, and Asana, a project and resource management application, the enterprise was able to continue to work closely on projects, seamlessly sharing project updates, data, resources, and direct lines of communication across teams and individually. Like most organizations, the enterprise also transitioned to virtual meetings both internally and with clients and partners using Google Meet.

The enterprise's ability to scale and adapt simple, affordable, secure, web-based tools to rapidly changing circumstances can provide some examples of how other tribally- and non-

tribally-owned cultural resources enterprises might prepare the work of the future by enhancing resilience through disbursed collaboration and sharing resource bases. During a year with multiple large-scale crises that shuttered governments and industries across the globe at unprecedented rates, these adaptations and applications ensured the enterprise not only remained in operation, but doubled its revenue compared to 2019 while significantly reducing its carbon footprint by a minimum of 50 metric tons per year through the implementation of a flexible, organization-wide remote work policy.

### **Looking Forward in the Environmental Century**

The wildfire season of late 2020 was unprecedented in Oregon, with over one million acres burned and thousands of homes and other structures destroyed. As climate change continues to impact the world, these disasters may become less anomalous, and those whose work involves protecting and managing cultural resources need to be equipped to face such crises. At Warm Springs Geo Visions, this has meant increased collaboration with the CTWSRO's Bureau of Natural Resources, assisting with timber salvage and surveys of fire-affected landscapes. The enterprise's fieldwork teams also learned an additional benefit of the masks worn as part of the safety protocol against COVID-19: protection from toxic particulates carried by the wildfires.

These masks are just one component of the semiotics of disaster, a worldwide visual language that also now includes ubiquitous hand sanitizing stations, private dining tents, and more. However, they also communicate a mutual ethic of shared responsibility and an understanding that our decisions affect each other and our extended communities and environments. As a tribally-owned enterprise, Warm Springs Geo Visions is particularly mindful of its impact on the environment in all of its natural and cultural forms. The enterprise practices

an anthropology that is minimally invasive and draws on numerous forms of knowledge production and ways of understanding the world in order to effectively address our partners' needs while playing a critical role in achieving goals related to the Tribe's self-determination. At the time of this writing, the COVID-19 pandemic continues to impact the globe although the number of new cases is currently declining as the number of vaccinations administered goes up. Geo Visions is optimistic about the end of this crisis, but many of the enterprise's adaptations and new practices will continue to stay in place as new and ongoing challenges emerge.

### **ACKNOWLEDGMENTS**

The authors wish to thank the entire team at Warm Springs Geo Visions, as well as the staff at Warm Springs Ventures, the Confederated Tribes of the Warm Springs Reservation of Oregon (CTWSRO) Tribal Historic Preservation Office and Branch of Natural Resources, the CTWSRO Culture and Heritage Committee, CTWSRO Tribal Council, the CTWSRO community and many others who have generously shared their knowledge, expertise, skills, and time with us. We are honored to work on the ancestral lands of the Wasco, Warm Springs, Paiute, and numerous other Indigenous peoples of the Pacific Northwest.



## **Mapping Railgrades and Dirt Roads from Drone Imagery Using Deep Learning**

Dale Hamilton and Gabriel Johnson (Northwest Nazarene University Department of Mathematics and Computer Science)

### **Abstract**

Northwest Nazarene University's FireMAP research team is in the process of developing a deep learning approach to finding various archaeological features. This approach is being constructed through the use of a mask region-based convolutional neural network (Mask R-CNN) using Google's TensorFlow. Over the past two summers NNU has been gathering hyperspatial drone imagery containing these archaeological features. This aerial imagery is then fed into the Mask R-CNN in hopes of making a more dynamic approach. In the past the only way to map out these features was through a manual approach. This research project hopes to create a dynamic approach to finding and accurately mapping old roads and rail grades so that these maps can remain historically accurate.

## INTRODUCTION

This study examines the improvements in mapping and detecting of linear features from hyperspatial (sub-decimeter resolution) imagery acquired with small, unmanned aircraft systems (sUAS) using machine learning. The linear features that this study refers to include, maintained unpaved roads (henceforth dirt roads) and rail grades. Through this project, over 15,000 acres were flown in the Boise National Forest over archaeological features in the Boise Basin. This includes roads which originally were trails and historic railgrades which were instrumental in the settlement and development of the Boise Basin in central Idaho. The resulting orthomosaics were used to train a Mask Regional Convolutional Neural Network (Mask R-CNN), allowing the mapping of linear features with much higher accuracy than was possible with previous methods.

Our knowledge of the settlement of the western US can be augmented by higher resolution knowledge of different types trails, roads and rail grades, some of which currently exist as dirt roads and recreational trails. The generation of high-resolution maps of different types trails, roads and rail grades using artificial intelligence tools, creating higher detailed maps from hyperspatial imagery acquired by sUAS. Increased mapping accuracy of these travel routes improves our historical understanding of where settlement and resource extraction occurred, resulting in the discovery of previously unrecorded archaeological features as well as more effective targeting of ground based archaeological activities

## BACKGROUND

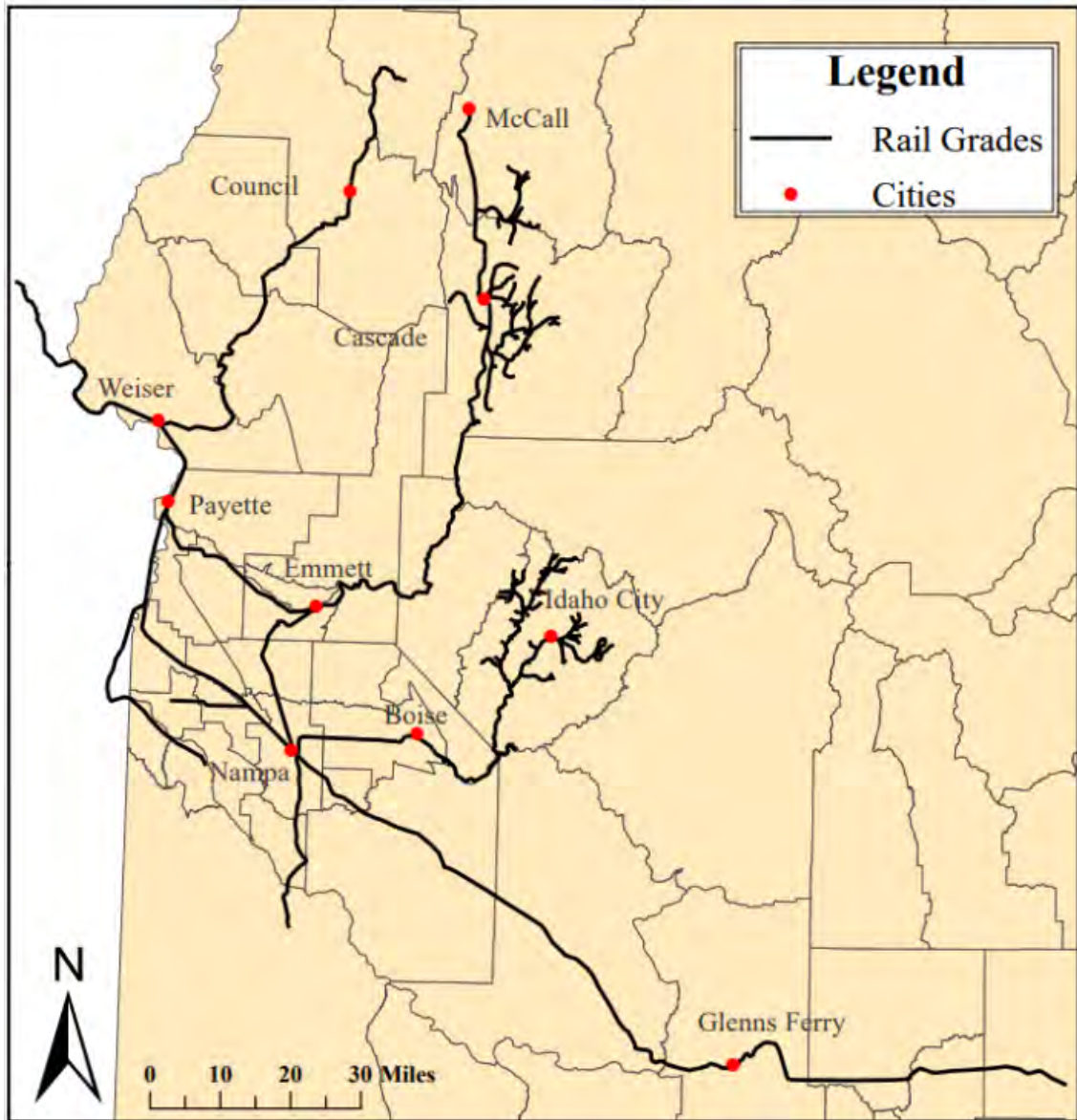
### Archaeological

The westward expansion of the United States (US) was facilitated by emigration along the Oregon Trail as settlers moved into newly acquired territories in the western US. The signing of the Homestead Act by President Lincoln in 1862 provided these and future emigrants with the promise of legal ownership of land they settled. Completion of the Union Pacific and Central Pacific transcontinental railroad in 1869 made emigration into the western US easier, cheaper, faster and safer. As the transcontinental railroads, their branch lines, roads and trails pushed further into the western US, settlement and shipment of agricultural and natural resources such as timber and minerals from the west into eastern markets became increasingly feasible.

The completion of the Oregon Short Line (OSL), a subsidiary of the Union Pacific Railroad, from the Union Pacific mainline in Granger, Wyoming to Portland, Oregon greatly increased access to southern Idaho. The OSL along with its subsidiary railroads and associated independent railroads facilitated emigration as well as provided a means for exporting agricultural and natural resources to markets throughout the rest of the nation and beyond. In southwestern Idaho these subsidiary railroads (built between 1900 and 1915) consisted of the Pacific and Idaho Northern Railroad (PIN) which connected New Meadows to the OSL mainline at Weiser and the Idaho Northern Railroad (INRR) which connected McCall to the OSL mainline at Nampa. The independent Intermountain Railroad connected Centerville and Idaho City to the OSL branch into Boise. While these railroads greatly improved travel into previously remote communities across southwestern Idaho, the primary impetus behind the building and operation of these railroads was to facilitate the harvest and export of timber to markets outside Idaho. In the first half of the twentieth century, timber companies built temporary spur lines (typically

following a creek drainage) from these local railroads to facilitate the transport of harvested timber to lumber mills. Once the timber accessible from a spur line was felled and transported to lumber mills, the rails and ties were pulled up and reused to build a spur line up another creek drainage for further to timber extraction (Witherell, 1989).

Operations have ceased on each of these local railroads. The PIN ceased operations in 1979 and has since been converted into the Weiser River Trail. The Intermountain Railroad ceased operations in 1935. The railgrade to Idaho City was purchased by the State of Idaho and repurposed in the building of Idaho Highway 21 (Witherell, 1989). The railgrade along the upper reach of Grimes Creek to Centerville was converted into a road by Boise County. The lower part of the railgrade along Grimes Creek down to the confluence with Moores Creek was abandoned due to erosion problems resulting in the railgrade being washed out frequently. The county road was built on the other side of Grimes Creek to reduce the risk of erosion. While unused, portions of the railgrade on the lower sections of Grimes Creek are still currently visible. The INRR continued operations in different forms, the most recent as a tourist train to Cascade, ceasing operations in 2016. Portions of the INRR between Cascade and McCall have been converted into trails, including the Crown Point Trail along Lake Cascade. Since cessation of operations, the remaining railroad between Cascade and Horseshoe bend has fallen into disrepair and is not currently capable of supporting rail traffic.



**Figure 1: Map of Railroads in Southwestern Idaho**

Though no longer used for rail service, these railgrades still exist. In some cases, they are now roads, either paved like Idaho Highway 21, or dirt roads like the Grimes Creek Road. Many of the associated roads and trails are still currently in existence, being used today as roads or recreational trails. High resolution mapping of these roads and trails have resulted in better understanding of the archaeological understanding of the associated areas. In some cases, the

high-resolution imagery that facilitated mapping also enabled the discovery of previously recorded archaeological features such as building foundations.

### **Technical: Mask Regional Convolutional Neural Network**

In 2017 a new type of machine learning algorithm was developed; called a Mask R-CNN. The goal of this new algorithm was to develop an improved way of both object detection and semantic segmentation. It completed this goal by extending the current solution for these issues which was the Faster R-CNN. In 2016, the Mask R-CNN outperformed all existing models in the COCO 2016 challenge (He et al., 2017).

The Mask R-CNN is an algorithm that is able to detect objects within images and then output a polygon mask of where the detected image resides. It does this by running images through convolutional layers, which is a function that transforms the data by doing pixel level calculations. It runs the images through multiple of these convolutional layers and then extracts meaningful information through these convoluted images. Using this information, it can perform object detection.

One of the most important improvements that are brought forward with the Mask R-CNN is instance segmentation, which is the combination of object detection and semantic segmentation. Object detection is the task of detecting the class of an object within an image and giving a rough estimation of where the said object resides. Semantic segmentation “deals with classifying each pixel of an image, given a set of classes.” (Romera-Paredes & Torr, 2016). Instance segmentation takes this a step further and not only detects the image, but also does pixel level delineation of which pixel, is in which object (Romera-Paredes & Torr, 2016).

The Mask R-CNN was able to do instance segmentation amazingly well. Along with this, the Mask R-CNN also uses a tool called RoIAlign, which allows for the realignment of misaligned features. Alignment was a former issue from previous models of this algorithm. Overall, the Mask R-CNN is a great improvement upon former CNN algorithms and added a lot of efficiency and new features including instance segmentation and RoIPool.

### **Technical: Computer Setup**

During the summer of 2018, the FireMAP team was able to secure a new top of the line workstation computer that could be used as an artificial intelligence workstation. This computer contained an Intel Core i9 Processor, two Nvidia GeForce GTX 1080 Ti's, and 64 GB of memory. The capabilities of this computer greatly improved the efficiency at which machine learning algorithms could be created and how quickly they could complete object detection.

## **METHODOLOGY**

The process of setting up a Mask R-CNN requires many steps. First all the training imagery needs to be acquired through the use of a sUAS. Then, that imagery is taken and used to create training data and validation data. Once this is complete, the Mask R-CNN is trained on the training data and then object detection is run on a separate imagery using the trained Mask R-CNN. Then this output is tested against the validation data to generate results.

### **Aerial Imagery Acquisition**

The first step in creating a Mask R-CNN is gathering the aerial imagery needed to train and validate this algorithm. While there is satellite imagery publicly available, it is not a high enough resolution. Most satellite imagery is about 5 – 15 meters per pixel, and with dirt roads only being around 10 feet in width, satellite imagery can brush over a dirt road in a single pixel.

This is not enough information for a Mask R-CNN to be trained on. Therefore, Higher resolution imagery is required.

The solution to this problem, is collecting imagery through the use of small unmanned aircraft system (sUAS). The sUAS or drone that was used to collect imagery was a DJI Phantom 4. The camera on the Phantom 4 is 12 Mega Pixels, which allows for very high-resolution imagery (*Phantom 4 Specifications*, n.d.). By using this drone, a spatial resolution of around 5cm per pixel can be achieved when flying at a height of 120 meters above ground level. This resolution is more than enough data to be able to sufficiently train a Mask R-CNN on.

Over the past three summers, the FireMAP team has been collecting imagery in a similar fashion to what is being needed by the Mask R-CNN. They have been going out in conjunction with the Forest Service and flying a sUAS over the Boise National Forest and creating high-resolution orthomosaics. This same process continued during the summers of 2018 and 2019 under an agreement with the US Forest Service Boise National Forest Heritage Program where over 15,000 acres of forested area were flown. Many of the areas that were flown contained dirt roads that were optimal for training the Mask R-CNN. In the next few paragraphs, insight on how this process worked will be provided.

For 10 weeks each year during the summers of 2018 and 2019, the FireMAP team drove out twice a week to a site chosen by our collaborators on the Boise National Forest. While in the field, the FireMAP team would utilize a DJI drone and collect aerial imagery of the site. Upon arriving, we would determine the accessibility of the site and then decide on the best plan for flying the site, which usually totaled up to around 100 to 500 acres. Once we decided on our flight path, we would launch the drone and maintain an altitude of approximately 120 meters above ground level. Then we would proceed to follow the flight path while the drone



automatically took photos in approximately 5 feet intervals, this allowed us to maintain 65% front overlap between photos (Fraser & Congalton, 2018). This process took an average of approximately 3 to 4 hours to fly the whole site. The time needed to fly the site depended heavily on the size of the site and the amount of logistical issues. Another determiner of flight time was the terrain of the site, since someone needs to have visual contact of the drone throughout the whole flight path visual observers (VOs) would often need to traverse through steep topography and dense vegetation. Generally, VOs took some time discovering and then trekking to good observation spots.

Once the process of flying a site was completed, we would return to the lab and organize our data. The imagery we acquired were 4000 x 3000 jpg images. Once organized, the data was inputted into a photogrammetry program called Pix4D (Forsmoo et al., 2019). This program was used to turn our aerial imagery into orthomosaics, which is an orthorectified mosaic of all the imagery collected. It does this by using the latitude, longitude, and altitude information embedded within the photos. At this point, the data is ready to be used in training the Mask R-CNN.

### **Development of Training Data**

In order to train the Mask R-CNN, an input of labeled or annotated images of dirt roads was needed. To start this process, all of the aerial images containing dirt roads needed to be found from within all the imagery taken during the image acquisition. Once all these images were discovered and procured, the labeling process took place.

To label the images, a program was used to go through the images one by one and define a polygon of where the specific feature resides (e.g. a dirt road) within the image. There are many programs that are used to do this. The program used in the lab was VGG Image Annotator

(VIA) created by the University of Oxford (Dutta & Zisserman, 2019). This program runs within a web browser using html, so no software installation was necessary to run the program.

First the images were imported into VIA. Then one by one, the images were visually analyzed by a lab member and a polygon was meticulously drawn around all the dirt roads within the image as shown in Figure 2. Approximately 400 images containing dirt roads were analyzed. During this process it was very important to create well-defined polygons annotating the dirt otherwise the Mask R-CNN will not be able to accurately detect the dirt roads. Once this process was completed the training of the Mask R-CNN could begin. First the validation data for testing the results of the Mask R-CNN should be created.



**Figure 2: Example of an Annotated Dirt Road**

### **Development of Validation Data**

Reflecting back to the hypothesis, the end goal of the study is to be able to run a whole orthomosaic through object detection to accurately find all dirt roads and rail grades within it. Thus, validation data should be created using an orthomosaic. This is done by taking an orthomosaic and opening it in ArcGIS Pro. Once open, we go through the orthomosaic and once again label every single dirt road within the orthomosaic by using the draw tool, which creates polygons that are stored within a shapefile. After this is done, a background layer is added to the

shapefile so that dirt road and background can be discerned from each other. Now, when the accuracy of the Mask R-CNN is wanting to be tested, the validation data is ready.

### **Creation of Mask Regional Convolutional Neural Network**

Now that the aerial imagery has been acquired and annotated, the creation and training of the Mask R-CNN can begin. Although before the Mask R-CNN training can begin, the virtual computer environment must be set up in order to create the Mask R-CNN. Anaconda was used to setup up this virtual environment.

The virtual environment process is started by creating a new Anaconda environment using Python 3.6. Then the following dependencies are installed on that environment:

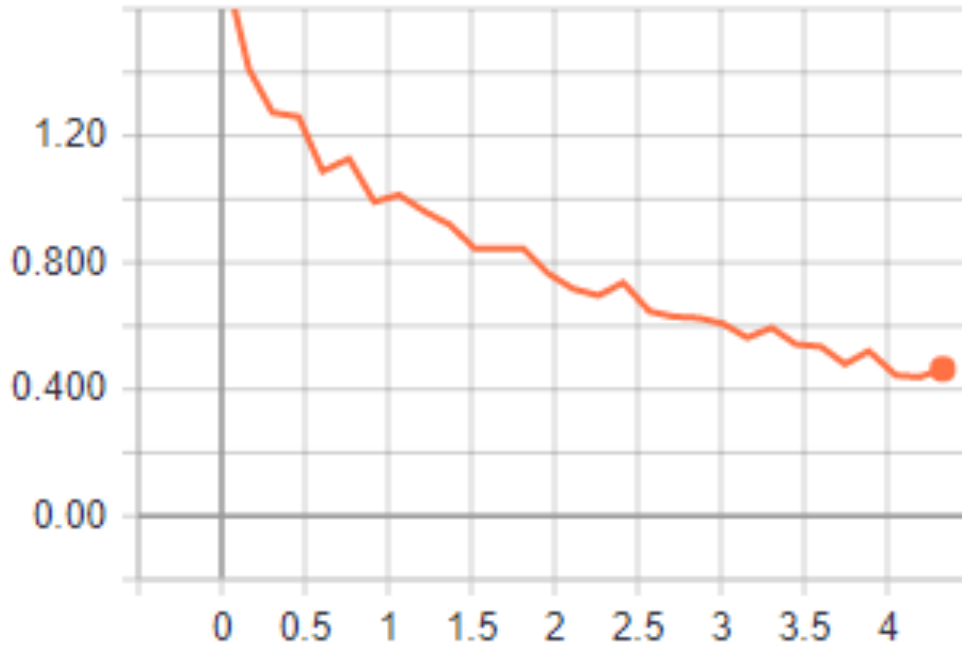
- Numpy
- TensorFlow GPU 1.5
- Scipy
- Cython
- h5py
- Pillow
- Scikit-image
- Keras
- Jupyter
- Matplotlib
- Imgaug
- Visual C++ 2015 Build Tools

After these dependencies are installed, the pre-trained Mask R-CNN folder structure is downloaded from GitHub (Abdulla, 2017). Then the COCO API is installed from another GitHub (Lin et al., 2014). Once all these steps are completed the computer now has the needed setup in order to start training its own custom object detection Mask R-CNN.

A new folder is created within the Mask R-CNN directory copied from the GitHub above. Next, a python file is copied and renamed from another directory to this newly created

one. In this python file, many settings and file paths are changed so that it will work with our new object, dirt roads, that we are trying to detect. Then two new folders are created within the Mask R-CNN directory that hold the training images and validation images. All annotated training imagery is then separated into these two folders. Eighty five percent of the images go into the training folder and the other 15% go into the validation folder. As the Mask R-CNN is running, it will train itself on the images within the training folder and then will test to see how well it is doing on the images within the validation folder.

Now that the setup for the Mask R-CNN is finished the training can commence. The training is started by running the python script described above with parameters that point to the folders containing both the training and validation imagery. After running this script, the Mask R-CNN will setup the TensorFlow environment and begin the training process. This process goes through 30 steps, called epochs, each which take around 10 – 15 min to complete. The whole training process takes around two to three hours, but this speed is very dependent on the power and amount of graphics cards being used. This speed is very quick compared to the speeds that a computer processing unit (CPU) would have; this is due to the fact that graphics cards are able to parallelize the linear algebra calculations that the Mask R-CNN gives them quite easily. While the Mask R-CNN is training, it will output the loss as it goes on, as shown in Figure 3. The loss number represents how accurate it is at detecting the annotated objects in the training process. In Figure 3, the X-axis represents the rate of errors and the Y-axis is the epoch that the training is on. An ideal number for the loss to be at is 1 (He et al., 2017). Once this lengthy training process finishes the Mask R-CNN will be ready to be used for detecting dirt roads.



**Figure 3: Mask R-CNN Loss Declining**

### Classification of Imagery

Now that the Mask R-CNN has been trained, it is time to detect dirt roads on our validation orthomosaic. Firstly, the orthomosaic is input into ArcGIS Pro and by using the tool ‘Split’, the orthomosaic is segmented into many 5000 x 5000 tiles, and then the images and their spatial reference are output into a folder. These images are moved into the Mask R-CNN directory for object detection to be run on them. The directory cloned from GitHub contains a python file that detection can be run with using Anaconda, but some heavy modifications had to be made to the python file in order for it to run the detection properly.

The anaconda environment created in the setup is opened and used to run the python file which is going to run object detection on the tiles of the orthomosaic. The python file sets up the TensorFlow environment and starts running the Mask R-CNN detection on the orthomosaic tiles. The object detection is run on one tile at a time and the output of the detection is a mask that overlays the detected object. Before moving onto the next image, this mask is first taken and

turned into a binary image with the background layer being set to 0 and the detected object being set to 1. This process is then done for all the images that were output from the orthomosaic splits. This entire process of detecting the dirt roads within the images takes approximately 30 minutes. This again depends on the number of images the detection is being ran on.



**Figure 4: Object Detection on Image**

After the binary mask is created, the python file then goes through each mask at a time and re-applies the spatial reference. This is required because during the process of detecting the dirt roads within the image, the image loses its spatial reference. Another modified python file is used to copy the spatial reference from the original orthomosaic split and apply it to the newly created binary mask which is called 'importsSR.py'. This process adds about another 30 minutes

to the detection process, again, dependent on the size of the orthomosaic. After all these masks are created of the detected dirt roads, they are put into an output folder by the detection python file.

### **Recombining the Orthomosaic**

Once all the masks are created, they can then be mosaiced together to form a new orthomosaic so that the detection can be compared against the validation shapefile created earlier in the process. This is done through using a tool within ArcGIS Pro called 'Mosaic'. First, all of the image files have to be imported into ArcGIS Pro, then the images are selected and mosaiced into an orthomosaic using the 'Mosaic' tool. This tool then outputs a tiff file. In order to validate the imagery against the validation shapefile, the created mosaic of the masks needs to be a shapefile as well. Another tool within ArcGIS Pro is used to convert it, which is called 'Raster to Polygon'.

Once this mosaic has been turned into a shapefile there should be two feature polygons within the shapefile: the detected dirt roads and the background layer. The detected dirt roads are classified with an ID of '1' and the background layer is classified with an ID of '0'. After the detected masks of the dirt roads have been successfully turned into a shapefile, the accuracy of the Mask R-CNN can be tested.

## **RESULTS**

The first step in determining the accuracy of the Mask R-CNN is to create a new ArcGIS Pro project and put both the detected dirt road shapefile and the validation image shapefile into the project. Both of these shapefiles have two classes within them: a background class which has an ID value of 0 and a dirt road class which has an ID value of 1. These two shapefiles are then compared using a tool within ArcPro called 'Tabulate Area'.



This tool compares the two shapefiles and outputs a confusion matrix that can be used to compare the accuracy of the Mask R-CNN. A confusion matrix is a table that has 4 fields within it: true positive (TP), false positive (FP), false negative (FN), and true negative (TN). TP represents when the Mask R-CNN and validation data agree that there is a dirt road, FP when the Mask R-CNN detects a dirt road but the validation data disagrees, FN when the Mask R-CNN failed to detect an object that the validation data had marked as having a dirt road, and TN when the Mask R-CNN and validation data agree that there is no road.

The ArcGIS Pro tool ‘Tabulate Area’ performs cross-tabulation on the two inputs and from that outputs a confusion matrix by doing cell by cell comparison where the size of the cell is about 4 pixels in height and width. The tool then outputs the number of cells that meet one of the four conditions above. This table is displayed in Figure 5.

	Validation: Dirt road <b>YES</b>	Validation: Dirt road <b>NO</b>
Mask R-CNN: Dirt road <b>YES</b>	2060.114 (TP)	10863.88 (FP)
Mask R-CNN: Dirt road <b>NO</b>	2446.385 (FN)	807918.6 (TN)

**Figure 5: Confusion Matrix output from ‘Tabulate Area’**

From this table we can now calculate the accuracy and precision of the Mask R-CNN. The formula for accuracy is shown in Equation 1. The formula for precision is shown in Equation 2. The value for accuracy is 0.9838 and the value for precision is 0.4571.

$$\frac{(TP + TN)}{(TP + FP + FN + TN)}$$

**Equation 1: Accuracy Equation**

$$\frac{TP}{TP + FN}$$

**Equation 2: Precision Equation**

The accuracy of the Mask R-CNN reached a value of 98%. This is very good but is a somewhat incorrect measure of the performance of the algorithm. This accuracy is so high, because there is such a large class imbalance between dirt road and background, since the amount of dirt road in an orthomosaic is so miniscule compared to the amount of parts that are not dirt roads. To combat this issue much of the background of the orthomosaic was cut out, but there is still quite a large class imbalance.

Alas, there is also a second measurement which is a much better indicator of performance, this is precision. Precision calculates when the Mask R-CNN detects a road, did it do it correctly. The Mask R-CNN achieved a 46% on precision. This means that about half of the time, when the Mask R-CNN detected a road, it was actually there. The value for precision is so low because the algorithm had a hard time of detecting all of the road. Generally, whenever there was a road within an image, it would detect it, but would generally miss some pieces of it.

These results are acceptable, and somewhat expected. This Mask R-CNN was only trained on around 400 labeled images of dirt roads. Honestly, I did very well for the amount of training data that was provided to this algorithm. Although, this research definitely achieved its goal. Again, this is only a pilot study to test the validity of using the Mask R-CNN to detect roads and railgrades from aerial imagery. From these results, it is definitely a valid option to detect these features. With more aerial imagery and more annotated training data, the Mask R-CNN could be a very good method of detecting and identifying these archeological features.

## FUTURE WORK

For future work on this project, as said in the conclusion, there needs to be a massive amount of additional training data. For the Mask R-CNN to achieve better results, there probably needs to be another 1000 to 2000 labeled aerial imagery. Another piece of future work would be taking the process of labeling the orthomosaic and turning it into fully fledged program. This program would take an input of an orthomosaic and then output a mosaic of detected dirt roads and rail grades within the orthomosaic. This type of program could easily be done in a C# framework. Along with this, the whole process could be parallelized using OpenMP or a different parallelization framework. Another potential future project, would be taking the outputted masks from this C# program and then converting the detected masks into a geo-referenced polyline, also known as skeletonizing. This polyline would be created by combining all of the outputted detected masks into one long polygon. Then it would take this geo-referenced polygon, find the center of mass going along the whole of the polygon, and then adding a line into the polygon. This line would then be converted into a geo-referenced polyline that would follow the lengths of all the detected dirt roads and railgrades.

## CONCLUSION

Overall, this project was a good initial study into the validity of using a Mask R-CNN in the mapping and detection of linear features. It shows a lot of promise for using this method in the future when dirt roads or rail grades are needing to be more accurately mapped and detected. This project could lead to a greater understanding of areas within the southern Idaho region due to the archeological knowledge that could be gained from more accurately knowing where these linear features reside. Along with this, the research into using the Mask R-CNN has created a good steppingstone for future students or researchers to build off of.

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## **Implementation of Deep Learning to Map Dredge Tailings from Hyperspatial Aerial Imagery**

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### **Abstract**

Northwest Nazarene University's FireMAP's research team is developing deep learning to identify archaeological sites including roads, dredge tailings, and hand-stacked tailings in support of a collaborative relationship with the Boise National Forest. Through the implementation of TensorFlow, a software library developed by Google, a mask region-based convolutional neural network (Mask R-CNN) has been trained to identify the desired landmarks. This project focuses on using the trained Mask R-CNN and the collection and labeling of hyperspatial, aerial photos of dredge tailings extracted from a provided orthomosaic in order to provide a georeferenced shape feature. The Mask R-CNN was able to detect numerous dredge tailings from provided testing imagery with high accuracy. Obtaining additional aerial imagery of dredge tailings would likely improve the Mask R-CNN's performance further, allowing for increased accuracy in detection.

## I. INTRODUCTION

This study examines the improvements in mapping of archaeological features such as dredge tailings from hyperspatial (sub-decimeter resolution) imagery acquired with a small unmanned aircraft system (sUAS) using machine learning. Through this project, over 15,000 acres were flown in the Boise National Forest over archaeological features in the Boise Basin. The resulting orthomosaics were used to train Mask Regional Convolutional Neural Network, allowing the mapping of dredge tailings with much higher accuracy than was found with previous methods.

The earliest European settlement of the western United States was primarily influenced by the emigration of settlers driven by mining. Gold discoveries in the Boise Basin in southern Idaho attracted settlers who were interested in mineral extraction, starting with the initial placer discoveries in 1862. Our knowledge of the advancement mining activity can be augmented by the generation of maps of different types of mining tailings using artificial intelligence tools, creating dredge tailing maps from hyperspatial imagery acquired by sUAS. Increased mapping accuracy of tailings extent and type improves our historical understanding of where mining was occurring, when it occurred, allowing better inferential assumptions of the historical significance of mining activity across the Boise Basin, resulting in more effective targeting of ground based archaeological activities.

Under the Antiquities Act of 1906, the USDA Forest Service Boise National Forest Heritage Program is required to monitor and record the state of historic sites on lands that they manage. This effort is a result of the partnership between the Boise National Forest and Northwest Nazarene University to improve how these historic sites are monitored and mapped.

## II. BACKGROUND

### 1. Archaeology

Prior to the passage of the Homestead Act of 1862, European settlement of the western United States was driven by gold discoveries found across the west. As placer deposits discovered in California in the late 1840's played out in the 1850's, miners migrated across the western US to other gold rich regions. With the discovery of gold on Grimes Creek in 1862, there were a large number of miners who migrated to the Boise Basin in southern Idaho. (Koschmann & Bergendahl, 1968).

The large influx of miners swelled Idaho, which was unpopulated by European settlers in 1860 (Idaho State Historical Society, 2020d), to a population of 20,716 by 1863 (Idaho State Historical Society, 2020a). The vast majority of the emigration was to the gold fields of the Boise Basin. By the 1863 census, Boise County had a population of 17,435 with the four largest cities in Idaho (West Bannock, Placerville, Centerville and Pioneer City) being in the Boise Basin (Idaho State Historical Society, 2020a). As of the 1864 census, West Bannock was renamed Idaho City and with a population of 7,000 was for a short time the largest city in the northwestern US, surpassing the populations of Portland and Seattle (Idaho State Historical Society, 2020b). The Boise Basin would turn out to be one of the most productive gold fields in the US, producing over 2.8 million ounces of gold. (Koschmann, 1968)

Increased mapping accuracy of tailings extent and type improves our historical understanding of where mining was occurring and when it occurred. Enhanced understanding contributes to better inferential assumptions of the historical significance of mining activity across the Boise Basin, resulting in more effective targeting of ground based archaeological activities

During the summers of 2018 and 2019, Northwest Nazarene University Department of Math and Computer Science flew over 15,000 acres over historic mining sites in the Boise Basin in collaboration with the USDA Forest Service Boise National Forest Heritage Program. In the areas that were flown, there were three different types of mining which were observed, hydraulic, dredge and lode mining.

Various types of sluice mining techniques were used for the extraction of gold from the Boise Basin, starting with the initial gold discoveries in the 1860's. Sluice mining relied running a stream of water over soil and rocks placed in a sluice box. The water run through the soil and rocks resulted in gold settling behind ridges in the sluice while lighter materials flowed through the slice. Piles of hand stacked rocks are remaining remnants of sluicing which are still visible today as shown in Figure 1.



*Figure 1: Hand stacked rocks*



Hydraulic mining (hydraulicking) relied on a stream gravity pressurized water sprayed from a monitor as shown in Figure 2. Soil including gold were eroded from hillsides and washed down hill to where the water was run through a sluice where the gold was extracted from the soil. Piles of hand stacked rocks and eroded hillsides are remaining remnants of this hydraulic mining which are still visible today.



*Figure 2: (Left) Hydraulic mining in the Boise Basin near Idaho City (Idaho, 2020e). (Right) Hydraulic mining head gate and ditches in the Boise Basin.*

Dredge mining was introduced to the Boise Basin at the beginning of the twentieth century. Dredges working along the creek as shown in Figure 3, scooped up material in the water and ran it through sluice boxes on the dredge. After gold was extracted through sluicing from rocks and sediment that were extracted from the creek bed, rocks and sediment were dumped from the dredge. Rocks which had a higher density would remain where they were dumped from the dredge, while the finer sediment would wash further downstream. The piles of rocks are the remnants of dredge mining which are currently visible. Dredge mining was initially used in the Boise Basin from 1900 to 1915, then to an even greater extent from 1930 to 1950 with a hiatus during World War II (Koschmann, 1968).



*Figure 3: Dredge operated by the Yukon Gold Company near Murray, Idaho. Note sluices discharging fine tailings into the pond at the stern of the dredge. Larger rocks are being dumped on the large cobble pile by the tailings stacker. (Idaho, 2020f)*

Hard rock mining entailed digging mine shafts from which gold ore was extracted from underground gold lodes deposits. Once the ore was extracted from the mine, it was crushed using a stamp mill. The crushed ore was then smelted or leached typically using a cyanide process (Idaho State Historical Society, 2020c). Closing abandoned shafts and adits (a horizontal mine tunnel) is an ongoing activity by the USDA Forest Service, either blasting the opening closed, or using foam or a gate to close the adit (USFS, 2020) as shown in Figure 4. This is done through the Abandoned Mine Lands (AML) program which serves to shut down mines that are no longer in operation while preserving all of the wildlife habitat and historic resources provided (Abandoned Mine Lands).



*Figure 4: Gated adit on the left, adit closed by foam on the right.*

## **2. Technical**

The choice to use a Mask R-CNN for this project was determined by the necessity to obtain the exact location in which a dredge tailing would reside within an image. Previous algorithms implemented by past research teams were able to locate the section of an image that contained dredge tailings by creating a bounding box around the area that contained a dredge tailing. However, the algorithms did not provide the exact pixels where there was a dredge tailing. The Mask R-CNN addresses this issue by implementing the combination of both semantic segmentation and object detection, known as instance segmentation. While object detection provides the general location that we were able to generate before, semantic segmentation takes it a step further by allowing classification for each individual pixel within the image (Romera-Paredes & Torr, 2016), which can then be converted into polygons which represent the spatial extent of the individual dredge tailing.

Essentially, the Mask R-CNN is an extension of the previously developed Faster R-CNN. By using a RoIPool, the R-CNN is capable of extracting the detected features from within a bounding box, providing us with the with an output of only the object we are trying to detect (He et al., 2017). The Mask R-CNN introduces instance segmentation. This is a combination of

semantic segmentation and object detection. While object segmentation only provides the area in which the object resides, the semantic segmentation is what provides the exact pixels we are looking for (Romera-Paredes & Torr, 2016).

NNU implements machine learning using an artificial intelligence (AI) workstation. It contains an Intel Core i9 Processor, two Nvidia GeForce GTX 1080 Ti's, and a total of 64 GB of memory.

### **III. METHODS**

#### **3. Collection of Hyperspatial Imagery**

Our first step in implementing an object detection algorithm is to collect the data necessary for the development of the AI. For the case of NNU's FireMAP research, our collaboration with the USDA Forest Service provided the opportunity to take hyperspatial imagery of select locations within the Boise National Forest. Throughout the summers of 2018 and 2019, every Tuesday and Thursday, the FireMAP research team travelled to locations within the Boise National Forest and set up the needed equipment and personnel, flying a total of 15,000 acres. The imagery was obtained using a small unmanned aircraft system (sUAS), specifically, DJI's Phantom 4. The pilot of the sUAS flew the drone 120m above the takeoff point and would fly the aircraft along a predetermined flight path. The height of the aircraft would periodically be adjusted in order to maintain a safe distance between the sUAS and the vertical vegetation on the ground. The Boise National Forest provided georeferenced, topological maps along with shape (shp) files as a reference for the area to be flown. Every 5 meters the sUAS would take an image using the equipped 20 Mega Pixel camera (*Phantom 4 Pro Specifications*). Such a high resolution is required to obtain images with a spatial resolution of 5cm per pixel at the height in which the aircraft was flown. At least two visual observers

standing in specified locations within the area of flight were required to maintain eye-contact with the sUAS in order to ensure safe operations and comply with the FAA regulations stating that at least one visual observer must have sight on the drone.

Once the Hyperspatial Imagery was obtained and the research team relocated back to the NNU campus, the micro SD card would be removed from the Phantom 4 and the images would be transferred to the AI workstation. Each 12 megapixel (MP) image has a resolution of 4000 x 3000 and contains overlap of 65% on the sides and 70% forward between the images to ensure that the developed orthomosaic would depict the entirety of the flown area without any missing gaps of images or information (Fraser & Congalton, 2018). Certain images such as ones taken during the takeoff and landing of the sUAS were removed from the collection to guarantee the quality of the orthomosaic. By using the image processing software Pix4D, the images would be stitched together to create an orthomosaic of the location as shown in Figure 5: Dredge tailings within an orthomosaic. Pix4D was chosen because of an educational discount that made it cheaper than the competition as well as being fast and having good support (Forsmoo et al., 2019).



*Figure 5: Dredge tailings within an orthomosaic*

With the equipment available to the FireMAP research team, the process of developing the orthomosaic would take a few hours on average, requiring us to begin the process immediately upon return. Doing this allowed the team to provide the Boise National Forest with the results the following workday while allowing the AI workstation to be free for training using the obtained hyperspatial imagery.

#### **4. Developing Training Data**

The development of the training data was accomplished with the objecting of identifying dredge tailings within an orthomosaic in mind. Due to the limited number of dredge tailings

within the Boise National Forest, each image obtained containing a dredge tailing was carefully selected and set aside in order to be used within the Mask R-CNN's training set. The images were obtained in two different ways. First, hyperspatial imagery taken from the sUAS by 2018 and 2019's FireMAP research team were gathered together along with cropped portions of already developed orthomosaics depicting clear images of dredge tailings. Second, many of the pictures taken would be put through a process of augmentation; that is, each image would be altered in color, size, proportion, and rotation until it appeared to be a visual distinct picture of a dredge tailing. This process would allow a single image altered into many different images in order to multiply the size of the training set.

For the Mask R-CNN to train on the provided imagery of dredge tailings, the dredge tailings within the photos must be labeled. For this project we decided to use the VGG Image Annotator (VIA) developed at the University of Oxford (Dutta & Zisserman, 2019). This program was chosen because of its web-based interface and relatively simple learning curve for image annotation. Being able to demonstrate to others how to properly label imagery was a crucial piece to this project; therefore, ease of access played a critical role in our choice of image annotator. The images themselves were imported into the program. Once there, a new label needed to be defined for our attributes. For the sake of consistency, the label we used was "dredge tailing." Many image annotators provide a multitude of shapes for the selection process including circles and squares. However, for the Mask R-CNN to identify an object by placing a mask over it, we need to carefully define the shape of the dredge tailing by using polygons.



*Figure 6: Annotated dredge tailings using polygons*

It was discussed whether to include vegetation within the polygons for the labeled dredge tailings. The conclusion that the team arrived at was to include any form of vegetation within a dredge tailing where the one labeling the images can safely assume that, underneath the



vegetation, the tailing continues. It is beneficial for the outputted masks from the Mask R-CNN to stay in one piece per dredge tailing rather than being segmented between areas of vegetation as these masks will soon be converted into shape files. Including the vegetation within the labeled polygons ideally will train the Mask R-CNN to identify the complete dredge tailing especially as the vegetation grows as time goes on.

## **5. Implementation of the Mask R-CNN**

To implement a Mask R-CNN, the AI workstation must first be set up with the proper environment and dependencies. To keep everything organized and create backups of our virtual environment, we used a program called Anaconda. With an Anaconda environment running Python 3.6, the following dependencies were installed:

- TensorFlow-gpu==1.5
- Numpy
- Scipy
- Cython
- h5py
- Pillow
- Scikit-image
- Keras
- Jupyter
- Matplotlib
- Imgaug.

Along with these, Visual C++ 2015 Build Tools are also required to be installed on your workstation. It is important to note that, when using TensorFlow-gpu, proper Nvidia CUDA drivers must be installed onto your workstation. Without the necessary drivers or a capable graphics processing unit (GPU), the TensorFlow dependency installed must be for your CPU which will likely increase the amount of time needed for training the Mask R-CNN. To simplify file paths and obtain a consistent folder structure, a pre-trained Mask R-CNN was downloaded off GitHub (Abdulla, 2017). In addition to this, the COCO API, which is used for the detection and labeling of our objects was also installed (Lin et al., 2014).

To train our Mask R-CNN, we take our labeled imagery along with the individual JSON files for each image downloaded from the VGG Image Annotator and divide the images into two sets. First, we have the set of photos that we will train on; this will be the majority of the images. The rest are set aside in a separate folder for validation which the Mask R-CNN will need to properly train. The entirety of this process for training will often take many hours to complete as checkpoint files will be created and set aside for when we are ready to begin object detection. As the Mask R-CNN trains on the dataset we decrease the amount of “loss” incurred; that is, over time, it begins to improve accuracy as it learns how to properly identify dredge tailings within the provided training set. As training progresses, the validation folder is accessed in order to determine how well the Mask R-CNN is training. This provides a chart that shows how the accuracy is improving over time as seen in Figure 7: As the loss decreases, object detection accuracy improves. The y-axis shows the frequency of loss while training while the x-axis shows which set of training the Mask R-CNN is currently in.

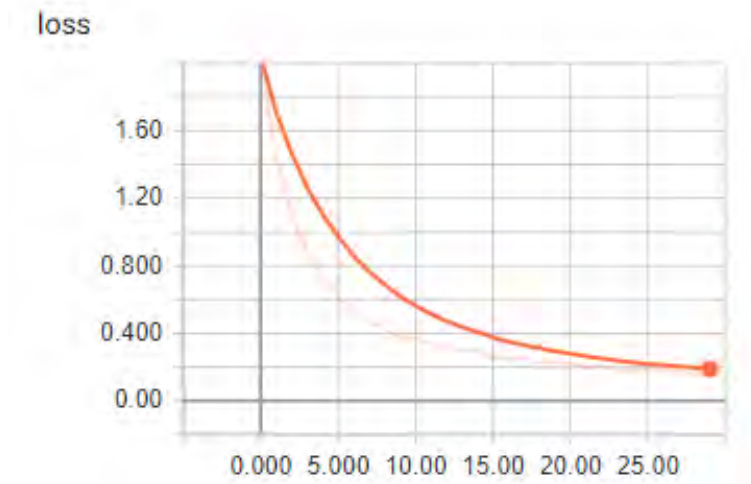
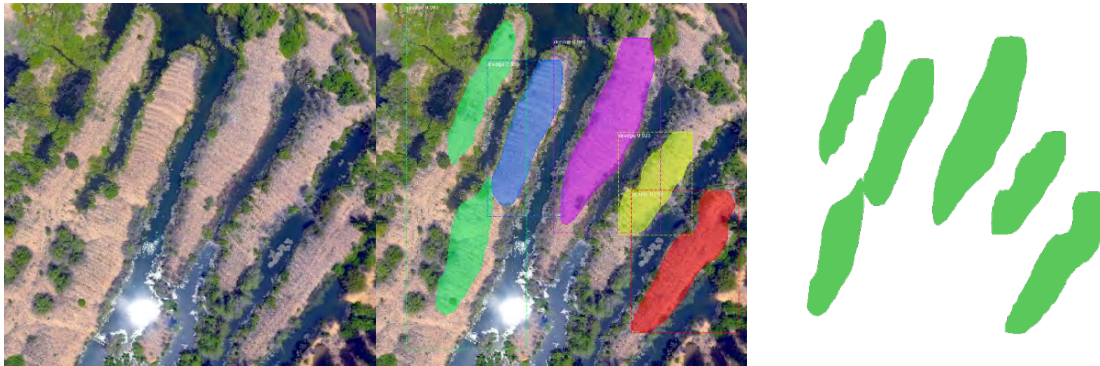


Figure 7: As the loss decreases, object detection accuracy improves

## 6. Classification

Our objective is to take an orthomosaic and identify all of the dredge tailings found within the image. While NNU's current AI workstation is not capable of performing object detection on such a large image like an orthomosaic, our solution was to divide the orthomosaic into smaller, 5000 x 5000 tiles using ArcPro's Split tool. The program retains the image's original spatial reference which is useful for when we create our polygon shapefiles of the dredge tailings. Heavy modification to the original Python file for object detection was needed in order to receive the output we were looking for. A separate Python script was created in order to extract the mask from the original outputted image while also keeping the 5000 x 5000 resolution from our tile. The script took the image with the overlaid masks along with the original, unaltered image and extracted the pixels that contained any differences. In this case, as seen in Figure 8: Object detection and mask extraction process. (Left) Unclassified orthomosaic tile. (Middle) Orthomosaic tile with tailing masks added by the Mask-RCNN. (Right) Tailing masks extracted from orthomosaic tile and converted to georeferenced polygons., the differences between the images

would be the masks covering the dredge tailings. Following this, the image is converted into a binary greyscale, providing an image that consists only of the masks. Although there are simpler ways to output the masks, each one would provide an output of a different resolution than the original image. In order to transfer a spatial reference between two images, they must be the same size.



*Figure 8: Object detection and mask extraction process. (Left) Unclassified orthomosaic tile. (Middle) Orthomosaic tile with tailing masks added by the Mask-RCNN. (Right) Tailing masks extracted from orthomosaic tile and converted to georeferenced polygons.*

We then transfer the spatial reference from the tile onto the new image containing just the masks and import these georeferenced maps into ArcPro. Given that the masks have now kept the original resolution of 5000 x 5000 and hold the same spatial reference, we are capable of combining the tiles of the masks into their own, stitched-together, orthomosaic using the ‘Mosaic’ tool which converts the new orthomosaic into a raster file. To detect accuracy, we need to compare two sets of polygon shape files to each other. To obtain the polygon shapes of our new raster, we can use the ‘Raster to Polygon’ tool. Validating the accuracy requires an individual or group of individuals to label and create polygon shape files of every dredge tailing found within the orthomosaic by hand. A team of NNU students from the Intro to Spatial Analysis course in the Fall of 2019 donated their time and effort into creating these shape files, providing us the opportunity to validate the accuracy of our object detection model as part of

their semester project for the class. The sets of polygons have two classes: one with the ID of ‘1’ that represents the dredge tailings within the orthomosaic and the other with an ID of ‘0’ that represents the areas that do not contain dredge tailings. Using ArcPro, we are able to create a confusion matrix that will provide us with the precision and accuracy of our Mask R-CNN using the Tabulate Area tool.

#### **IV. RESULTS**

After obtaining the confusion matrix from ArcPro, we are able to calculate the accuracy and precision of our Mask R-CNN. The matrix is composed of four sections: true positives (top left), false positives (top right), true negatives (bottom right), and false negatives (bottom left). True positives (TP) are created when the detection performed by the Mask R-CNN agree with where the human said there was a dredge tailing; if the detection states there is a dredge tailing where the human did not label one, that is a false positive (FP). A false negative (FN) is where the object detection did not detect a dredge tailing where there was one and a true negative (TN) is where both the human and the Mask R-CNN agree that there is no dredge tailing.

	<b>VALIDATED POSITIVE</b>	<b>VALIDATED NEGATIVE</b>
<b>MASK R-CNN POSITIVE</b>	26,179.7013 (TP)	108,953.8 (FP)
<b>MASK R-CNN NEGATIVE</b>	32,917.1245 (FN)	773,135.3 (TN)

Accuracy:           0.84926366

Precision:           0.44299674

Accuracy is obtained by taking the TP, adding it to the TN and dividing it by the sum of them all while precision is found by taking the TP and dividing it by the sum of the TP and FN. The accuracy of the Mask R-CNN is far higher than the precision because of the contents within the imagery. Accuracy takes into account the areas that are labeled as dredge tailings as well as the areas that are not. Given that there are likely few dredge tailings within a specified image. A majority of the accuracy is determined by the large amounts of true negatives found in an orthomosaic. Precision emphasizes the detection of the dredge tailings alone, demonstrating how well the Mask R-CNN performs at detecting the tailings.

While the results show promise, there are some improvements that can be made. Switching the orthomosaic that we used to validate the results to one that is smaller will allow us to certify that our labeling of dredge tailings, as humans, is as accurate as possible. This step is crucial to determining the validity of the Mask R-CNN. Other than this, obtaining additional training images will certainly improve the results.

## **V. CONCLUSION**

The Mask R-CNN, with the provided training imagery that contained labeled dredge tailings, was able to identify dredge tailings on recently obtained, unlabeled imagery. This shows that future NNU researches will be able to run new orthomosaics through the Mask R-CNN for the identification process. The recall and accuracy of the Mask R-CNN needs to be improved by obtaining more labeled imagery of dredge tailings within the areas that NNU will fly for future image acquisition.

## **VI. FUTURE WORK**

The NNU FireMAP project has completed year two of a five-year cooperative agreement with the Boise National Forest, helping the forest's Heritage Program acquire aerial imagery of and map dredge tailings. Future teams will continue to obtain aerial imagery over the next years. In order to improve the accuracy and recall of the Mask R-CNN, additional images of dredge tailings will be needed. In order to accomplish this, new areas within Idaho or other states containing dredge tailings will need to be flown as every image that NNU owns depicting dredge tailings have been labeled. Outside of improving the success of the Mask R-CNN, MPP, massive parallel processing, can be implemented to run the object detection algorithm on each individual tile of the orthomosaic, improving the detection speed. Additionally, combining the training, detection, and conversion to shapefile process into a singular batch file will simplify each of the steps allowing for future team members to be able to continue our work with a gentle learning curve.

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## **Protecting Places that Matter: A Paper Exploring Historic Properties of Religious and Cultural Significance to Indian Tribes**

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### **ABSTRACT**

The purpose of this session was to explore the concept of Historic Properties of Religious and Cultural Significance to Indian Tribes (HPRCSITs). HPRCSITs are a new addition to the types of properties identified as part of the legal mandate established by Section 106 of the National Historic Preservation Act and the National Environmental Policy Act. The format was a two-hour panel discussion with questions posed to a diverse group of land managers, cultural resources management (CRM) professionals, members of American Indian Nations, and government agency officials. Questions were designed to generate discussion on the nature of HPRCSITs, different approaches to evaluating the potential presence, context, and meaning of HPRCSITs and to what extent they should be documented. Questions from the audience were answered as well. Participants were encouraged to share their experiences devising appropriate methods to evaluate, record, and manage HPRCSITs.

## **Introduction**

Historic Properties of Religious and Cultural Significance to Indian Tribes (HPRCSITs) are an important but critically underdiscussed category of cultural resource. Heritage managers and archaeologists for federal agencies have struggled with how to best identify, evaluate, and mitigate effects to these properties. These properties represent an integral part of the history and culture of indigenous people throughout the United States and are as worthy of protection as archaeological sites and historic built environments. During the 2021 Northwest Anthropological Conference, eight heritage professionals (representing tribal, state, federal, and private, tribally-owned heritage cultural resource programs) participated in a discussion panel on the importance of these properties, and best practices for identifying, evaluating, and managing these properties. This paper highlights some of the key takeaways from this discussion and identifies ways to move forward.

## **The Legal Basis for Historic Properties of Religious and Cultural Significance to Indian Tribes**

A number of federal and state laws and regulations provide a legal framework for guiding cultural resource management. However, most of these laws focus primarily on material remains such as archaeological sites and historic built environments. Laws or sections of laws that deal with HPRCSIT sites are not as frequently discussed in the literature, so it is useful to provide context for these laws here. This section provides a brief introduction on the legal rationale for these properties, providing important background on HPRCSIT properties. The National Historic Preservation Act of 1966 (NHPA) is the most pertinent of these laws for this paper. In essence, the NHPA (particularly Section 106) and the regulations in 36 CFR 800.2 require that federal

agencies consider the potential effects of an undertaking to historic properties that are eligible for inclusion in the National Register of Historic Places. Further, federal agencies also have responsibilities to consult with State Historic Preservation Offices (SHPO) as well as Tribal Historic Preservation Offices (THPO) regarding these potential effects and all findings of cultural resource inventories. HPRCSITs are explicitly discussed in § 302706.A as properties that may be determined to be eligible for inclusion in the National Register. Regulations in 36CFR800.2(D) further elaborate on HPRCSIT stating:

When Indian tribes and Native Hawaiian organizations attach religious and cultural significance to historic properties off tribal lands, section 101(d)(6)(B) of the Act requires federal agencies to consult with such Indian tribes and Native Hawaiian organization in the section 106 process. Federal agencies should be aware that frequently historic properties of religious and cultural significance are located on ancestral, aboriginal, or ceded lands of Indian tribes and Native Hawaiian organizations and should consider that when complying with the procedures in this part. (NHPA 1966 54 US Code Chapter § 302706 A and B)

It should be noted here that HPRCSITs are distinct from Traditional Cultural Properties (TCP) in several important ways. Most importantly, TCPs are not specifically mentioned in the NHPA nor in 36 CFR 800.2. TCPs are first described in National Register Bulletin 38 as properties that are “eligible for inclusion on the National Register because of its association with cultural practices or beliefs or a living community that a) are rooted in that community’s history, and b) important in maintaining and continuing cultural identity of the community” (Parker and King 1998:4).

While not legally binding, National Register Bulletin 38 does provide key guidance for

considering TCPs as historic properties. Secondly, while there is significant overlap between these two categories of property, TCPs are a more generalized category of historic property that can be significant to any type of community (social group, ethnic identity, marginalized group,, etc.) while HPRCSIT properties are limited to places particularly important to Indian Tribes, Native Hawaiian organizations, and Native Alaskan corporations (King 2003:5; Lusignan 2009:41; Parker and King 1998:3). Third, a TCP must demonstrate continuous use by the cultural group. While it is unclear if this standard is required of HPRCITS, (to the author's knowledge) no HPRCSIT has been challenged in court (Parker and King 1998).

Executive Order 13007 (Indian Sacred Sites), signed by Bill Clinton in 1996, further delineates federal land management agencies responsibilities and obligations regarding HPRCSIT sites. Namely, agencies must, “(1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and (2) avoid adversely affecting the physical integrity of such sacred sites” (EO 13007 1996). Further, this executive order stipulated that agencies must maintain the confidentiality of these sites where appropriate (EO 13007 1996). Additionally, a more rigorous definition of sacred sites is provided in EO 13007 as:

...any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the Tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site. (EO 13007 1996)

This Executive Order can be used to maintain access to a site currently located on federal property and a can be useful for preservation as a place can be designated as a “Sacred Site” without otherwise meeting National Register eligibility standards (King 2013:264; Hutt 2009:48). However, this definition puts the onus of identifying these sites on Tribes or tribal members. Depending on the quality of historical relationships between agencies and tribal partners, Tribes may be reluctant to share this information with federal agencies. Further, many sacred sites are highly personal, and taboos might exist regarding sharing any information with outside individuals. Lastly, this definition provides an expectation of free labor from Tribes to conduct research and document these types of sites for federal agencies. As discussed later in this paper, this expectation has been a source of consternation for many tribal heritage professionals during the HPRCSIT identification process.

Similarly, the American Indian Religious Freedom Act (1974) does not necessarily require federal land managers to do anything or prohibit the land managers from taking any action, but it does state that American Indian groups, including Aleut, Eskimo and Native Hawaiians, should have access to sites and sacred objects and the freedom to practice traditional ceremonies. A logical conclusion of this mandate is that Tribes should be consulted when sacred sites or when plants, animals, or other resources necessary for the ceremony may be impacted (King 2013:301). The Religious Freedom Restoration Act requires that if an agency action will “substantially burden” a person’s religious practice, the agency must prove its compelling need and then proceed in the manner that would be least disruptive to the practice (RFRA 1993). Land managers have frequently been involved in these cases as many American Indian religious practices take place on public land.

## **Contextualizing HPRCSITs: A Brief History of the Relationships Between Federal and Tribal Partnerships**

The beginning of dividing land into separate uses in the United States began with the arrival of Europeans. The recognition of indigenous title to land varied depending on which European nation was first encountered. The Spanish generally did not recognize any land rights of the American Indians in Spanish-claimed territory, while the French and British often did, at least early on, and tried to acquire land via treaty and purchase (Nettheim et al. 2002:80; UN Permanent Forum on Indigenous Issues 2012). The relationship between the United States government and American Indian groups followed a path that would be repeated among colonizing nations around the world: a period of coexistence, then concentrated actions by the government to relocate and acculturate American Indian peoples, and finally to recognition and some limited self-determination (Nettheim et al. 2002:79).

Early in the history of the republic, the United States government continued the tradition of treaties (Nettheim et al. 2002:28). Most of these treaties compelled the American Indian group to cede large tracks of territory in exchange for protection from European-American settlers, rights to self-determination in their new territory, and a specific amount of money, goods and services, healthcare, and education (Nettheim et al. 2002:28). The United States government also negotiated several “Trade Intercourse Acts” with the purpose of regulating nearly all actions between American Indians and European-American settlers in the hopes that separation would prevent conflict between the two groups (Nettheim et al. 2002:28). Such hopes were quickly dashed and the period of relocating American Indian groups to the west began (Nettheim et al. 2002:29). After the War of 1812, American Indian groups lost much of their bargaining power as allies in conflicts against the British and thus could do very little to protest their removal. Most

groups tried some form of defiance, with individuals and small bands having varying degrees of success (Nettheim et al. 2002:28-29; Keil 2017). The removal of American Indians from traditional homelands separated them from culturally and spiritually significant landscapes and made it much more difficult for their descendants to even visit, let alone protect these places (Gulliford 2000:11). Despite long term geographic disconnection from their traditional homelands, these areas remain of significant import to indigenous people.

Additional complications arise from the varying levels of protection offered by each state within the United States. According to an analysis done by Douglas MacDonald in 2008, only 15 states guidelines for cultural resource surveys explicitly require consideration for Traditional Cultural Properties: Arizona, Colorado, Idaho, Illinois, Missouri, Montana, Nebraska, Nevada, New Mexico, Oregon, South Carolina, Wisconsin, and Wyoming (MacDonald 2008:26). While this study is over 10 years old, it is still fair to say that land managers in states west of the Mississippi River are more familiar with TCPs than those to the east of it. Another significant finding was the variation of the strength of state historic preservation laws. Generally speaking, states with the strongest cultural resource laws are located in the West, Northwest, and Northeast/Mid-Atlantic (MacDonald 2008:29). This is good news as these areas also have large and expanding urban populations (US Census Bureau 2019). However, the Midwest and Southeast, which have more variable laws, also include some places of increased growth (MacDonald 2008:29; US Census Bureau 2019). According to MacDonald's (2008:28) study, 18 states have a state law with similar requirements to NHPA requiring consideration of resources on state land or for projects with state funding or permits, while 22 require cultural resource survey only on state land. However, eight states do not require CRM survey for any state project.



This can create situations where a project can avoid any cultural resource work by needing only state approval (MacDonald 2008:29).

There are also significant differences in how different courts interpret the eligibility standards for a Traditional Cultural Property. The 9th US Circuit Court includes the states and territories of: Alaska, Arizona, California, Guam, Hawaii, Idaho, Montana, Nevada, Northern Mariana Islands, Oregon, and Washington (United States Courts for the Ninth Circuit [2010s]). It has consistently required a historical significance outside of traditional cultural value to consider a property eligible for the National Register of Historic Places (Hutt 2009:53). In cases of First Amendment Rights to practice traditional ceremonies, the burden of hardship set by the 9<sup>th</sup> Circuit Court would be the complete inability to practice the religion, not just the inability to practice one site-specific ceremony (Hutt 2009:53). The 10<sup>th</sup> US Circuit Court, on the other hand, has a pattern of accepting a TCP on the basis of cultural use, without a need for additional historical significance. Part of this interpretation stems from their ruling that the accommodation of a TCP by the federal government does not violate the Establishment Clause (Hutt 2009:49).

Hutt explains:

“While the First Amendment of the Constitution protects religious freedom and bars government from advocating religion, protecting a site of traditional use on a historic preservation basis is not the advocacy of religion. Identification of a specific site for its use requires evaluation of the connection between the site and the ceremony.” (Hutt 2009:49)

Therefore, the burden of hardship is set at impact to the site (Hutt 2009:54). The 9<sup>th</sup> Circuit Court, on the other hand, has not established a clear precedent on the relationship between

Traditional Cultural Properties and the First Amendment (Hutt 2009:54). The discrepancy between these two interpretations causes confusion among cultural resource practitioners and the public alike because circuit court decisions create precedent in their respective regions (Hutt 2009:54). The confusion is amplified as many states in the 9<sup>th</sup> Circuit Court neighbor those in 10<sup>th</sup> Circuit Court. States in the 10<sup>th</sup> Circuit include the states of Colorado, Kansas, New Mexico, Oklahoma, Utah, Wyoming, and Yellowstone National Park (parts of which extend into Montana and Idaho) (Court of Appeals for the Tenth Circuit [2010s]).

### **Identifying HPRCSITs on the Landscape: Tips for Archaeologists**

Heritage professionals in federal agencies tend to have archaeological backgrounds—a science based on physical remains. Therefore, the process of identifying HPRCSITs is more challenging for heritage managers as the qualities that make them religiously or culturally important may not be readily apparent or identifiable in terms of a material record that may be investigated to establish an archaeological context. The question then is, how does one identify HPRCSIT sites? It may be tempting to rely on tribal heritage staff to identify these sites. A common question that tribal heritage staff have been asked during consultation was for maps or locations for sacred sites. As mentioned above, language in EO 13007 may have contributed to the notion taken by some federal heritage professionals that the onus of identifying all the HPRCSIT sites within a project area is up to Tribes and THPOs. However, while tribal partnerships are important relationships to cultivate, it is ultimately the responsibility of the federal agency to make a good faith effort to identify all historic properties.

Some SHPOs have developed guidelines to help heritage professionals tackle HPRCSITs. The Washington State Department of Archaeology and Historic Preservation (DAHP) recently

introduced protocols in consultation with the Pacific Northwest Region (Region 6) of the Forest Service and the Advisory Council on Historic Preservation (ACHP). All 32 tribal governments whose ceded lands would form part of the National Forest system in the state of Washington were invited to participate in consultation and to be “concurring parties.” Eight tribal governments responded with comments, and the Confederated Tribes of the Colville Reservation elected to participate as a concurring party (Washington Department of Archaeology and Historic Preservation 2020:2). Within Appendix D of this agreement, a broad set of guidelines have been established for identifying HPRCSIT sites. These include sites that may be readily identifiable by archaeologists including habitation sites, rock features, rock art, and cultural modified trees, but also more esoteric or natural properties such as legendary sites, traditional gathering sites, springs and water courses, and traditional cultural landscapes (Washington Department of Archaeology and Historic Preservation 2020:45-50). In addition to identification, guidelines for evaluation, documentation, and the implementation of undertakings with HPRCSIT-specific project design criteria are all discussed in Appendix D. While not exhaustive, this offers cultural resource professionals on the ground a valuable starting point. The stipulations outlined in this appendix are broad and can only provide so much guidance. Further, since the agreement has only gone into effect in 2020, few Forests have had the opportunity to utilize Appendix D to its fullest extent.

### **Applying the National Register Criteria: Overcoming Colonial Bias**

The NHPA was written specifically to preserve places that were important (“historic”) as understood by Euro-Americans; this is generally defined as buildings or other observable material remains of human activities. However, this limited and pervasive colonial perspective does not adequately capture qualities and characteristics of places of import to American Indian

Tribes. For example, certain HPRCSIT sites may incorporate entire landscapes. Landforms, or features that figure into events that occurred in the distant past or in oral accounts that may not have a material signature or obviously culturally modified component that would immediately class it as an archaeological or historic site. The consensus of the panel was that heritage professionals should empower themselves to exercise professional judgement when documenting a HPRCSIT site and use the evaluation criteria that form the basis for National Register of Historic Places (NRHP) determinations of eligibility as a method for developing and justifying determinations of significance for HPRCSITs.

It was recommended during the panel that HPRCSIT evaluators use as many criteria as possible, and to avoid using just Criterion D (data potential) to establish narratives related to site significance. This offers the evaluator a chance to innovate as they interpret the scope of the criteria definitions to encompass less visible but equally as significant characteristics of important cultural sites that expand site definitions beyond mere material remains. For example, Criterion B (association with the life of a significant person) can be used for a traditional cultural hero (Coyote, for example) as well as an historical person (can someone offer a good example here? An historically prominent indigenous person would be ideal). Criterion A (association with broad patterns of history) may be especially important for HPRCSIT sites that have a particularly deep history or use. For example, Snoqualmie Falls was determined eligible and listed in the NRHP using Criterion A based on, “its historical associations with the traditional customs and beliefs of Snoqualmie culture and for its associations with the legendary figure Moon” (Garfield 1992:11). Further, Criterion C (association with the work of a master) may also be applicable to rock art of particular artistic merit. The Tsagaglalal (She-who-watches) petroglyph in the Wishram Village Site certainly reflects the work of a master artist or craftsman.

Ethnographic research methods, especially oral history work, can provide some of the richest and most effective data sets available for analyzing, understanding, documenting, and evaluating the significance of HPRCSITs. These methods may involve a number of different approaches and tools that can be tailored to various communities, locations, and situations. Successful HPRCSIT determination projects have included new, in-person (or remotely conducted, as was the case in 2020 in response to COVID-19) interviews with tribal Elders, transcriptions of existing interview and/or video archives (an oft overlooked cultural resource data set that is often stored on friable media that degrades significantly over time), group interviews with tribal Elders, group interviews with culture and heritage committees, in-person visits and tours with Elders to potential HPRCSIT sites, and review and analysis of various other types of ethnographic data (published and unpublished literature, interviews, historic photo and map archives, proprietary archives, etc.). Oral history work is a uniquely holistic and powerful method because it leverages both traditional cultural knowledge and applied anthropological methods to generate multidimensional data sets that span both space and time, and mostly importantly, that center indigenous voices and forms of knowledge production, a key feature of decolonizing methods.

Many challenges faced in the process of formulating determinations of significance can be understood through differences in world view and values among the various groups that identify with or seek to ascribe meaning and value to a resource or place. American Indian Nations and cultural resource professionals are the most obvious examples, but land managers, local communities, recreational users, and other stakeholders all bring different values and needs to this process. In general, cultural resource professionals are aware of and try to account for these different standpoints and perspectives, but misunderstandings still occur. Thornton

(2009:65) explains these differences in world view as the political ecology of cultural models, or “how differing cultural models of environmental phenomena compete—often unequally—in shaping collective perceptions and actions towards particular landscapes, including historic sites and traditional cultural properties.” (Thornton 2009:65). In other words, how one values the landscape (including both the natural and cultural features) is influenced by culture, but the values (or cultural models) of the dominate cultural group has a considerable effect on how the landscape is conserved (or not - a central tenet of political ecological theory). This underscores how critical it is that cultural resource professionals consult with all possible decedent communities to ensure that such places are properly identified, documented, and recognized.

### **Mitigating Effects**

Most participants agreed that mitigation of a cultural resource is not a preferred alternative. In fact, it was recommended that conversations about projects *not* begin with mitigation as their starting point for managing adverse impacts to cultural resources. It is also important to note that excavation or other intrusive methods of evaluating archaeological resources is typically not well received as a mitigation alternative. The challenge for heritage managers is to be creative, communicative, and collaborative as they consider how information, resources, or cultural practices can best be preserved while including the voices, preferences, and desires of decedent communities in the development of mitigation proposals. For example, resources that would have been directed towards excavation and data recovery in the past can be applied with more impact in the present to support development of education, outreach, conservation, and training multimedia materials, to preserve or interpret important cultural information, support language education, or even to fund a tribal community event.

Another process heritage professionals want to reduce is the concept of *cultural triage*. Cultural triage is a process developed by Stoffel and Evans (1990:95) while working with Tribes in the American Southwest. Stoffel and Evens (1990:95) define cultural triage as:

... a forced choice situation in which an ethnic group are faced with the decision to rank in importance cultural resources that could be impacted by a proposed development project. Through this ranking the probability of certain cultural resources being protected is increased. On the other hand, it is understood that by selecting some cultural resources for special status, it relegates others to less-than-special status. Those defined as less-than-special, then, are placed at greater risk from the proposed project.

Stoffel and Evans (1990:91) determine the rankings through a complex process that includes: multiple consultation sessions with tribal governments; detailed, comprehensive interviews with key cultural experts; archival research; site visits with cultural experts; and an aggregation of the rankings of resources done via a paper survey mailed to tribal members. Stoffel and Evans have achieved good results through this process (King 2003:142). Going through cultural triage gives the tribes control over the resources. However, there is risk to more than just the resources. Those who are tasked with doing the rankings could face ethical conflicts, emotional distress, and even fear of reprisal (Stoffel and Evans 1990:96). Therefore, not everyone is in favor of ranking cultural resources. Historically, the necessity of choosing some resources over others is a part of the preservation process in general, not just in relation to Traditional Cultural Properties. Offering TCPs/HPRCITs as a mitigation measure can be a form of cultural triage. However, this would put the Tribes in the onerous and painful position of choosing which locations and/or resources are “most important”.

**Discussion: How far have we come?**

The good news is that many of the participants noticed a difference between the respect allotted the American Indian perspective from the beginning of their career to the present. The challenge is that there is still much work that can be done. In the most basic terms, the category of HPRCSIT is actually being considered by state and federal heritage professionals, even if the details on best practices for documentation have not been adequately defined yet. SHPOs from both Oregon and Washington have explicitly incorporated these classes of historic properties into the Section 106 process and federal land management agencies have made great strides in consultation and documentation of HPRCSIT properties. Some HPRCSIT sites have even achieved national recognition. Snoqualmie Falls, located east of Seattle, Washington provides an excellent example of how a collaborative approach to managing HPRCSIT properties can yield incredible results. For the local Snoqualmie people, the 268-foot falls feature significantly in their creation stories (Garfield 1992:9). Despite changes to the flow of the water by the installation of a hydroelectric generating system at the turn of the twentieth century, the falls were found to have sufficient integrity both of its physical condition and in its continued importance as a HPRCSIT to the Snoqualmie people. Interviews conducted during the evaluation of the Falls repeatedly highlighted its historic and continued importance as religious and spiritual site of profound power (Larson 1988:23; Tollefson 1991). The listing of Snoqualmie Falls in the NRHP in 2009 was an important step in recognizing the importance of these sort of non-archaeological cultural resources and the need to protect them at the highest levels of heritage management. While the Falls remain the property of Puget Sound Electric, the nearby Salish Lodge was purchased in 2007 by the Muckleshoot Tribe before being purchased by the



Snoqualmie Tribe in 2019 as part of an effort to halt further development at the falls and to reclaim tribal land (Cornwell 2019).

### **Conclusions: Where do we go from here?**

One theme that was repeatedly mentioned by individuals from all of the participants was the importance of creating and maintaining relationships between the cultural resource staff of Tribal, federal, and state agencies. Within Region 6 of the US Forest Service, the last ten years have seen great strides being made in the improvement of collaborative efforts between individual Forests and their Tribal partners. For instance, the Umatilla National Forest in southeast Washington and northeast Oregon has made great efforts to improve collaborative relationships with the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), Confederate Tribes of Warm Springs (CTWS), and the Nez Perce Tribe. In particular, the Umatilla National Forest is currently engaged in multi-year collaborative stream restoration projects with both the CTUIR and Nez Perce Tribe's fisheries departments. More recently, the Forest has begun a huckleberry monitoring and habitat restoration project with botanists from the CTUIR. Recently, the Gifford Pinchot National Forest has developed a huckleberry management strategy collaborating with the Cowlitz Indian Tribe to improve historic huckleberry gathering fields throughout the forest (Hudec 2018:3).

It is also important to recognize that there are many types of expertise (academic, historical, legal, cultural, religious, etc.). Any expert that takes the time to contribute to the report, including those from the federal agency and Tribes, should be fairly compensated. This was alluded to earlier in the discussion of the

expectation that the Tribe document sites or otherwise provide historical background for the project location.

However, it is also important for the federal agency (or those completing the historic research on their behalf) to do their own research and not expect a THPO's office to have the resources to gather and report on information that is available elsewhere.

In the case of a contractor doing work on behalf of a federal agency, it is still important that the proper communication channels be utilized to inform Tribes of the project prior to any contact between Tribes and the contractor. There is currently not a unified approach for communications between Tribes and contractors. To avoid confusion, contract specifications should explicitly delineate responsibilities for contractors with regards to communications, and kick-off meetings should clearly spell out roles and responsibilities for all project stakeholders, especially as they pertain to agency versus contractor.

While most people agree that it is important to protect culturally important places, the exact processes involved in doing so are less obvious. Two specific property designations that can be leveraged to this end are Traditional Cultural Properties and Historic Properties of Religious and Cultural Significance to Indian Tribes. On the surface, TCPs and HPRCSITs appear similar as both offer an opportunity to identify and manage places that are associated with practices, myths, or other less visible and intangible aspects of culture and expand the reach of preservation objectives beyond mere material features. TCPs and HPRCSITs are often the frameworks that make more sense to communities than the more legalistically vague term *historic properties*. However, there are several important distinctions. First, a HPRCSIT is explicitly stated in federal law, whereas TCPs are not mentioned in any federal statute. Secondly,

in order to be eligible as a TCP, a site must demonstrate sustained use (Parker and King 1998:20). It is unclear whether HPRCSITs have a similar requirement. Finally, TCPs can pertain to any cultural group, while HPRCSITs pertain specifically to American Indians.

TCPs and HPRCSITs have increased the types of properties considered eligible for the National Register and expanded the categories land managers even considered during Section 106 evaluation (Lusignan 2009:37-38; Smythe 2009:16;). This is a positive development as it allows the National Register to become more representative of the diversity of the American experience. However, cultural differences between the groups that value the places and those who wrote the laws and complete the cultural resources surveys can cause some challenges (Thornton 2009:65). Simply identifying a potential TCP or HPRCSIT can be impossible for someone outside the culture group without consultation. Attempting to define site boundaries or apply NRHP criteria for would be impossible. Other complications regarding what type of places merit inclusion on the NRHP can arise when there is confusion over the distinction between state and federal cultural resources law or courts in different jurisdictions rule differently on similar cases (MacDonald 2008; Hutt 2009; Thornton 2009). Finally, there is the idea of using Traditional Cultural Properties and/or HPRCSITs as “cultural triage, essentially the ranking of cultural resources by members of the group that values those resources (Stoffel and Evans 1990:91). While some groups have appreciated having control over their own resources, the process is not universally popular (Stoffel and Evans 1990:95; Ferguson et al 1994:36). This creates a situation where some members of a group are making decisions for the entire group. As all groups have sub-groups, power dynamics, and inter-group rivalries, this can cause conflict within the group and further the limit the types of places that are saved. In summary, Traditional

Cultural Properties and Historic Properties of Religious and Cultural Significance to Indian Tribes are two designations that are not easy to apply, but the results are worth the effort.

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## Very Interesting Artifacts—Chemical Analysis in Historical Archaeology

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### ABSTRACT

Artifacts recovered by historical archaeologists often require chemical analysis to establish their identity. They may, for instance, be bottles or jars showing no markings or typical features to indicate what their contents are. Identifying these materials is a challenging analytical problem, that is also very interesting. Chemist working on such samples often experience “Eureka”– moments as they recognize unexpected materials that were used for long forgotten purposes. A Chemistry laboratory at the University of Idaho specializes in the analysis of historical artifacts, thereby not only connecting Science students with the world of Historical Archaeology, but also providing a valuable service for practitioners across North America.

## INTRODUCTION

Historical archaeologists frequently recover artifacts that defy visual identification. This may happen when the artifact in question is a bottle, vial, jar, can, or other vessel with contents of unknown composition, but no, or minimal, labeling. Sample recognition can be especially challenging in cases where the container was repurposed and its appearance seems to be at odds with its contents (von Wandruszka and Warner 2018:52).

Chemical analysis can be invaluable in such instances. In an ideal case, the contents of the vessel can be definitively identified by chemical means, and the mystery artifact can be placed in its proper historical context. All too often, however, the materials can only be partially characterized, as time and exposure lead to chemical changes that must be elucidated and interpreted by the analyst (Spinner et al. 2011:47)

Whatever the status of the artifact and its associated materials, the archaeochemist will be called upon to answer the question “What is this?”. In order to do so, he/she needs to engage in chemical detective work that has many forensic aspects and often leads to interesting and unexpected discoveries.

## RESULTS AND DISCUSSION

The analyses of 4 typical artifacts, recently received for analysis at the University of Idaho Chemistry Department, are described below.

### I. Wine bottle with resin mixture

The artifact (Figure 1) was a wine bottle, recovered from a 19<sup>th</sup> century student boarding house and held by the Maryland Archaeological Conservation Laboratory. It was half-



filled with a brown semi-liquid of sticky consistency. The archaeologists had tentatively identified the material as a glue, and on the basis of this we compared its infrared (IR) spectrum with those of hide glue, mucilage, and pine resin. It became immediately clear that the unknown contained pine resin, and not the other two substances. It was notable, however, that it had a greater alkyl (C–H bond) content.

It is well known that pine resin (sap) hardens upon exposure to the atmosphere – i.e. it turns to ‘rosin’ (Fiebach and Grimm 2000). The present material, however, had evidently stayed liquid for some 150 years. Moreover, at one point it was sufficiently fluid to be poured into a wine bottle with a narrow neck. To make this possible, the resin may have been mixed with oil (Rose 2008), which would, apart from providing fluidity, also lead to the increased alkyl content observed.

To explore this possibility, we prepared a series of mixtures of pine resin with: i) mineral oil (oil derived from petroleum); ii) vegetable oil; canola oil; and corn oil. Only the corn oil produced a material virtually identical to the bottle contents.

What the incentive would be to mix pine resin with corn oil with pine resin cannot be established definitively. The result clearly was not a glue, since it did not set. There are, however, several possibilities:

- i) Pine resin is known to have antibacterial properties and is useful for sealing wounds (Jokinen and Sipponen 2016:5). Mixing it with oil would prevent it from hardening and make it easier to apply.
- ii) The mixture may have been used as a fire starter. Pouring it over kindling would make lighting quick and easy.

- iii) In a related scenario, it may have been used to make long-burning torches by pouring it on a stick swaddled with cloth or straw.

## II. Leather dressing

This artifact, a bottle with stopper (Figure 2), was distinguished by being recovered with an intact label and an original box. As the label stated “Wittlemore’s Guilt Edge Dressing” and ”Fine Shoes”, there was little doubt that the contents (now a dark crumbly solid) were shoe polish. The IR spectrum displayed the features of a fatty material such as rendered tallow, which was commonly used in polish. The challenge with this unknown was to establish the original color of the dressing.

*fig 2 here*

The dressing contained some insoluble components – fatty hydrocarbons and a silicate filler – but what appeared to be a remnant of dye was soluble in a number of solvents: in methanol and dimethylsulfoxide it gave purple solutions; in acetic acid it gave a blue solution; and in hydrochloric acid it gave a blue/green solution. The methanolic solution fluoresced at 570 nm, and gas chromatography/mass spectrometry (GC/MS) analysis indicated the presence of diphenyl amine.

These results were consistent with a common blue dye – indigo – but a spot test revealed that bromine was present in the material. This is not the case with indigo, but it is part of a closely related dye, dibromo-indigo, a.k.a. Tyran Purple.

The conclusion was that this was a purple shoe dressing, originally fluid enough to be dispensed from a bottle, but now dried and oxidized to a black solid.

### III. Ringworm treatment

This artifact (Figure 3) was recovered from the Redlands Chinatown in California. It appeared to be a milk, or cream, bottle filled with a light yellow granular substance. On closer inspection it was found that there were some clumps of materials that, when broken apart, turned out to be brown on the inside. Chemical analysis with benzoic acid and with a scanning electron microscope (EDS attachment) established that the yellow material was elemental sulfur, S. Optical microscopy showed that the material contained some hair (Figure 4), which, from the electron micrographs, appeared to be animal hair.

*fig 3 here*

*fig 4 here*

The brown material in the clumps was extracted with methanol and analyzed by GC/MS. It was found to contain cholesterol, and together with the appearance of the sample, this led to the conclusion that it was fecal matter.

Elemental sulfur was, and is, used as a treatment for fleas on dogs, and against ringworm in cattle (Smith Thomas 2017:10). The latter appears to be the more likely scenario in the present case. One could envision that the sulfur was rubbed into the infected areas on a cow's skin, subsequently falling to the floor. From there it was scooped up, with inclusion of some fecal matter on the stable floor, and put into a cream bottle for storage or disposal.

### IV. "Golden" glass

This artifact (Figure 5) was recovered from Guana in the British Virgin Islands. It was identified by the archaeologists as a bottle shard from the 1700s, exposed in a

sandy surface setting for some 250 years. The glass was dark green, and, remarkably, covered with a shiny golden surface coating of almost 1 mm in thickness.

*fig 5 here*

Atomic absorption analysis immediately established that the coating was not in fact gold, but contained iron. IR spectroscopy also indicated the presence of silicates. Subsequent SEM/EDS measurements showed that the material contained no sulfur, obviating that it was “fool’s gold” (FeS<sub>2</sub>). Aluminum, oxygen, and calcium were found to be present.

Analysis of the glass itself revealed that it contained 2.6% iron – a very high value considering that “normal” green glass only contains a fractional percentage of Fe (Shelby 2015). Optical micrographs of the material (Figure 6) showed that it was of a flakey consistency with many clear silicate platelets and a distribution of yellow iron oxide along their edges.

*fig 6 here*

The conclusion was that the “gold” coating was an unusually substantial patina – a secondary silicate mineralization on the glass surface, colored golden by iron “sweated” out by the high-iron glass below and oxidized to yellow Fe<sub>2</sub>O<sub>3</sub>.

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**Figure Captions**

**Figure 1.** Wine bottle with resinous contents; *insert*: cup with sample of bottle contents.

**Figure 2.** Guilt Edge Dressing bottle.

**Figure 3.** Cream bottle containing unknown yellow solid.

**Figure 4.** Image showing hair and clumps of material, broken open to reveal brown interior.

**Figure 5.** Bottle shard showing gold colored patina; *insert*: flake of patina

**Figure 6.** Magnified (230X) image of patina.



*fig 1*

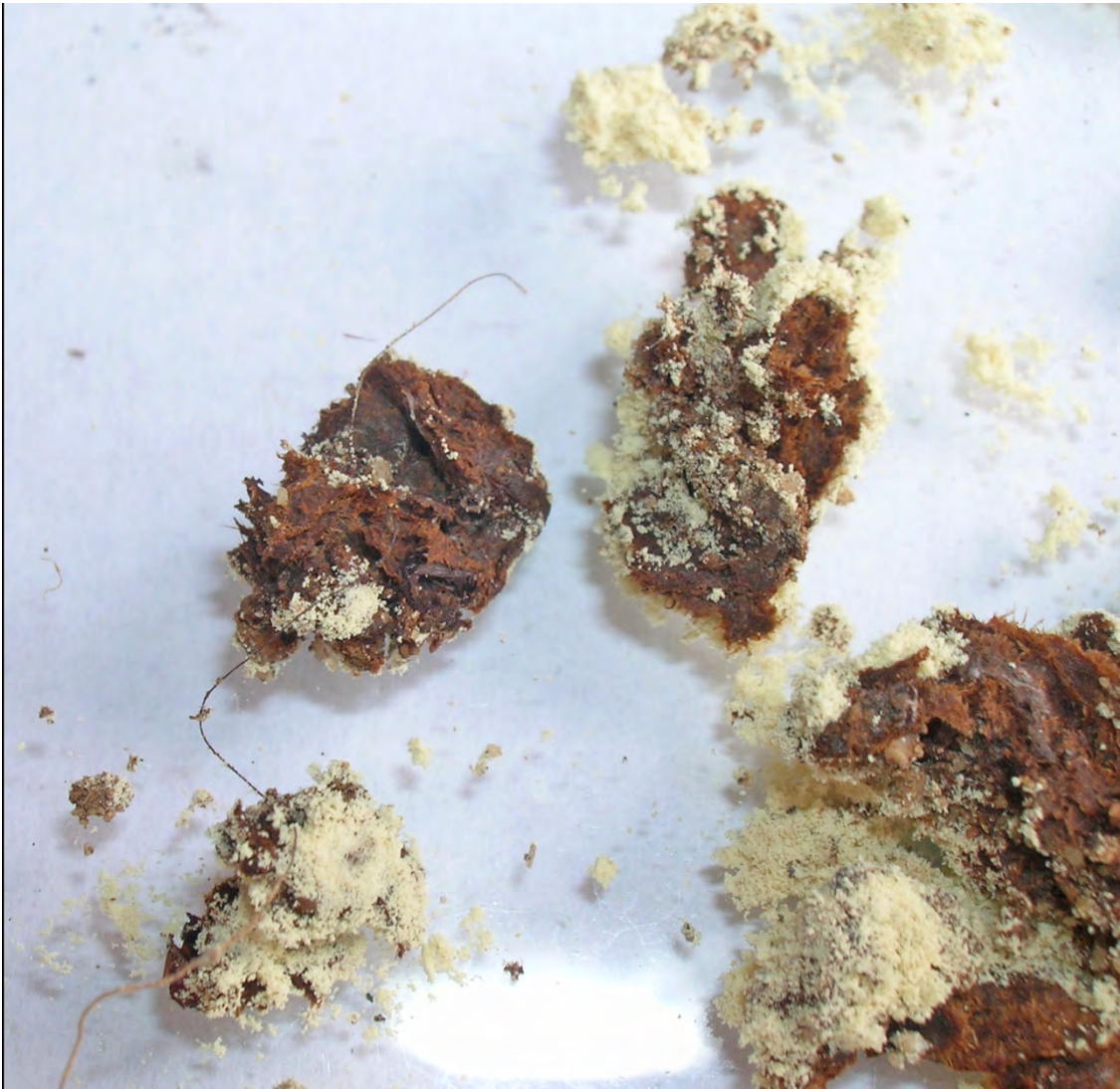




fig 2



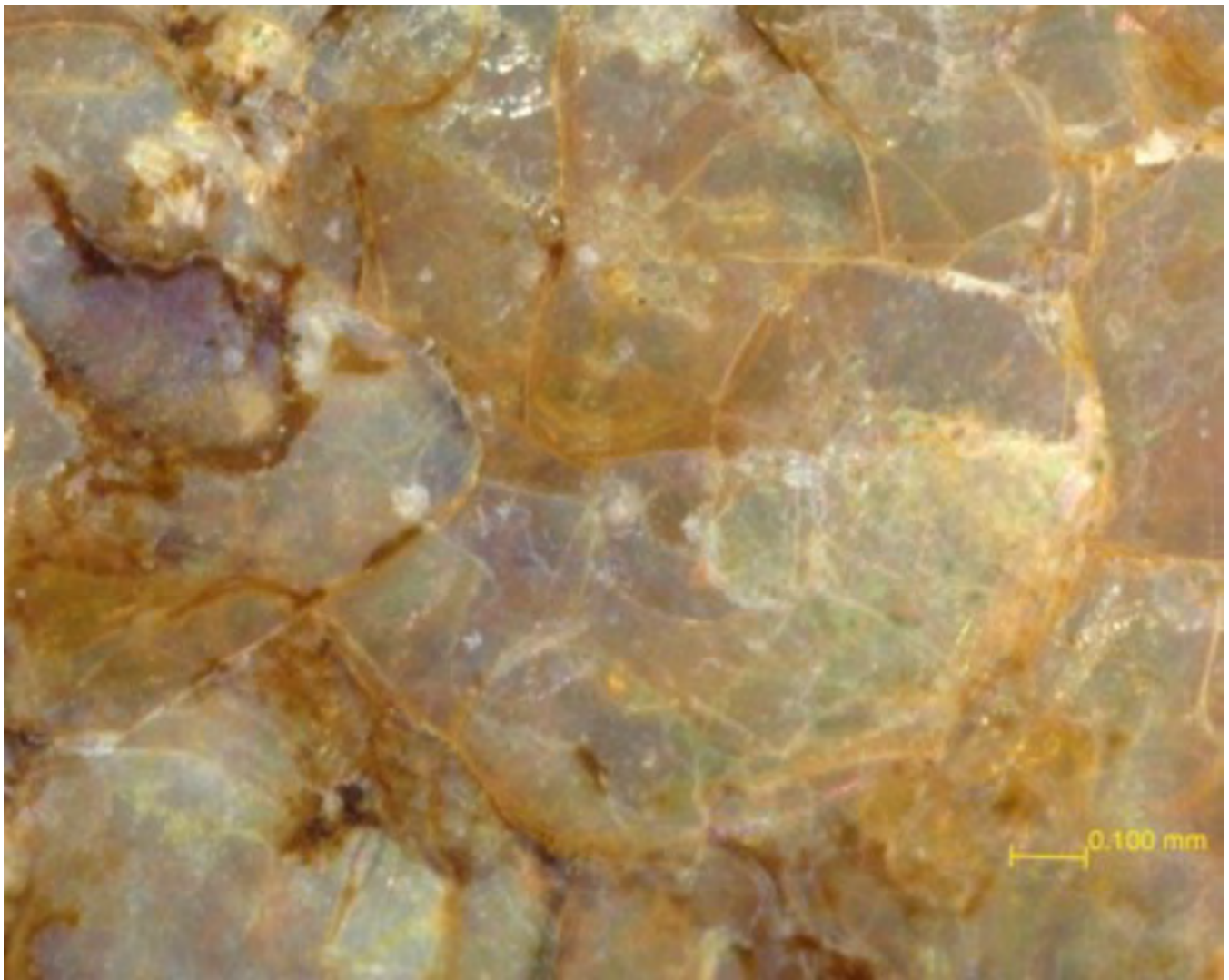
*fig 3*



*fig 4*



fig 5



*fig 6*

**Listening to and Learning from Tribes, Researchers, and Participants—  
changing research processes to encourage co-equal production and research  
sovereignty**

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**ABSTRACT**

University researchers usually frame Native Americans as participants, rather than co-equal collaborators in research. Most research in Native Nations remains extractive. Two concurrent Idaho State University projects address this issue. Under the 2019 Shoshone-Bannock Tribes (SBT)-Idaho State University (ISU) Memorandum of Agreement, ISU is refining its research approvals/training processes toward supporting decolonized research, Tribal sovereignty, and privileging Native Nations' needs through collaborative research design. Additionally, a research team is interviewing ISU-SBT researchers and participants to identify research ideologies and challenges in collaborative research toward strengthening research relationships. This paper presents the processes, challenges, and lessons learned from the perspective of the authors, ISU personnel involved in both processes. Preliminary findings suggest most researchers desire a co-equal relationship, requiring revising both ISU and SBT processes. We argue developing complementary research review/training processes requires actively listening to and internalizing the needs of our collaborative partners.

When university researchers consider Native Americans in research, they usually frame them as participants, rather than co-equal collaborators. Most research remains extractive (David-Chavez and Gavin, 2018; Latulippe and Klenk 2020). Two concurrent Idaho State University projects address this issue. Under the 2019 Shoshone-Bannock Tribes (SBT)-Idaho State University (ISU) Memorandum of Agreement, in concert with SBT's redefining research review protocols, ISU is refining its research approvals and training processes toward decolonizing research practices and supporting Tribal sovereignty. ISU encourages researchers to a) privilege Tribal needs in research planning and b) engage in fully collaborative research design. Additionally, a team of researchers across three departments are interviewing past and present ISU-SBT researchers and participants to describe research ideologies and identify barriers and opportunities to achieve research co-production. This paper presents the processes, challenges, and lessons learned to date from the perspective of the authors, who are ISU personnel involved in both processes. Preliminary findings suggest most researchers desire a co-equal relationship and revising both ISU and SBT institutional research processes may remove barriers to achieving co-equal collaborative partnership. We argue that, while SBT and ISU have distinct but overlapping goals, developing complementary research review and training processes requires actively listening to and internalizing the needs of our collaborative partners.

### **Academic Research and Native Engagement**

Academic research practices have frequently led to the marginalization of intellectual contributions by Indigenous peoples, the denial of intellectual property, and other harms (Rigney 1999; Cohen et al. 2021; Tsosie 2017). One result of the privileging of academic research norms regarding research within and about Native Americans is the idea that non-Native museums can



own Tribal property, including not just material culture and ‘artifacts’, but biological samples and human remains. For example, in 1911, the California Museum of Anthropology (the Hearst Museum) under the direction of Alfred Kroeber, brought Ishi, a Yahi man, to live at the museum as a ‘living exhibit’. Ishi’s community had been eradicated through the genocide perpetrated on Native Californians by the California government and missionization and Kroeber took the opportunity to study Ishi and his language for the five years Ishi lived at the museum before dying of tuberculosis in 1916.

Within the field of Anthropology and Museum studies, the acknowledgement of the harm wrought on this individual remains contentious, with some entities openly addressing this harm and others maintaining a narrative of beneficence and ‘contribution’. The Hearst Museum publicly acknowledged that Kroeber “used their unequal relationship to advance his own career and the Museum’s popularity” and that Ishi was “objectified” and held in “indentured servitude” (Hearst Museum 2017). The Museum’s website describing Ishi’s time at the Museum further states:

It is now shameful to recall the actions taken by employees of the Museum and University following Ishi’s death. During his time at the Museum, Ishi was apparently very distressed to be living amidst excavated human remains, Native American ancestors unearthed for research and curation. He asked that his own body be cremated according to Yahi tradition. Disregarding his wishes, Ishi’s University doctor completed an autopsy on Ishi’s body. Kroeber, traveling at the time of Ishi’s death, advised against an autopsy. However, returning to Berkeley after its completion, he sent Ishi’s brain to the Smithsonian for further study.

Ishi's body was cremated and placed in a niche at a cemetery just south of San Francisco.

In 2000, as the result of tireless work by Maidu, Redding, and Pitt River tribes in California, Ishi's ashes and brain were repatriated and reunited. Ishi is now buried in a secret location near Deer Creek, his homeland.

However, the California Museum (2021) website frames Ishi's 'contribution' to Anthropology and Museum Studies under the category 'public service' and, while the site does acknowledge the desecration of his remains against his wishes and beliefs, it provides a much more positive spin on his experience as a living exhibit and the role of the museum and anthropologists in his indenture:

Given a home at the University of California's anthropology museum, he adapted with grace to his new life, spending his days making arrowheads – which he often gave as gifts to museum visitors – or demonstrating fire-building and other Native traditions. The UC anthropologists learned much about the Yahi culture from him as he demonstrated tool-making and hunting and shared his ancestral stories and songs.

Research harms have a long history tied to European Colonialism, ethnocide, and genocide (Pacheco et al. 2013; Smith 2013) and open acknowledgement of these historical harms has the potential to expose the genocidal and assimilationist agenda of U.S. policies and cultural agencies or to maintain the hegemonic narrative supporting the colonial experiment. These abuses are not relegated to the past, however, and continue into recent times, including, for example, the 1989-1994 research project's collection of Havasupai blood samples that were originally part of a diabetes study and, according to the Havasupai Tribe in 2003, were used for additional, unauthorized, and improperly consented research on topics such as schizophrenia,

inbreeding, and population migration (Garrison 2013). This unauthorized use of biological materials resulted in the Tribe suing the Arizona Board of Regents, an internal investigation (Hart and Sobraske 2003), a settlement in the amount of \$700,000, and the return of the Tribe's blood samples (Harmon 2010).

Social sciences research practices have also resulted in harm to Native American Nations and communities, often fueling or perpetuating stereotypes (Brugge and Missaghian 2006). These stereotyped and misinformed views have often been used to justify marginalization, displacement from land, and ethnocide and persist to this day in mainstream representations of Native Americans. Even the ways academics discuss community needs, create categories, (King 1997), and express ideological frameworks concerning research marginalize the needs and values of Native communities. For example, Hill (2002) describes three rhetorics used by language revitalization academics--universal ownership, hyperbolic valorization, and enumeration. These rhetorics and the ideologies they represent potentially harm Native communities' efforts to revitalize their languages by framing the work within a deficit model, commodifying language, and undermining Native Nations' self-determination and sovereignty. King (1997:115) expresses a widely-held emotional response to the past and ongoing harms of academic research in Native communities: "Many of our people have felt anger at the way our communities have been cheated, held up to ridicule, and our customs sensationalized," and argues that many Natives feel "imprisoned in the anthropologists words." Further, the privileging of academic epistemologies and methodologies serves to marginalize Native American beliefs, practices, and research voices. For example, most research about Native American education illustrates a power imbalance, one that is slowly shifting amid a reassertion of Tribal sovereignty (Lomawaima 2000) as Native communities respond to and reclaim voice within the practice of research.

As part of this reclamation of power, many Native Nations and organizations are establishing their own research review processes, including formal Institutional Review Boards, and setting regulations for who can research, what can be researched, and how it can be researched (Alaska Native Knowledge Network 2000, Brugge and Missaghian 2006, Clark 2019, Ho-Chunk Nation 2005, and Navajo Nation 2005). Further, Native communities and scholars are re-evaluating the role of Western academic researchers and methodologies in Indigenous research. To address the imbalance of power in research relationships, some scholars suggest that non-Native academics might not have a valid role in conducting Indigenous research (Aveling 2012) while others suggest that researchers working within Native American communities can occupy a ‘guest’ role, intermediate between outsider and insider (Harvey 2003) or even adopt a Native epistemic frame and ‘think like an Indian (Mihesuah 1993).’ Brugge and Missaghian (2006:4) report the words of one Native American concerned with the imbalance of power in Native relationships:

The researcher has the luxury of studying the community as an object of science, whereas the young Indian, who knows the nuances of tribal life, receives nothing in the way of compensation or recognition for his knowledge, and instead must continue to do jobs, often manual labor, that have considerably less prestige. If knowledge of the Indian community is so valuable, how can non-Indians receive so much compensation for their small knowledge and Indians receive so little for their extensive knowledge? (Mihesuah 1993 as cited in Brugge and Missaghian 2006:4).

To adopt a Native frame in research, though, non-Native academics must first listen to the needs and beliefs of members of that community. It is within this shifting power dynamic and in response to Native calls for a more Indigenous epistemology and methodology (Kovach 2009,

Rigney 1999, Smith 2012, Wilson 2008) that Idaho State University staff, faculty, and students are evaluating and revising Native-focused research protocols.

### **Decolonizing and Indigenizing Research**

In response to the persistence of extractive research approaches informed by the colonial context, and the call for more Indigenous-led research, a movement towards decolonizing research has emerged within the Western academic model. Decolonizing research entails a critical reevaluation of the underlying assumptions, motivations and values of researchers and research practices with and involving Indigenous communities (Rigney 1999; Wilson 2008; Kovach 2010; Smith 2013; Latulippe and Klenk 2020). A key part of this movement has been the development and recognition of Indigenous research methodologies that center on self-determination and sovereignty for Indigenous Peoples, and which include culturally-tailored approaches not requiring any validation from other research paradigms (Wilson 2008; Smith 2013). Another fundamental feature of Indigenous research methodologies, in direct contrast to routine extractive approaches, is that research outcomes are directly meaningful and useful to Indigenous Peoples and communities. Chalmers (2017:111) argues that Indigenous peoples have always had and practiced Indigenous methodologies, that the academy has marginalized them, and that training of non-Indigenous researchers in Indigenous methodologies supports ethical and accountable research practices and, in turn, the decolonization of the academy.

Indigenous research methodologies share characteristics with other research traditions that support decolonization and power-sharing such as community-based participatory action research and co-production (Durose et al. n.d.; Kemmis, McTaggart, and Nixon 2013; Wallerstein et al. 2017; Zanotti et al. 2020). To make sense of diverse research approaches that

involve engaging with the community various typologies have been developed (Arnstein 1969; Johnson et al. 2002; David-Chavez and Gavin 2018; Reed et al. 2018). These typologies often describe a continuum where, at one end of this spectrum, engagement may simply mean that the researchers inform the community they are working with about a project decision that has already been made, or that they inform the community about progress and results. As such, the community is not actively engaged in the research beyond participating as ‘subject’ and being informed. The other end of the spectrum, sometimes called co-production, entails collaboration and power-sharing between community and researchers at all stages of the research process, from generating the research questions, to research design, data collection, analysis, and publication. Indigenous-led research (Smith 2013; David-Chavez and Gavin 2018; Latulippe and Klenk 2020) takes a step beyond co-production and acknowledges the need for research to be initiated and directed by Indigenous communities in order to heal past harms. To illustrate how these degrees of community engagement can be conceptualized by the degree of agency of or support for Indigenous research sovereignty, we adapt schema provided by Reed (2018) and David-Chavez and Gavin (2018) into a wheel correlating degree of engagement with entity initiating the research, as in Figure 1. The pie sections represent the types of engagement we have so far identified in ISU-SBT research partnerships.

### **Figure 1: Levels of Community Engagement by Entity Initiating Research**

While important contributions have been made to understanding the best practices for community-engaged and co-produced research across disciplines and specifically with Indigenous Peoples and communities (Ball and Janyst 2008; Baldwin, Johnson, and Benally

2009; LaVeaux and Christopher 2009; Adams et al. 2014; Arsenault et al. 2018), less attention has been given to the real-world, “on the ground” barriers and challenges both academic researchers and Indigenous community members face in forging these research partnerships and achieving these ideal “best practices” (Adams and Faulkhead 2012). To contribute to this understanding, here we describe a case study of an evolving relationship between a Tribal Nation and a university who are working collaboratively to improve research partnerships. In addition to these collaborative processes, we describe a research project about this research relationship that draws on the lived experiences of researchers and research managers across tribal and university boundaries as they have navigated these research partnerships over time.

### **Idaho State University, the Shoshone Bannock Tribes, and Native Engagements**

The research relationship between Idaho State University and the Shoshone-Bannock Tribes has gone through several high and low periods, often depending upon political climate, University and Tribal leadership, and the overall relationship between the two institutions and communities. As an integral part of practicing listening to our Tribal partners and to reinvigorate the relationship toward positive growth for both institutions, in 2019, the Shoshone-Bannock Tribal Councilman and University president signed a Memorandum of Agreement (MOA) acknowledging SBT sovereignty and that ISU is on original SBT land and affirming that ISU and SBT have a commitment to maintaining a collaborative and mutually beneficial relationship, promoting a positive campus climate, and educating SBT citizens. The MOA entails several ongoing strategic actions, including:

- Meeting regularly for open communication,
- Establishing a Tribal University Advisory Board (TUAB),

- Developing programs of need to SBT,
- Increasing Native faculty hiring,
- Committing to university-wide diversity initiatives, including hosting an annual Indigenous Peoples Day,
- Establishing “mutually agreeable protocols for research”, and
- Periodic review of the MOA to meet future needs.

The Tribal University Advisory Board is the ISU entity tasked with enacting the MOA. To ensure the perspectives of the SBT are included in board decision making the board includes not only ISU faculty and staff, but also SBT employees and ISU students who are also SBT citizens. The TUAB consists of four SBT citizen members and four University members each serving five-year terms and at least two Shoshone-Bannock student members serving between one to three years. Of the non-student members, two co-equal board chairs, one from the Tribes and one from the University, oversee the board. The TUAB meets at least quarterly to implement these strategic priorities. The board has also identified the need for a Student Services needs assessment and interventions. The board has formed two working committees to date: one to assess and address the campus climate and student needs, especially as it pertains to Native students, and the other is a research subcommittee, created to review protocols toward a better, more mutually beneficial, research relationship between the two entities.

The strategic priorities can be broadly grouped into three interdependent objectives: 1) creating programs supporting SBT economic development, 2) improving campus climate and student success, and 3) improving the research relationship between SBT and ISU. Several programmatic needs have already been identified and developed at ISU, most notably a



hospitality program. The focus of this discussion is objectives 2 and 3, as they are mutually influential toward supporting a positive relationship between SBT and ISU.

The diversity awareness and faculty/staff trainings are intended to raise awareness of the needs and value of Native American students and the contributions of the Native Nations from which they come to ISU and demonstrate respect for the Shoshone-Bannock Tribes, on whose traditional lands ISU resides. Native American Success needs assessment and campus climate assessments are essential to understanding the current campus dynamics impacting Native students and non-Native students alike and to planning interventions.

Within this context of the SBT-ISU MOA and its strategic priorities, ISU and the SBT are both evaluating research practices and research approvals processes, entailing several interrelated but independent activities. The relationship between these activities is illustrated in Figure 2: Entities Engaged in Evaluation and Revision of Research Engagement Practices across SBT and ISU.

**Figure 2: Entities Engaged in Evaluation and Revision of Research Engagement Practices across SBT and ISU**

The TUAB research committee is working in concert with the SBT Research Review Board to develop independent but mutually agreeable protocols. The SBT-ISU Research Relationship Research Project is working with the SBT Research Review Board to gain approvals for the research and to identify SBT citizens who were researchers or participants in past and current ISU research projects engaging with the Tribes. In addition the Research Relationship Project is providing results to inform the TUAB research committee's revision of Native-focused research

projects. While TUAB has not yet accomplished every priority under each goal, significant interventions are underway.

### *Campus Climate and Student Support Initiatives*

The goal of creating and implementing university-wide diversity initiatives is to create a more inclusive and welcoming campus for Native American students. Native American college students are less likely to persist, often due to a college environment that values normed groups over minority groups, competition over collaboration, and individualism over community. For these reasons, Native students often benefit from peer mentoring programs, culturally specific clubs/activities, and socialization space (Moshholder, Waite, Larson and Goslin 2016). Further, whether a university environment is overtly welcoming of Native students impacts retention (ibid), as sense of belonging and ability to maintain cultural identity and connection to community impact Native student retention (Tachine, Cabrera and Yellow Bird 2016). Murphy et al found that targeted interventions focused on improving sense of belonging for minority students resulted in improved retention over two years.

Toward this goal of improving the campus climate, TUAB and its sub-committees, have completed and continue to work on several initiatives, including hosting two Indigenous Peoples Day celebrations, creating and disseminating a campus-wide land acknowledgment, and forming a student services subcommittee to identify student needs and opportunities for improving the campus climate. The first of these initiatives, Indigenous Peoples Day (IPD), has been a well-received success.

Indigenous Peoples Day was first proposed in 1977 by the United Nations in response to their report on the treatment of Indigenous peoples worldwide and meant to raise awareness of

the needs of and celebrate the contributions of Indigenous peoples. Later, in 1990, South Dakota renamed Columbus Day to Indigenous Peoples Day (Zotigh and Gokey 2020), but it wasn't until 2019 that that the governor of Idaho, a state with five federally recognized Tribes, the Coeur d'Alene, the Kootenai, the Nez Perce, the Shoshone-Paiute, and the Shoshone-Bannock, declared the second Monday in October as Indigenous Peoples Day. As of 2020, seventeen U.S. states and the District of Columbia have replaced (or added to) Columbus Day with Indigenous Peoples Day (Zotigh and Gokey 2020).

The Idaho State 2019 University IPD was a full-day event including a sunrise ceremony, a panel discussion by Indigenous students and alumni, a lunch catered by a local Shoshone-Bannock company, concurrent afternoon workshops for faculty and community, and a film screening. Attendance well exceeded registration with over sixteen campus departments, thirteen campus non-academic units, citizens of six Native Nations attending, with the largest percentage of attendees being ISU students and local community members. Post-event surveys indicated a satisfaction score of 4.3 out of 5 with the majority of respondents indicating they were "extremely satisfied" across all criteria and events. In 2020, due to the Covid-19 pandemic, the event moved online and lasted a week. Events included an Indigenous student athlete panel from across North America, a virtual tour of the Shoshone-Bannock Tribes museum, a series presentations from scholars, both from the University and Tribes, about the history of Native American residential schools, the history of Pocatello and the Fort Hall Reservation, Tribal Health Authority responses to the pandemic, and a series of film screenings in partnership with VisionMaker Media, each followed by a question and answer session with the films' director or producer. Registered attendance at the 2020 IPD outstripped year one with an increased presence from over twenty Native Nations' citizens, including out-of-state and international attendance,

doubled workshop attendance from the previous year, and over 3800 additional viewers via Facebook Live.

As part of each IPD event so far, at least one workshop has been provided specifically for instructional faculty and researchers. In 2019, two workshops were offered: #IndigenizingTheCollegeExperience and Ethical Research with Indigenous Communities. The first workshop, led by two Shoshone-Bannock ISU graduate students, focused on how campuses can create a more welcoming climate for Native American students. The second workshop, led by an ISU researcher and a SBT employee, focused on ethical considerations and practices for researchers working with and within Native communities. In 2020, one workshop for faculty and instructors was offered, titled Indigenizing Pedagogies. Led by a team of one ISU faculty, one ISU staff member from the Office of Research, and one Shoshone-Bannock ISU graduate student, this workshop focused on creating a welcoming classroom experience for Native Students and incorporating Indigenous epistemologies, authors, and perspectives in courses to improve non-Native student understanding of Native American history and contemporary issues and diverse perspectives on course content. Additionally, 2020 IPD events included two workshops targeting more broadly the understanding of the complex history Native Americans within US and local history: “Reservation History and the City of Pocatello”, led by an SBT employee, and “History and Literature of Native American Boarding Schools”, led by an ISU researcher.

**Figure 3: ISU 2020 Indigenous Peoples Day Calendar of Events**

ISU accomplished an additional public-engaging initiative in 2020—the creation and dissemination of an official ISU land acknowledgement. Developed in consultation with representatives from the Shoshone-Bannock Tribes and approved by the Shoshone-Bannock Tribal Council, the land acknowledgement was a year in the making and includes several versions, including the official version to be used at all public ISU events, a syllabus version, a version for presentations, and an email signature line. To support uptake and appropriate use of the land acknowledgements and to support faculty-student dialog about the purpose of the land acknowledgement and accurate histories inclusive of Native American histories, the land acknowledgement was disseminated within a website including not only the statements, but a background statement, a guide to using the land acknowledgment, guidance for faculty and staff how to use each version, links to campus Native resources, and a set of resources on Native American Peoples and History of Idaho, Native American History, and, important to avoiding discourses relegating Native Americans to the past, Native Americans in contemporary U.S. culture. Debuted on June 9, 2020, the text of the official ISU land acknowledgement reads:

Acknowledging Native lands is an important way to honor and respect Indigenous peoples and their traditional territories. The land on which Idaho State University's Pocatello campus sits is within the original Fort Hall Reservation boundaries and is the traditional and ancestral home of the Shoshone and Bannock peoples. We acknowledge the Fort Hall Shoshone and Bannock peoples, their elders past and present, their future generations, and all Indigenous peoples, including those upon whose land the University is located. We offer gratitude for the land itself and the original caretakers of it.

As a public research university, it is our ongoing commitment and responsibility to teach accurate histories of the regional Indigenous people and of our institutional relationship with

them. It is our commitment to the Shoshone-Bannock Tribes and to ISU's citizens that we will collaborate on future educational discourse and activities in our communities (Idaho State University 2020).

Toward the overarching goal of improving campus climate for Native students, an additional initiative is underway by faculty in American Indian Studies (AIS) and student leaders of the Native American Student Council (NASC). To determine Native American student needs, how welcome they feel on campus, and non-Native campus attitudes toward Native Americans, NASC and AIS have developed a campus survey and, as of this writing, are in the process of obtaining permissions from TUAB and SBT to administer the survey annually with the goal of measuring intervention effects on campus climate.

#### *TUAB Research Committee*

Within this context of improving the general relationship between ISU and SBT, one focus is strengthening the research relationship. A TUAB subcommittee, working in conjunction with an SBT group, is developing a set of standards, a training, and a form for inclusion in applications for research including Native Nation's citizens as participants or co-producers. At the same time, the SBT are developing a board for research proposal review before submission to the SBT Business Council. The research subcommittee consists of four ISU faculty, one post-doc researcher, and one graduate student who is also a SBT citizen, and two consulting members from the SBT. The goals of the subcommittee are to support successful research collaborations with Native Nations, encourage collaborative research design and ethical research practices, and to support Native Nations' research sovereignty. As the perspectives of the SBT citizens who have been involved in research are essential to informing the research committees' work in

evaluating research norms, needs, opportunities for revision and in developing resources, the committee is drawing on research emerging from a project examining the lived experiences of participants and researchers engaged in past and current SBT-ISU research.

### **The SBT-ISU Research Relationships Research Project**

Having autonomy in the research being done in and about their communities is of utmost importance to Native Nations. In order to identify pathways and barriers to research engagement that supports Native sovereignty, our team of four university-affiliated researchers initiated a project to explore the lived experiences of researchers from both the Shoshone-Bannock Tribes (SBT) and Idaho State University (ISU) during research projects in which both entities were involved at some level. By exploring how researchers have experienced such partnerships, how they have engaged the community, and the opportunities and barriers for doing so, we hope to provide insights that help guide this research relationship going forward. Our specific research questions are as follows:

- What is the history and context of Idaho State University research engagement with the Shoshone-Bannock Tribes and affiliated community/people?
- How have Shoshone-Bannock and Idaho State University researchers who have been involved with SBT-ISU-affiliated research experienced working on such projects?
- How do these researchers envision the ideal research relationship between ISU researchers and the Shoshone-Bannock/Fort Hall community?
- What barriers and opportunities do interviewees see for attaining that ideal relationship?

Given the MOA and current collaborative processes we have described in previous sections, our project will be directly useful in guiding on-the-ground changes to the forging of research

partnerships. Our overarching goal is to help create productive research relationships between institutions and Tribes. We plan to provide information to the Tribal and university entities tasked with developing shared research protocols that can assist with 1) improving ethical practice in collaborative research, 2) mitigating challenges to successful research partnerships, and 3) developing guidelines for future collaborative research.

We are in the data collection phase of our project. We have conducted a systematic review of joint Shoshone-Bannock and Idaho State University publications and categorized these publications by level of engagement based on the information available in the publication itself. We are currently conducting semi-structured interviews with both ISU and Tribal researchers, as well as tribal research participants to explore their lived experiences with SBT-ISU research projects. One of the challenges we've faced so far was navigating the Tribal research approval process. As we began the project, the SBT were changing their research approval processes, so we were the first project that was approved via their new Tribal research committee. We learned about the existence of this new process from a tribal employee while presenting our project for approval before the Tribal Business Council. The entire approval process for this project, from initial presentations to IRB approval took approximately 16 months. Though it was a lengthy process, the project benefited from receiving guidance from the TUAB members, the Shoshone-Bannock research council, the Fort Hall Business Council, and two Institutional Review Boards, the Idaho State University IRB and the Northwest Portland Area Indian Health Board IRB.

We've also seen some difficulty in recruiting participants for one of our populations-- research participants or "subjects." We hope social media and print media will help us reach this population. Those who have had successful research projects and partnerships with the Tribes have been more willing to talk with us, however we think the discussion would be enhanced by



having a greater diversity of perspectives and talking with those who have purposely not worked with the Tribes or who have not been successful. We have been working on recruiting such individuals to our study.

So far, we have found that very few SBT-ISU projects published in the literature provide evidence that they were co-produced or Indigenous led. Interviews with ISU faculty, however, have revealed that such projects are likely more common than the literature would suggest. The majority of published studies have ranged from the non-participation level, meaning there was no known Tribal engagement, to the communication level, where at some stage in the research process, some aspect of the research was communicated to the SBT formal governing body, a relevant department, or an organized focus group. Preliminary results from interviews with ISU researchers indicate a need for training researchers in understanding the historical context of Native research and in collaborative rather than consultative research.

The historical context has led to frequent mistrust between groups and researchers. The relevance of this historical context is highly salient to Native Nations' citizens, but may be less evident to academic researchers. In an effort to educate academics, Native collaborators or partners might appear, in the perspective of some researchers, to return to a narrative focusing on the past. For Native communities, though, the past is the frame within which all current research is situated. It is therefore essential that academics not only understand this past, but acknowledge it in their current collaborations toward establishing a shared frame.

Compounding this historical context's impact on trust, contemporary trust issues may result from the mismatch of research expectations between Native Nations' citizens and employees and academics. These mismatched expectations center on the research process, including timelines, and products and often result from institutional values and structures that

may present barriers to collaborative research. One such barrier is presented in the competing needs and requirements of each institution's research approval processes. The need of university IRB and other approvals boards to have proof of consent from the Tribes prior to approval of research conflicts with the Tribes requirement of IRB approval before their research approvals review process, presenting a catch-22 scenario for researchers. An additional barrier concerns a mismatch between expectations concerning timeframes for research processes and institutional change. ISU and the Tribes timeframes for accomplishing actions frequently differ, in part due to differing values. Universities' value of research 'productivity' in the form of frequent publication may compete with Native communities' valuing of thorough deliberation and consideration before taking an action or articulating a position. In addition, the expectations of timeframes for institutional change differ, as the University, with its large structure and relatively rigid operating procedures inhibits rapid innovation compared to the ability of the SBT to engage in rapid innovation and institutional change due to the flexibility of the SBT government structure. And, finally, leadership structures and frequent leadership and researcher/staff change at both institutions may inhibit the maintenance of long-term collaborative relationships, access to resources and engagement of key stakeholders from both institutions, and inhibit frequent, open, and ongoing communication of research goals, processes, including approvals processes, and outcomes.

These preliminary results indicate the need for a re-evaluation of current ISU research approvals processes and training provided to ISU researchers intending to work with Native Nations. Further, these results indicate a need to incorporate the perspectives and needs of the SBT government and citizens within this evaluation and revision of processes to ensure that continued miscommunication and trust issues do not persist.

### **Informing ISU Research Approvals Processes**

The preliminary and future results from the SBT-ISU Research Relationships research project are currently and will continue to inform the final version of interventions developed by the TUAB research committee. The research committee is in the process of developing recommendations for revised research approvals process for Native-engaged research proposals and training for researchers intending to work with Native Nations and their citizens. A primary goal of both of these interventions is to shift the research frame from one privileging Western academic epistemologies and methods to one supporting Tribal and research sovereignty, including data sovereignty, Native-led research questions development, and the right to approve or deny research based on its utility, relevance to the community, and to review and approval of research processes. An additional goal of these interventions is to support ISU researchers' success in developing collaborative research relationships, to help them understand and engage with the perspectives and needs of Native Nations, and to avoid replicating past harms.

First, the committee is developing a self-paced online training module. The training will include sections educating ISU researchers about the history and past harms that academic researchers have enacted on Native Nations and their citizens and collaborative research methods and considerations. The training will consist of five modules. The first module will review the history of academic research with Tribes, the harms that inform the current research context, and ethical considerations arising from this historical context. Understanding and acknowledging this context is important for researchers for several reasons: to avoid repeating the mistakes of the past, to understand the context informing many Native communities' resistance to Western academic research, and to consider the potential impacts of the proposed research. The second and third modules will outline the principles and frameworks for collaborative research,

including the role of indigenous methodologies, and Community-based Participatory Research, focusing on co-production, to support researchers in moving toward a more fully-collaborative and, ideally, Native-led research practice. The fourth module will communicate the results of the SBT-ISU Research Relationships Project to enable researchers' understanding of the perspectives and experiences of research of ISU's closest Native neighbors, again, to encourage understanding of and engaging with those perspectives and frames, but also to support researchers avoidance of common relationship-building pitfalls, such as failing to understand different expectations, timeframes, and values. The final module will outline and provide guidance on navigating the research approvals processes for each of the five Idaho federally recognized Native Nations.

The committee is also developing a process for researchers to address these considerations before the approach the SBT research board and Business Council seeking approval, including a form for researchers to complete intended to be attached to any applications going through existing approvals processes, such as human subjects research boards/IRB, animal subjects research approvals boards, and grant review by the Office of Research before submitting to the SBT for their review. The content of this Native American Research Considerations Form (form) (working title) is also informed by the SBT-ISU Research Relationship Research Project research project. The form will consist of three blocks, a text/information block, a question block, and a signature block. The first block will provide a brief overview of the historical context of Native research impacts and ethics, including Tribal, data and research sovereignty, collaborative design, and identifying stakeholders, as well as guidance for relationship building and communicating and negotiating expectations. This block is intended as a refresher to the training. The second block will contain a series of question sets

meant to engage the researcher in thinking through their research project as specifically relates to a) the relevance of their research topic and design to the Native Nation and potential benefit to the Native Nation engaged in the research, b) collaborative design considerations, including understanding of the research approvals process, identified stakeholders and permissions agencies, plans for engaging the Native Nation in research question development, methodology, and co-production of knowledge, and communicating expectations concerning timeframes and reciprocity, c) data and research sovereignty, including research data management, protections, and ownership and publication/report review and approvals processes, and d) additional sections as may emerge from the research project still underway.

This form will be required to be appended to any ISU research approvals applications, such as Human Subjects Review, Animal Subjects Review, Archaeological permitting, and applications for grants through the Office of Research. In addition, this form will be required to accompany any research proposals submitted to the SBT research approvals board.

The training and the form will both be available via a website, ideally housed on the Office of Research and TUAB websites. In addition, the committee is developing an educational campaign to support wide reach of these resources across campus, including presentations at faculty and graduate student orientations, messaging from the administration, and presentation at departmental meetings. Finally, the committee is planning for ongoing revision of the form and training to reflect changes in SBT and other Idaho Native Nations' research processes and concerns.

## **Challenges & Opportunities in Revising Processes**

Looking forward to changing institutional research processes and encouraging co-equal production, as well as supporting research sovereignty, numerous challenges and opportunities present themselves. Some of the challenges identified so far include accessing process needs both within the Tribes and the university, making sure we are reaching the appropriate audiences, undue burden on Native students/faculty and allies who represent Native interests, and institutional gatekeeping. Opportunities that rise out of the initiatives previously mentioned include increased availability of training for graduate students and junior faculty, increased research opportunities for Native Students, creation of more resources for Tribal researchers, and ultimately changing the institutional and campus culture at Idaho State University.

### *Challenges*

To create a research process that is clear and serves both Tribal and University researchers and interests, we need to assess the challenges with creating such processes. There is a need for developing complementary research review and training processes. This is currently being addressed on the university side by the TUAB sub-committee on Research, Preservation, Protection and Management, and on the Tribal side by their own independent research committee. This process requires acknowledging past harms by non-native researchers, including those at ISU, as well as actively listening to, and internalizing the needs of Tribes as precedent. Most importantly both entities will need to commit to bi-directional openness and education. The creation of the TUAB at ISU is a part of that commitment.

Understanding that the Tribes and ISU may have separate but overlapping goals, and how we can best address those goals is one challenge. For example, the SBT research board would

ideally like ISU's research committee to vet research before it is submitted to them for approval to reduce the number of research proposals they receive. While this is an understandable want, the ISU TUAB research committee members are serving on this committee in addition to their other research and teaching workload and would not have the time or person-power to review all prospective research proposals and so have developed the training and Form solution as a compromise.

Another challenge to be addressed is how to ensure that all university researchers are going through the processes and training even if they are exempt from ISU institutional approvals. Researchers who are not working with humans, animals, or biological materials or who are not seeking internal or external grant funding may be exempt from typical research approvals processes. To address this challenge, the research committee is planning to publish the training via a standing website, to market the existence of the training and Form through the Office of Research, at faculty and graduate student orientations, and through College deans, Department chairs, and direct presentations to department meetings. We are also working with the SBT research board to ensure they and the Business Council are aware of the Form and require it be attached to all applications presented to them.

Unfortunately, ISU currently has very few Native faculty and staff. While there are non-Native allies who aid in representing Native interests on campus, there are often already too many service obligations on those few individuals. To take full advantage of all the initiatives presented in this paper, greater buy-in is required by existing non-Native faculty and staff. There must also be follow through on the MOA objectives of hiring more Native faculty, to create new, and enhance existing, Native-serving programs at the university as well as training existing non-Native faculty and staff concerning the needs, histories, and contributions of Native students and

their communities. Through greater buy-in across campus, and more Native representation in hiring, the burden of supporting the above initiatives is shared more widely.

### *Opportunities*

There is currently no formal or systematic training provided to students and faculty interested in engaging in research with, about, or on the lands of Tribes and Tribal citizens. One of the 2019 MOA commitments agreed to was creating and promoting campus-wide diversity initiatives that support and provide increased Native American cultural awareness. According to the MOA, ISU's Office of Equity and Inclusion is committed to working with the Tribes to develop training for admin, faculty, staff, and students (ISU MOA, 2019). As part of the Indigenous Peoples Day events of 2019 and 2020, ISU's Native American Student Services and American Indian Studies program personnel have begun to offer limited voluntary trainings to students or faculty about the historical and contemporary relationship between the University, the city of Pocatello, the state of Idaho, or the region, with the Shoshone and Bannock peoples and/or other Indigenous peoples native to the surrounding areas. These trainings, though, are not required for any faculty, students, administration, or staff, and do not fill an identified need of training specifically in research practices, expectations, and relationship-building. The TUAB research committee is in the process of addressing this opportunity by developing just such a training, and is developing plans to integrate it into existing systems.

An additional opportunity concerns increasing Native representation among faculty and staff. Identified as a strategic priority, the recruitment and retaining of Native students is of utmost importance. The initiatives addressed in this paper lend to more opportunities for Native students to engage in research with and about their own communities while at ISU. Preliminary



data from the research project focused on better understanding the research relationship between the SBT and ISU, has shown that researchers believe that an increase in engagement by Native students on research projects would enhance the overall research relationship. By creating strong and accessible pathways for students to engage and contribute to their own people and communities through offering culturally relevant course offerings, and an approach to academic research based on co-equal production between our institution and Tribal nations, we believe that could increase the enrollment of Native students at ISU.

Another opportunity provided by the aforementioned initiatives includes creating more resources for Tribal and university researchers. Thus far, some of the preliminary data from our research project reflects that researchers are either unaware of the proper avenues and processes to engage in research with the Tribes, are confused with the processes, or have only been able to engage with projects as a third party and less directly with the specific researchers and projects. The initiatives going on at ISU will serve to help streamline the processes so that information on how to engage the Tribes as a research partner and the proper protocols for doing so will be more readily available, and easier to understand. We also hope to provide a directory for Tribal researchers to match their research needs to a database of university research experts in specific disciplines.

We are hopeful that the above opportunities will all lead toward the changing of the culture at Idaho State University. While the process will take time, these incremental changes lend to supporting and enhancing respectful Tribal relations, while also increasing the campus presences of Native students, staff, faculty, and community, that then in turn leads to a more diverse and welcoming campus, which we hope will increase Native student enrollment and retention at ISU.

Ultimately, these opportunities lead to a better Tribal-University relationship with a commitment to supporting Tribal sovereignty.

### **Looking (and Listening) Forward**

The integrated initiatives and activities currently underway at ISU are both essential to improving the research relationship between the SBT and ISU and dependent upon understanding the perspectives of our research partners and participants. Developing research review/training processes to align with the needs and expectations of the SBT and other Native Nations requires actively listening to and learning from these partners. The SBT-ISU Research Relationships Project is just one means of gaining the perspective of ISU researchers and SBT citizens engaged in research. The Tribal University Advisory Board, charged with enacting the priorities of the MOA, and the research committee area also essential tools for communicating SBT needs in research and negotiating the challenges, barriers, and opportunities entailed in maintaining a respectful, reciprocal, and success research relationship between ISU and the SBT.

To continue this practice of listening to and learning from our Native research partners and participants, and to encourage continued bi-directional communication, ISU is planning to share the results of the Research Relationships project not just with the SBT Business Council, but also with the community, through a series of town hall meetings. In addition, we are planning a workshop series aimed at training both university and Native Nations' researchers throughout Idaho in the spring 2022 semester. The goal of these workshops, which will include both Native and academic workshop facilitators will be to share the results of the Research Relationship Project with the Idaho research community and to begin a state-wide conversation about the need for, best practices within, and relationship-building strategies of collaborative

research with, in, and by Native Nations. We hope this conversation will support Tribal sovereignty, research sovereignty, and successful Native-academic research collaborations across Idaho.

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In an effort to show respect and recognize their intrinsic ties to the land, we acknowledge that Idaho State University (ISU) is located on the traditional territory of the Shoshone, Bannock, and Paiute peoples, collectively known as the Newe. As a public research university it is our responsibility to teach accurate histories of the regional Indigenous peoples and our institutional relationship with them. It is ISU's ongoing commitment to the Shoshone-Bannock Tribes and to our communities that we will collaborate on future educational discourse and activities (Idaho State University 2021).

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**LIST OF FIGURE CAPTIONS**

**FIG 1:** Levels of Community Engagement by Entity Initiating Research. Adapted from Reed (2018) and David-Chavez and Gavin (2018).

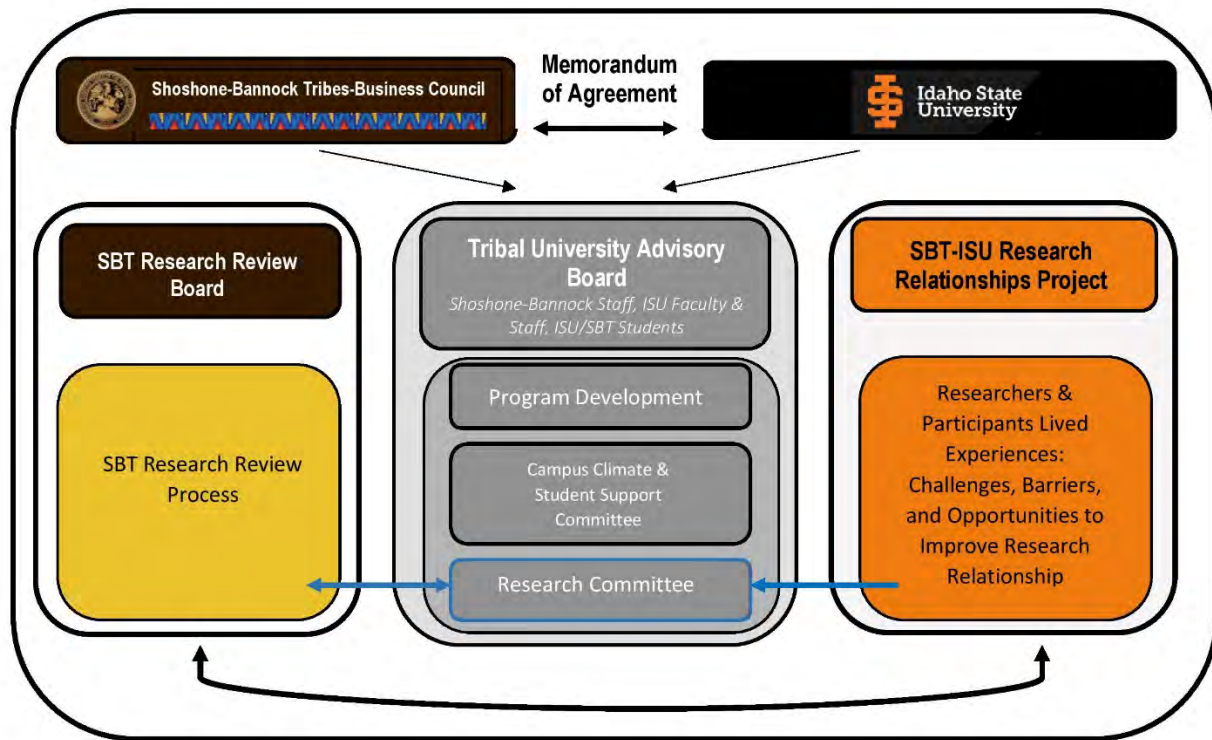
**FIG 2:** Evaluation and Revision of Research Engagement Practices across SBT and ISU.

**FIG 3:** 2020 ISU Indigenous Peoples Day Calendar of Events.

**FIG 1:** Levels of Community Engagement by Entity Initiating Research. Adapted from Reed (2018) and David-Chavez and Gavin (2018).



**FIG 2:** Evaluation and Revision of Research Engagement Practices across SBT and ISU.



**FIG 3:** 2020 ISU Indigenous Peoples Day Calendar of Events.

Indigenous Peoples Day
Register
Events
Posters & Community Contributions

## Week of Events

<b>Monday, Oct. 12: Land</b>	<b>Tuesday, Oct. 13: Education</b>	<b>Wednesday, Oct. 14: Health</b>	<b>Thursday, Oct. 15: Cultural Expression</b>
<p>11 a.m. - 12:30 p.m. <b>"Reservation History and the City of Pocatello"</b> <i>Yvette Tuell</i></p> <p>1:30 - 2:30 p.m. <b>Workshop for Faculty and Staff: Indigenizing Pedagogies and Inclusive Teaching Strategies</b> <i>Samantha Blatt, Laticia Herkshan, Sonia Martinez</i></p> <p>6-7 p.m. <b>Film: <i>What Was Ours</i></b></p> <p>7 - 8 p.m. <b>Q&amp;A with Jordan Dresser (Northern Arapaho), Film Co-Producer</b></p>	<p>10 a.m. - 11 a.m. <b>"Living in Two Worlds"</b> <i>Tyson Shay, ISU Shoshone-Bannock student</i></p> <p>11 a.m. - 12:30 p.m. <b>"History and Literature of Native American Boarding Schools"</b> <i>Amanda Zink, Associate Professor</i></p> <p>6 - 7 p.m. <b>Film: <i>Navajo Math Circles</i></b></p> <p>7 - 8 p.m. <b>Q&amp;A with George Paul Csicsery, Film Director</b></p>	<p>11 a.m. - 12:30 p.m. <b>COVID-19 Connected Human Communities: Tribal Health Authorities</b></p> <p>6 - 7 p.m. <b>Film: <i>Growing Native – Northwest: Coast Salish</i></b></p> <p>7 - 8 p.m. <b>Q&amp;A with Shirley Sneve (Sicangu Lakota), Film Producer</b></p>	<p>10 a.m. - 11 a.m. <b>"Indigenous Activism at Alcatraz"</b> <i>Dr. LaNada War Jack, alumnus and author</i></p> <p>11 a.m. - 12:30 p.m. <b>Native American Sports/Athletics Panel</b> <i>Moderated by Lethaniel Loley</i></p> <p>1:30 - 2:30 p.m. <b>Shoshone-Bannock Tribal Museum Tour – Language and Cultural Preservation</b></p> <p>6 - 7 p.m. <b>Film: <i>Growing Native – Oklahoma: Red People</i></b></p> <p>7 - 8 p.m. <b>Q&amp;A with Charles "Boots" Kennedye (Kiowa), Film Producer</b></p>

## **Criticism, Compliance, Consent—A Personal View of Government-to-Government Consultation, and the Road Forward**

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### **ABSTRACT**

Federal Agencies are mandated to complete government-to-government (G2G) consultation with the First Nations to identify potential impact on tribal resources resulting from proposed projects, and to make a good-faith effort to achieve consensus on how to move forward. In my 20-year career with the BLM I've seen many variations in Agency approach to consultation, ranging from desultory 'notice and opportunity to comment', to the attempt to formally follow all procedures as directed in the new (2016) BLM-1780 Improving and Sustaining BLM-Tribal Relations Handbook. No single approach has proven to be effective in defining or achieving mutual management goals, but mutual familiarity and respect between consulting parties goes a long way toward facilitating understanding. Here is my experience interacting with Native Americans, Agency consultation, and the road ahead

### **ACKNOWLEDGEMENTS**

I acknowledge Helen and Andrew Squinas, Ulkatcho of Anahim Lake, B.C., and the Hans, Mack and Siwallace Nuxalk families of Bella Coola, B.C. who shared their lives and made me family, and Dr. Karen Capuder of Okanogan, WA, for more reasons than can be listed.



## **Criticism, Compliance, Consent—A Personal View of Government-to-Government Consultation, and the Road Forward**

I will preface my comments by stating unequivocally, the Bureau of Land Management (BLM) has been very good to me over what will be a 20-year career this August, and I am grateful. Everything that follows is personal experience and observation, in no way meant to denigrate the Agency.

I've observed that no matter how many times subsequent teaching is received, one inevitably reverts back from whence they came. I was educated and began my career in British Columbia and that has given me a vastly different perspective and vocabulary.

In 1763 in a Royal Proclamation that set out guidelines for European settlement of Aboriginal territories in North America, the British crown recognized Aboriginal title, Aboriginal rights to harvest resources from their territories, and declared all land would be considered Aboriginal land until ceded by negotiated treaty. But British Columbia (B.C.) was the last corner of North America to be colonized, and by then the First Nations had already been decimated by European disease; the crown and the colonial government didn't perceive a First Nations presence that needed to be addressed. Further, survivors were somewhat pacified by (primarily) Jesuit missionaries. Without a general need to push the First Nations off their lands to make way for European settlement only two treaties were signed, comprising a relatively insignificant portion of the province. Since there were no treaties to speak of, there were no resulting "reservations" (which, in Canada, pertain to dining plans rather than describe First Nations land). Instead, First Nations people retained full access to crown land with areas within those lands set aside—"reserved"—for their exclusive use. The First Nations don't have

ownership of reserve land; effectively, they're wards of the crown. Currently, 94% of B.C. is crown, 5% is privately owned, and Federal crown land (national parks, military installations and reserve land) comprises 1%, with First Nations reserves occupying less than one half of one percent of the land in B.C. The Province is legally obligated to consult and accommodate First Nations on land and resource decisions on unceded land – 95% of BC - that could impact indigenous interests. If we were considering an American-type government structure individual states, rather than the federal government, would be responsible for consulting with Native American Tribes.

Although many First Nations wished to negotiate treaties, successive B.C. provincial governments refused until the 1990s. When I moved to the U.S. in 1999, land claims covered approximately 110% of the province. Areas that traditionally had been cooperatively utilized were often claimed by 2 or more bands. ("Band" is another Canadianism – tribes are in Africa; bands are in the Americas). The first contemporary treaty was negotiated and implemented in 1990 with the Nisga'a, who are now a self-governing Nation within Canada. Although other First Nations are in the process of negotiating treaties, others remain unwilling to cede their rights to crown land and remain strongly against entering a treaty process.

My personal experience with the First Nations began in the late 1980s when I was a student in the Simon Fraser University Archaeological Field school in the Bella Coola Valley of the Central Coast. We worked at two sites that year, Stuic and Snxlhh; Stuic was one of those areas that were claimed by multiple bands. Traditionally, the Ulkatcho (Carrier Cree) of Anahim Lake would come down from the Chilcotin Plateau to Stuic, which is near the confluence of the Bella Coola and Atnarko Rivers at the head of the Bella Coola Valley, for their annual take of salmon. While there, they would meet with the Nuxalk (Bella Coola) to trade – particularly

soopollalie (*Shepherdia canadensis*, soapberry) for oolichan (*Thakeichthys pacificus*, candlefish) grease – and get together with friends and relatives who had married into the other band. Both the Nuxalk from the west, and Ulcatcho from the east claimed the area, and it also fell within the use area of the Chilcotin (an English name) from the south. I came to University as a mature student and had little in common with the rest of the field school, so I ended up hanging out with the Ulkatcho on the River, helping Helen and Andrew Squinas, an older man and his younger wife, harvest their fish. I helped Helen wet-tan a moose hide and traded field school raisons and lard for “sluk” (smoke, dried salmon). Helen taught me how to make bannock right in the flour bag.

My unofficial adoption came the next year when I was back in the valley working for the University teaching field techniques. I was in Anahim for the weekend when Helen frantically beat on my truck to wake me up saying “too hot” and “Andrew breathing”. It turned out the government had built houses on the reserve, torn down the cabins, and “upgraded” the living situation without teaching the people how to operate the houses. One of the many kids running in and out had bumped the thermostat, which had pumped the temperature up to almost 100 degrees. Andrew, with his compromised heart, was having trouble breathing. Once we got Andrew cooled down and I showed Helen how to operate the furnace I looked around and found a number of other issues that needed explanation. No one in the household understood toilet paper could be flushed, and Helen was cooking on a fire in the back yard while bemoaning the loss of her “house”; the cabin – with wood stove - that had been torn down. I told Helen I’d show her how to cook in the house; she slapped a mountain sheep shoulder down on the counter then watched carefully and approvingly while I made stew for 20 on her electric stove.

The lesson here is that the government – be it Canadian or American - often doesn't know what the people actually need and, consequently, often fail to act appropriately. Helen was from the Blackwater, even now an extremely isolated area, and had spend her girlhood working as cook for a white guide-outfitter where she met Andrew who had been engaged as tracker. She'd never seen an electric stove.

Snxlhh (also called 4Mile) is located four miles from where the Bella Coola River dumps into the salt water chuck – fiord - still over 100 miles from the open ocean. The Nuxalk had a reserve at Q'umk'uts' (Bella Coola) and another at Snxlhh (the “new” sub-division), with scattered little pieces of reserve at traditional use areas such as Nusq'lst, “the place of the sasquatch” abut also where the greenstone that was used to make adzes was obtained, a village excavated by the university in previous years.

When I was in the Valley the Nuxalk Nation had six hereditary chiefs, each from a Nuxalk village. There was the family from Q'umk'uts' (Bella Coola); the family from Snxlhh (4Mile); the family from Suts'lh (Kimsquit) on the Dean River; Talyu on South Bentinck Arm – both a family name and a village name; Kwalhna, and; Nusq'lst. Once the population had been decimated by disease the survivors were moved to the mouth of the Bella Coola River on the south side. Even this location was foreign; the original village of Q'umk'uts' was on the flat on the north side of the River with a nice, sunny exposure. But, it was inconvenient for the colonial government to access, so the village was recreated in the shadow of a mountain. Much of the off-reserve section of the town of Bella Coola is constructed atop a traditional cemetery.

The university recorded Nuxalk stories as part of their mandate. I was working at Snxlhh early in the field school when Andy Siwallace and Art Hans came to tell stories of the area. Andy looked at the assembly - professor, employees and students - pointed at me and said, “I

will tell you". The professor, who had been working in the valley for years, and the rest of the group trailed us, scribbling madly as Andy, Art and I strolled around the site and Andy told me his story, with Art adding observations from his family. It was the beginning of an eternal relationship between me and the Nuxalk, especially the Siwallace, Mack and Hans families. Attending dances and potlatches, gathering, cooking and eating together, drift fishing with Art on the Bella Coola River; the best of times.

And now for something completely different. In 1999, after paying off my student loans, I threw the motorcycle and library in the truck and moved south. I had no job, no prospects and no place to land, but I couldn't make a living as a seasonal trowel tramp and I'd sworn I'd be an archaeologist. It couldn't be worse, right?

By 2001 I was working for the BLM in Lander, Wyoming, where Craig Bromley began my education in the *Archaeological Resources Protection Act* (ARPA) and the *National Historic Preservation Act* (NHPA). So much more powerful than the Heritage Conservation Act of British Columbia. In 2002 I was in Elko, Nevada under the tutelage first of Tim Murphy, then with Doctors Hockett and Fawcett. In November 2003 they traded me to Battle Mountain which, according to the Washington Post, was the "Armpit of America". There, my mentor became Dr. Roberta McGonagle, a wise and practical woman, continually overlooked by her Great Basin colleagues. I stayed almost 15 years, officially earning "full performance" in 2006, although I'd been working at that level since 2004. Bobbie and her contemporary, Alice Baldrice - Nevada Deputy SHPO at the time - taught me how to write a context and evaluate cultural resources against that context. In Nevada every report contains appropriate historic contexts and there had better be a tangible excuse – such as 90% of the site on private property and the owner denies access – for leaving any resource unevaluated.

Battle Mountain and neighbouring Elko Districts shared a Native American Consultant. Most of the Western Shoshone Tribes we were supposed to deal with were on a continuum of disfunction, ranging from ‘too-busy-to-be-interested-in-what-the-Feds-are-doing’ to, in an act of defiance pointed at the “traditionalists” by the “modern” faction, impounding the records from the tribal headquarters and leaving the state. The one thing the Tribes had in common was no one reliably received BLM letters, and green cards were what a foreign national needed to get a job rather than return receipt. So, in order to fulfill our Section 106 consultation responsibilities – see how that rolls off my tongue; almost like I knew what I was talking about – we had a Native American Consultant (NAC) who visited each tribe about once a month, to let the few who came to the meetings know what we were up to. As far as effectual Government-to-Government (G2G) consultation goes, it was a non-starter.

To exacerbate our ignorance of tribal desires and responses to BLM, Nevada was also working under at statewide protocol with the SHPO. That protocol effectively gave BLM the right of prior approval on anything we wanted to do as long as we promised to orchestrate the project so we’d have No Adverse Effect on Historic Properties. In practical terms, the NEPA document was signed before the cultural resource survey was initiated . . . and somewhere in the process the NAC told an empty meeting room what we were doing . . . and, if it was a fuels reduction project, promised to let tribal members scavenge firewood. In the background, Bobbie quietly told me of doing inventory on horseback with any one of several First Nations women riding along as often as they wanted. It was a different world when women were responsible for managing cultural resources in certain Nevada BLM Districts.

In 14 years of BLM employment in Nevada, during most of which I was sole cultural resource specialist on about 6 million acres of BLM, I never ONCE wrote a consultation letter. I didn't even see one. I think that's worth a pause for thought.

In May of 2015 it became apparent my dad was getting ready to walk on and I needed to be with him. The day I was thinking about taking a leave of absence without pay – and if I couldn't get that, then quitting – the stars aligned and a detail opportunity in Wenatchee crossed my desk. That in itself seemed cosmically orchestrated; I hadn't been signed up to receive detail notices but this one just appeared. And I had been unaware there was a BLM office in Wenatchee, even though I drove through it on one of my many routes from Battle Mountain to Kelowna. Spokane, yes, but still 8 hours from home; Wenatchee, at four and a half hours from home, is as close as possible while still working for BLM. So I got the detail and went north every weekend. Then, after a somewhat surreptitious dance on my part – this job was mine and I would do anything at all to get it – BLM gave me a direct transfer and I am in Wenatchee for the remainder of my career. Directly after moving to Wenatchee in November 2015 I took leave for an undetermined length of time – while BLM continued to pay me “family leave”. Dad's illness was short and I was back at work in February 2016.

Taking over cultural resource management in Wenatchee, I was delighted to realize I'd be responsible for consulting with the First Nations. Oh Boy . . . an opportunity to return to the people of my heart. Not to imply all First Nations are the same, but to recognize the tribes have a spiritual philosophy similar to mine. And then I found the letters I was to use as “template”. “Dear Honourable chairperson ABC. The BLM is blah blah blah . . . If you have comments or concerns blah blah blah”. A total letdown. Depressing. Formulaic. Dehumanizing. But this is what I'm directed to do and, being educated in Canada and therefore relatively articulate, its

what I do. And, for the first few years I occasionally received a “Dear BLM” letter from the Colville, and once or twice, from the Yakama. Generally, I wrote a letter, waited 30 days, then went ahead with whatever the project was. My observation here is that “comment” is NEVER good. “Comment” means ‘we disagree so don’t do that’.

A change began when Dr. Karen from the Colville told me ‘not only do we not agree, but you don’t have any idea what you’re talking about’. I’ll say it takes one to know one, but that’s not relevant here. The fact is, I was well-aware I had no idea what I was talking about and knew the appropriate steps to take to figure it out. However, going to the source wasn’t an option because I just couldn’t establish a personal relationship with Tribal members no matter what avenue I tried. At the NWAC in Kennewick I was attending an afternoon, tribal panel session where the moderator didn’t show up. The room was full of First Nations people and I thought “now’s my chance.” So, I went to the front of the room and asked if we could use this time to talk about the things that are in the way between you and me having a conversation. Then I introduced myself with proper lineage and a quick summary of where I came from. And since I was no longer Agency in the eyes of the people, we had a good talk and I had a lesson in the personal injustices these people and their families and their Nations had suffered at the hands of the invaders. I’m embarrassed to be Caucasian. And . . . speaking of Caucasian, half my family is from what was Galicia in eastern Europe, growing oranges in the back yard. Our homeland was also conquered, subsumed, and no longer exists. My people immigrated as dispossessed, ending up in northern Alberta where it’s too cold to grow much of anything except wheat!

Since I couldn’t learn from speaking with elders, I decided proposition Dr. Karen. “If I find money how much will it cost to figure out what we have on BLM land in Upper Moses Coulee?” And while we’re at it, who can I talk to about native plants? I used to gather with the



Nuxalk and I was missing it. So I've jammed my foot in the door and won't back off until I retire and consult for pleasure rather than duty.

In my ideal world and as—hopefully—we have begun, Agency and First Nations work together to protect the land and promote its health. When we want to discuss what to do, we pick up the phone and call. Sometimes we call just because it's nice. We talk about it until we come to agreement and then make an action plan. Sometimes Agency does things to meet First Nations goals, sometimes First Nations do things to meet Agency goals, but more often than not our goals are the same. It seems to me we're all getting paid out of government funds, so does it really matter who foots the bill as long as we're both satisfied with the intended outcome? And after all that talking is through and agreement is reached, I can draft that letter the NHPA tells me I'm responsible for. By then it will truly be a formality because our consultations would be continual and non-confrontational. This is not G2G consultation; its two entities working together to meet our multiple use goals, allowing that sometimes multiple use may be reserving certain areas for specific, sole use.

I think formal, G2G consultation between Agency and First Nations should be undertaken when the issues are truly between governments, such as when the land is to be affected on a monumental level – like the Trans Mountain Pipeline in Canada or the Keystone Pipeline in America—or when the ways in which these governments will relate—policy—is on the table. To be affective, grassroots level consultation should be planning between friends.

Using a Native American consultant may a good idea, depending on the situation. I will say, though, Every BLM Native American consultant I've met or heard of has been male, and all but two have been white. One self-identified as Hispanic and the other was a Western Shoshone in the unenviable position of acting as Agency go-between with his own family and Tribe. It

didn't work. There were cultural expectations he couldn't fulfill because he worked for the BLM. If, for example, as a tribal member he called to meet with the council or elders, he was expected to provide a meal; at the time BLM wouldn't support that, although I believe those restrictions are loosening with increased sensitivity to Tribal practices. There were other specifics, but suffice it to say he applied for and was promoted out of the position.

I don't think a woman could be an effective tribal liaison with the Western Shoshone (at least those I met) because the society is patrilineal/patrilocal; women don't belong at the government table. Then again, the matrilineal Nuxalk appear patrilineal—all the chiefs are men—but the women told me “they just think they're chiefs and we go along with them because it's easiest and it keeps them happy and busy. Actually we make the decisions and let the men think it's their idea. If they don't agree we have ways to make them agree.” So I suppose, like everything else, the effective approach to using a tribal liaison and who that liaison is, is situational.

I want to finish up by saying I began as a cultural anthropologist, but soon realized there was no chance whatsoever of employment outside a university, so I switched to archaeology where the employment potential was slim but not non-existent. If one were pursuing a career with Agency, education should include as much Cultural Resource Management as possible. I've noted that CRM is not required in obtaining a degree in Archaeology, a vast and costly oversight in preparing students for a career outside the educational institution. And, despite my unpreparedness for it, I have few regrets regarding my stable and rewarding Agency career.

## A Can of Worms?

William Schroeder, Ph.D.

### ABSTRACT

According to the Utah Division of State History, “[t]here are no experts in historic artifact identification, only people who have seen more of the variation than others (Merritt 2014:2). U.S.F.S. Archaeologist James T. Rock (1942–2010) “compiled information and provided typologies and dating techniques, including examination of seams, closures, openings, materials composition, etc. that have enabled archaeologists and historians to better interpret historical archaeological sites” (soda.sou.edu.2018). Indeed, Rock’s *A Brief Commentary on Cans* (Rock 1987) is the most comprehensive monograph on the subject, yet does not discuss the innovation of the corrugated can. If the unofficial motto of Historical Archaeology is: Confirm the facts; Contradict when necessary; and Contribute whenever possible, then a revised can type, opening, and opener technology chronology is warranted. This paper presents postprocessual posits, recently published archival research, and information that promote professional praxis regarding the identification, assessment, and evaluation of historic period cans in archaeological contexts.

## Introduction

London Broker, Peter Durand is credited with coining the term “tin canister” in 1810 and an anonymous William Underwood Company bookkeeper is credited with coining the term ‘can’—a shortened version of canister—in 1840 (Depew 1895:396; May 1937:12; Fontana et al. 1962:67). Emigrants traveling west by wagon along primitive trails had to carry the majority of their food for the four- to six-month trip with them; foods that did not spoil easily and were relatively light weight, some of which were canned (Zeide 2019:15). Gold seekers in the American West, Civil War soldiers, French and British colonialists: all ate canned goods for the sustenance that fueled their ventures (Zeide 2019:12). Selçuk Balamir, Ph.D. Fellow at the Amsterdam School for Cultural Analysis, finds that prior to WWI, canned food was “a military tool of European colonialism” and posits that after WWI, the tin can became “the symbol of capitalism, serving the interests of the American Empire” (Balamir 2011:5). Indeed, the preponderance of tin cans scattered along the roads and in cities prompted a Connecticut newspaper to dub the U.S. the “Tin Can Civilization” (Meriden Morning Record, 22 March 1922:13; Sandor and Rose 2017:149).

Sanitation was another driver of improvements in canning technology from the beginning. Easier, more efficient means of can construction, opening methods and devices, and consumer safety and satisfaction have also been key to success. National Park Service (NPS) Themes into which canneries can be situated include Developing the American Economy and Expanding Science and Technology; if related to Railroads, Military, and/or Emigrant Trails, the Peopling Places theme may also apply. Tin cans can be situated within historic contexts if enough information is available. But are cans significant? Do they retain enough aspects of

integrity to substantiate essentialist or exemplarist eligibility for listing on a heritage register under any Criteria in and of themselves? It depends.

### **Historical Overview**

“An army marches on its stomach”

—Napoleon Bonaparte and/or Frederick the Great

Tin plating was successfully developed in Bohemia in the 1300s and improved in Saxony in the 1600s (Clark 1977:11). In the 1670s, the process was brought to Great Britain. From 1784 to 1795, Nicolas Appert, a young confectioner, pickler, preserver, vintner, brewer, distiller, and chef from the region of Champagne, France, experimented with wide-mouthed glass jars for preserving foodstuffs by sealing contents with wax, a cork with a wire stopper, and placing the jars in boiling water (Clark 1977:11; Collins 1924:3), i.e. appertization, a sterilization-preservation process that involves cooking the food contents in excess of 70°C (158°F). Pasteurization involves heating a liquid between 60°C and 100°C (between 140°F and 212°F); both methods kill *Clostridium botulinum* spores.

In 1795 the French Directory (the final phase of the nation’s government following the French Revolution) determined that it was necessary to supply French forces fighting battles in Italy, The Netherlands, Germany, and the Caribbean with a stable source of food. At that time and for centuries beforehand, livestock were integral cargo on ships—for their byproducts and as direct sources of food. Through the Society for the Encouragement of Industry, the Directory, including Emperor Napoleon Bonaparte I, offered a prize to anyone who could solve the problem of stable long-distance transportation of foodstuffs. Appert won the sought-after prize. In 1803

his preserved foods, which included vegetables, fruit, meat, dairy, and fish, were distributed to the French Army and Navy.

In 1808, an English Chemist, Sir Humphry Davy, discovered that salted water boiled at 240°F (116°C; Collins 1924:16). In 1809, the French Bureau of Arts and Manufactures of the Ministry of the Interior gave Appert an *ex gratia* payment of F12,000 on condition that he make his process public (Robertson 1998:174; Swedberg and Swedberg 1985:10). In 1810, Appert published *L'Art de conserver les substances animales et végétales* (The Art of Preserving, for Several Years, All Animal and Vegetable Substances; translated into English by Dr. A. W. Bitting in 1920). Appert's method fostered home canning.

Also in 1810, Philippe Henri de Girard worked with London Broker, Peter Durand, to receive a patent for a "substitution of glass jars and bottles with tin cases" (Figure 1) from King George III of England. Simultaneously, Augustus de Heine, worked on and independently patented a similar method.

After a successful trial with the Royal Navy in 1811, the de Girard-Durand patent was acquired by Bryan Donkin for £1000 in 1812 who later was the first to pack coffee in canisters. "Donkin applied to the British Admiralty for a test of his product and the first substantial orders were placed in 1814 for meat preserved in tinsplate canisters," (Robertson 1989:123; cf. Sacharow and Griffin 1970:9), and the world's first commercial canning factory was established on Southwark Park Road, London (wiki.sanitarc.si 2020). "By the 1820s, canned foods were a recognized article of commerce in Britain and France" (Robertson 1989:123). Early cans featured embossed labeling. Embossing is boss and really groovy, too.

In 1856, Gail Borden improved and patented a method of condensing milk he learned from the New Lebanon, New York Shaker Colony which incorporated a globe-shaped copper

vacuum pan (US15553A; Clark 1977:11). In 1858, can seams were sealed in a “joker system” solder bath (Hunziker 1914:101; Memmott 2015:5–6; Rock 1987:7–8). Borden partnered in the New York Condensed Milk Company of New York in 1860 and partnered with William Numsem & Sons of Baltimore to form the Baltimore Condensed Milk Company in 1863 (Depew 1895:397). The American Civil War was yet another opportunity for the burgeoning canning industry, yet can bulging due to botulism was still a problem. Gail Borden’s company received the contract award to supply condensed milk to Union soldiers and demonstrated that it was a safe, nutritious product (Darling and McConnell 1993:16).

In 1865, retired Union Colonel Silas Augustine Ilesley founded a tinware factory in Brooklyn, New York (Clark 1977:11, 78) that later merged with the American Can Company (ACCO) of Maywood, Illinois in 1901 (Reilly 2012). After 1866, Borden’s Eagle Brand condensed milk featured an embossed can end and a “hole-and-cap” closure.

Also in 1865, William Underwood’s sons began producing a canned deviled ham meat spread. In 1867, their famous devil logo was registered as Number 82 under the Copyright Clause in the U.S. Constitution per the Trade Mark Act of 1870 (16 Stat. 198), one of the oldest food trademarks still in use for a prepackaged food product in the U.S. (Figure 2).

A. K. Shriver perfected and patented a steam autoclave called a retort in 1874 that delivered a higher temperature and allowed canned foods to be processed in less time (US149256A). That same year, John Fisher developed a method of ‘dry’ or superheated steam in a kettle that delivered even higher temperatures (Collins 1924:22-23).

In 1883, I. H. Cox of Bridgeton, New Jersey introduced a “hand-capper” that improved efficiency; the Norton Brothers Co. of Chicago, Illinois employed such a machine (Zeide 2019:23). John B. Meyenberg’s Helvetia Milk Condensing Company (later Pet Milk Co. in

1923) of Highland Park, Illinois produced the first unsweetened sterilized evaporated milk in a can (labeled evaporated cream until 1906) in 1885 (US308421-308422A; Bitting 1937:737–739) and supplied U.S. troops during the Spanish American War of 1898 (Rock 1987:46).

Imported British black plate from which sheet metal and cans were made dominated the market. The U.S. Tariff Act (also known as the McKinley Tariff Act) of 1890 raised the duty on imported tin-plated steel from 30% to 70% with the provision that imported tin-plated steel tariffs would be lowered to 0% (duty free) if one-third of tin-plated steel was domestically produced by 1897.

Domestic tin-plating (packer) mills and Bessemer steel foundries came and went. Despite the Panic of 1893–1897, the canning industry ballooned. In 1896, Charles M. Ames and Julius Brenzinger of the Max Ams Machine Company of New York patented a method of mechanical roll double-crimping can ends resulting in the ‘sanitary’ can in 1896 (US570591A) and revolutionized the canning industry (Figure 3) (Reilly 2012; US570591A). Soon thereafter, over 100 tin and steel manufacturers, including the American Sheet and Tin Plate Company ([perintonhistoricalsociety.org](http://perintonhistoricalsociety.org) 2010a:1), incorporated as the American Can Company (ACCO, alt. CANCO) in 1901. The Max Ams Machine Company, the George W. Cobb Preserving Company, and jobbers Bogle and Scott of New York incorporated and formed the Sanitary Can Company (SCC) in 1904 in Fairport, New York (Reilly 2012). Their cans are distinguished by the word SANITARY embossed on the lid (Rock 1987:104). That same year, Edwin Norton—a canner since 1868—renamed the Norton Tin Can and Plate Company and founded Continental Can Co. (CCC), and became the second largest can manufacturer in the U.S. The Metal Package Corporation, established in 1909, rebranded itself as the National Can Co., Inc. (NCC) in 1929, and became the third largest can manufacturer. The Panic of 1907 resulted in the SCC’s failure



“to secure loans to continue manufacturing tin cans” and so was taken over by ACCO in 1908 (perintonhistoricalsociety.org 2010b:1). The U.S. Government sued ACCO in 1913 stating the ‘Tin Can Trust,’ worth \$88 million, was a monopoly, restrained trade, and arbitrarily fixed prices therefore should be dissolved (*New York Times* 30 November 1913:6; Zeide 2019:207); in 1916 ACCO was dissolved (230 F. 859 [D. Md. 1916]). ACCO was acquired by Triangle Industries of New York in 1986 for \$570 million; in 1988, Triangle Industries sold to Pechiney S.A. of France (perintonhistoricalsociety.org 2010a:2).

Other than the lactose added to cream ales and milk stouts, there would not seem to be any connection between canned milk and beer, but there was. Due to the National Prohibition Act of 1919 (Pub.L. 66–66), more commonly known as the 18th Amendment, which went into full effect on 17 January 1920, prohibited the production, sale, and distribution of intoxicating liquors. Fortunate for some brewers, their equipment was suitable for adaptation and were able to enter the condensed milk market and save their businesses. For example, the Christian Diehl Brewing Company of Defiance, Ohio joined several local investors with milk condensing experience and incorporated as the Defiance Dairy Products Company in 1922. The brewery resumed beer production in 1933. The Diehl Family still owns and operates the milk condensory (Miller 1995).

### *Gebee- and McDonald-type, Vent hole, Sanitary, Key-wind, Ribbed Cans & Key-wind Ration Cans*

#### Gebee-type

As early as 1865, “hole-and-cap” closures on condensed milk cans (and others) were filled through a center filler hole in the top, a metal burr cap with a rim was inserted into the

filler hole, and the contents appertized (Hunziker 1914:76; cf. Bitting 1937). Gebee-type “hole-and-cap” closure technology advanced canning technique and reduced material waste, but the closure was not soldered or hermetically sealed which resulted in some canisters failing food safety.

### McDonald-type

McDonald-type closure cans featured flanged friction caps with a depressed center which were inserted into the filler hole, the rim was flattened flush with the can top by a series of revolving dies (Hunziker 1914:76, 98–99). Like the Gebee-type closure, McDonald-type can closures were not soldered or hermetically sealed, and resulted in some canisters failing food safety (Heite and Heite 1989:102). Gebee- and McDonald-type closures could be pried open, but the ‘flat’ end was typically cut with a lever-knife opener (or a knife) in order to retrieve or pour out the contents.

In cold storage conditions, Gebee- and McDonald-type cans contracted and created a partial vacuum; in warm conditions, cans expanded and bulged. Whereas sweetened condensed milk did not freeze and contents were “perfectly normal,” (Hunziker 1920:249) can bulging suggested fermentation had occurred and many cans were rejected. In 1823, Frenchman Pierre Antoine Angliberg developed the “exhausting” process known as “hole-in-cap” which allowed air to vent through a pinhole in the cap during the appertizing process. Gebee- and McDonald-type cans, therefore, cannot be called vent hole cans (Figure 4).

### Vent hole

Vent hole cans offered a relatively safer product. The vent hole filling process employed gravity and automatic tipping machines more so than Gebee- or McDonald-type closure processes, thus a reduced risk of contamination due to contact with human hands and airborne

pathogens or vectors. Inspection was still done ‘by hand.’ Solder seals around vent hole caps offered an hermetic seal, a safeguard against spoilage, and a longer shelf-life.

Several innovations in the canning industry that replaced human labor with machines or ‘Iron slaves’ (Collins 1924:28) significantly reduced the price of goods and increased company owner profits (Zeide 2019:24). Caps placed over the filler hole were manually ‘sealed’ by a soldering copper element—a telescoping steel plunger fitted with a circular tip equal to the diameter of the cap was heated in a gas soldering stove or pot or via flexible rubber tubing and a pipe passed through the handle and tip, and quickly fitted over a filled can top and depressed to form a ring seal composed of ca. 45%–55% Lead around the cap, a process known as ‘tipping’ (Hunziker 1914:118). “A rapid, neat and leakless seal [was] made with this instrument” (Hunziker 1914:101). Mechanized soldering machines used pre-cut bars or wire segments or were automatically fed from a spool which resulted in increased efficiency. Sealed cans were dunked in a hot water test bath while they appertized in order to detect any leakers. Spot seals reduced the amount of Lead necessary to seal the can and were uniform to within a gram (a mere 5 oz. was needed to seal 1,000 cans). Over 90% of cans were filled by this method by 1914 (Hunziker 1914:119). True “hole-in-top” cans featured stamped ends and a pinhole exhaust vent sealed by a drop of solder (Rock 1987:21); the “change-over was completed before 1918” (Rock 1987:47). Matchsticks were not used; machines were.

### Sanitary cans

Sanitary cans are distinguished from Gebee- and McDonald-types and vent-hole cans by two 1-piece crimp-sealed can ends and a rolled internal or external side-seam (Figure 8). The first Sanitary cans had a soldered lock-seam body with ends crimped on and hermetically sealed with paper gaskets. Initial results were “not very good” (Hunziker 1914). Cans were deemed

“sanitary” because they were made, filled, and sealed entirely by machines. The drawing-and-ironing process perfected in 1963 allowed for cans without side seams (Rock 1987:2), in other words, lead solder was unnecessary.

### Key-wind cans

A key-wind method for removing soldered disk closures over filler holes and from the can top was patented on 2 October 1866 by J. Osterhoudt (US58554A). Osterhoudt made sure to indicate how his method did not challenge Moritz Primer’s Letters Patent granted on 28 June 1864 for the use of a wire soldered between the can and cover to assist opening the can (US43378). These early types of key-wind openings were used on sardine cans—similar devices are still used today. A key-wind opening strip was patented in 1892 by John Zimmerman (US486521A–486523A), assignor to the National Key-Opening Can Company of Chicago, Illinois. Edwin Norton adapted a key-wind strip that was incorporated into the base of the body of tapered rectangular processed meat tins in 1895 (US539366A; Rock 1984:105). Norton's Continental Can Company introduced the first vacuum-packed coffee cans featuring a key-wind opening strip marketed by Hills Brothers in 1903. Reclosable friction-lidded key-wind opened coffee cans were introduced in 1920 (Rock 1987:107).

### Ribbed cans

G. W. McKim patented a collapsible, telescoping Metallic Cask container (US169824A) granted worldwide on 9 November 1875 that exhibited horizontal beaded rings to prevent damage. Maurice Lachman of Lachman Mfg. Company patented a Cylinder-body for Containers with beaded rings granted on 31 October 1916 (US1202857A). On 8 December 1936, Charles R. Cooper of San Francisco, California patented a Packing Can “having internal corrugations, ribs or embossments formed in the walls of body of the can to stiffen and strengthen the same against

deformation, from either external or internal forces or pressures” that did not preclude paper labeling on the exterior of the can. Vertical, horizontal, and vertical+horizontal corrugations were depicted in the patent diagrams. Indeed,

...where the can may be subjected to external pressure during retorting, or where they remain under high internal vacuum during storage, the cylinder wall may be beaded or ribbed for radial strength. There are many bead designs and arrangements, all of which are attempts to meet certain performance criteria. In essence, circumferential beading produces shorter can segments that are more resistant to paneling (implosion), but such beads reduce the axial load resistance by acting as failure rings. (Robertson 2006:132).

Thompson and Baker (2012:9) found that some gallon-size juice cans exhibited ribs after 1936 and some non-juice cans after 1950. When canners began actively incorporating beaded, ribbed, or otherwise corrugated sanitary cans is still a mystery, but must have been after 1936.

#### Key-wind ration cans

The Civil War urged the canning industry to produce commodities that could be easily transported to troops; some estimate 5-6 million canned goods were produced. After the Civil War, in 1870, an estimated 30 million cans—approximately 3,000 cans per day—were produced. WWI reinvigorated the canning industry.

A-rations included fresh, frozen, or refrigerated ingredients; B-rations were prepared in the field or served in garrisons that did not have refrigeration or freezer facilities; C-rations replaced “Iron rations” (1907–1922) and “reserve rations” (1922–1937) which featured key-wind

opening strips (Figure 5). “Iron rations,” developed by the British Army, contained three 3-oz. cakes (hardtack), three 1-oz. bars of chocolate, salt, and pepper in a tin packet designed for emergency use by infantrymen. “Reserve rations” contained 12 oz. of bacon or 14 oz. of meat, two 8-oz. cans of hard bread or hardtack, a 1.16-oz. packet of pre-ground coffee, a 2.4-oz. packet of granulated sugar, and a 0.16-oz. packet of salt; a separate ration of rolling tobacco and 10 cigarette papers was later replaced by machine-rolled Lucky Strike-brand cigarettes. In 1922, the ration contained 16 oz. of meat (usually beef jerky), 3 oz. of corned beef or chocolate, 14 oz. of hardtack, coffee, and sugar.

### **Can opener technologies, types, & diagnostic attributes**

Concomitant with can manufacturing is can opener technology. Robert Yates, a cutler and surgical instrument maker, is credited with inventing the first lever-type can opener on 13 July 1855 (Patent No. 1577). However, lever knives for opening tin cases were already known. Indeed, Robert Yates’ father, Frederick Green Yates, registered a patent for a lever-type tin can opener on 26 August 1852 (No. 3356). Samuel J. Hardman and Dr. Andrea Tanner discovered that John Gillon of the John Gillon & Co., Edinburgh, Scotland had developed a claw-type can opener before 1840 (Chambers’ Edinburgh Journal 1840) and diagrams appeared in the Timmins & Sons catalogue ca. 1845 along with a lever-knife-type opener (Hardman 2017:4).

The first U.S. Patent for a can opener (Figure 6) (US19063) was awarded to Ezra J. Warner on 5 January 1858. The design was called a “bayonet and sickle” by users because the shapes of the acting elements resembled a bayonet and a sickle—both of which military personnel could have employed to open sealed cans prior to Warner’s invention; they also might have used axes, chisels, knives, and/or hammers. When Union soldiers did not receive canned goods from the US Sanitary Commission, they obtained them from sutlers who sold “a wide

range of canned goods—canned beef, lobster, blueberries, jams, pickles—that appealed to soldiers who grew tired of their monotonous rations” (Zeide 2019:18).

A can with two small openings on either side of an end or a can with a cut or cuts or punctures on the top can only [have] contained a liquid, such as evaporated milk or cooking oil. Traditional cuts like triangles, crosses [or a] semicircular cut that [was] folded back held food that could not be simply poured out. ... Fruits and vegetables are perhaps the most frequently found ones with partial cutting away of the top or folding it up. By the late 1920’s and early 1930’s complete removal of the can top became common. (Rock 1987:113)

William W. Lyman received the first U.S. Patents for a cutting wheel to open cans on 12 July 1870 (US 105346A and US105583A). “Lyman’s design was difficult to use and was not successful” (Hardman 217:19). Edwin Anderson of Seattle, Washington improved the cutting wheel technology with his Can-Opener patented on 30 November 1920 (Figure 7) (US1360256A). Anderson’s innovation featured a hand crank and horizontally cut the circumference of any double-crimped lid rim regardless of shape or size leaving a smooth edge so that the contents of the can could be removed “unbroken” (Western Canner and Packer 1924:48). Also in 1920, Anderson and Star Can Opener Company of San Francisco, California improved the guide roller to grip a double-crimped lid rim more securely (US1528178A and US1598841A). In 1926, Charles Arthur Bunker filed for a can opener patent featuring a geared wheel called a ‘freed wheel,’ that grips a can rim vertically (US1838525A). In defense of Anderson’s patent, the Star Can Opener Co. sued Owen Dyneto Co. (16 F.2d 353, 355) and then the Bunker-Clancey Mfg. Co. (41 F.2d 142) in 1930 for Patent infringement—and lost. Bunker’s patent was granted in 1931 and is still in use today as is Anderson’s. John T. McGrath of

Bloomington, Illinois (the author's hometown) patented a Reciprocating Knife Can Opener (Figure 8) (US1473306A) on 5 November 1923—a type still in use today in commercial kitchens.

The so-called “church key” container opener was patented in 1933 by Dewitt F. Sampson and John M. Hothersall of ACCO (Figure 9) (US1996550A and US1996551A) before the first cans of beer were filled for sale after Prohibition was lifted in 1934. Operating instructions were depicted on the side panel of flat top beer cans until ca. 1955. This type of opener is still used to open juice cans. Churchkey Can Co. and Churchkey Beer Co. originated in Seattle, Washington in 2012 and re-located to Portland, Oregon in 2015. It has been dubbed the ‘most hipster beer in the world’ (Brown 2012). Pssssst.

The first electric can opener (with a camshaft!) was filed for patent on 16 November 1925 and awarded on 1 December 1931 to Preston C. West of the P.C. West Mfg. Co. of Chicago, Illinois (Figure 10) (US1834563A). The P-38 was designed by U.S. Army Maj. Thomas Dennehy of the Subsistence Research Laboratory in Chicago, Illinois in 1942 (Figure 11) (Foster 2009) and issued to WWII military service members as a convenient and reliable tool to open ration cans. The first U.S. Patent for a “Tin-Box Opener” was granted to French Republic citizen Etienne Marcel Darqué in 1913 (US1082800A). Very similar to the P-38 was also Dewey M. Strengberg's can opener patented on 8 May 1928 (US1669311A). The P-51 improved on the P-38 design by being slightly longer which provided more leverage, yet incorporates and employs the same working element as Yates' 1855 invention—the lever knife—albeit curved and hinged. One could and still can use a pointed knife to open a can lid.

If *terminus ante* and *post quem* dates, United States Patent and Trademark Office (U.S.P.T.O.) records, and empirically discernable differences or characteristics on opened cans are observed and accepted, then a can opener and opening technology chronology is possible, yet



is not ‘clean cut.’ Due to technological overlap and lag, shelf-life, and consumer habits, cans of various types may have been opened, contents consumed, and subsequently discarded after the production of such a can type ceased. An improved can dating typology and chronology based on the most recently published information, should be treated “as provisional, requiring further field and archival verification” (Simonis 1997) (Table 1).

There are empirically discernable differences between early puncture- or lever-knife-type and mechanical wheel-type openings on cans; mechanical wheel-type openers left a cleaner circumferential cut as opposed to the lever-knife-type jagged edge. A can opened by means of a mechanical wheel-type opener can only have been accomplished after 1920, not before (and not common until after 1935; Rock 1989). Occasionally teeth marks from the gripping wheel are still visible on the can rim. Due to time lag and shelflife, cans of various types may have been opened and consumed after the production of such a can type ceased; can openers were designed for ‘lifetime’ use with periodic part replacement on some models.

### **Significance**

To qualify for the NRHP, a property must be significant; that is, it must represent a significant part of the history, architecture, archaeology, engineering, or culture of an area, and it must have the characteristics that make it a good representative of properties associated with that aspect of the past—an exemplarist notion (United States 1991:7). Ultimately, the question of integrity is answered by whether or not the property retains the *identity* for which it is significant (United States 1991:45). The answers to the following questions concerning tin cans are useful when attempting to substantiate or provide a basis for significance:

- Can the artifact(s) be located on a current or historic map?
- Are there any historic-era photographs or images of the artifact(s)?

- Can the artifact(s) be located in a book or historic newspaper reference?
- Has/Have the artifact(s) been recorded before either in the same place or a different place?
- Can one determine the manufacture date(s) or date(s) of use?
- Does or Do the artifact(s) have ties to any other known resources, e.g. an historic building or homestead?
- Does or Do the artifact(s) appear to contribute to a broad pattern of history as a contributing element to an historic property such as a Civil War battle field or Emigrant Trail—or is it a single roadside domestic refuse disposal event?
- Is or Are the artifact(s) named after or associated with the land owner who created it?
- Does the resource have a proper name or number?
- Is or Are there any pertinent research question(s) the artifact(s) inspire(s) or potentially answer(s)?

If the answers to some or all of these questions are, yes, then the resource has significance.

Integrity is based on significance within an historic context, i.e. why, where, and when a property is important. Only after significance is fully established can one proceed to the issue of integrity. The evaluation of integrity is oftentimes a subjective judgment, but it must always be grounded in an understanding of a property's physical features and how they relate to its significance. Historic properties either retain integrity; either they convey their significance or they do not. To retain historic integrity a property will always possess several, and usually most, of the aspects. The retention of specific aspects of integrity is paramount for a property to convey its significance—an essentialist notion (United States 1991:44). The seven Aspects of integrity are: Location, Design, Setting, Materials, Workmanship, Feeling, and Association (United States 1991:44–49). The seven aspects are fairly straightforward in definition, yet “integrity is very

much in the eye of the beholder, and it is possible to get into some pretty esoteric arguments about whether a place has it or doesn't" (King 1998:67), particularly when justifying or refuting such subjective Aspects as Feeling or Association. Significance and integrity may be and often are more in the eye of the beholder. Ample documentation, substantiation, and justification is necessary; purely personal feelings or opinions are not valid on their own merit or as *a priori* proof of significance. Case in point, landfills, while potentially worthy of deeper investigation (Humes 2010; Rathje 1977, 1979; Rathje and Murphy 1989) must exhibit exceptional importance if less than 50 years old to be considered eligible for listing (NRB36).

Out of the integrity continuum a conundrum develops: when there are numerous cultural resources of a certain type, some of them can be removed and there is not a significant loss to history or culture; there are still plenty of examples including the best surviving examples. As time progresses and more resources are removed, the preservation community begins to rumble with concerns about impending threats to valuable cultural resources, history, and cultural identity. Soon thereafter integrity becomes a pivotal aspect, and resources that had marginal integrity gain more currency and value because they retain the essence of the past and cultural identity vocal participants in the present wish to see retained for future generations. When there are only a few surviving examples of a certain type of cultural resource, attention towards the identity and integrity the resource exemplifies becomes increasingly important. Depicted another way, the significance continuum looks something like Figure 12. This diagram has the continuum on a vertical not a horizontal axis. This is intentional.

Essentialism is the view that every object (i.e., a whole or fragmentary piece of technology) has a set of attributes that are intrinsic to its identity and function. So long as enough

attributes are present that something can be identified as a specific object, its identity may be known. How much is 'enough' becomes the issue at hand.

Exemplarism is the condition of being exemplary; the belief that something is beyond the ordinary, unique, outstanding, exotic, and or exceptional. Although exceptionalism or exceptionalist might be better terms to describe outstanding resources, the word has been associated with National Register Criteria exceptions per the National Register Bulletin Number 15 (NRB15) and should only be used in cases or regarding resources that fit the Criteria of exception (a.) through (g.). Phrases, passages, and text in the NRB15 contain either essentialist, exemplarist, or a combination of both paradigmatic approaches and result in a confounding of the evaluation process when one or more consulting parties holds an opposing viewpoint on a resource or set of resources. The debate may boil down to a more basic conflict wherein in an essentialist perspective: any and all identifiable artifacts, features, sites, isolates, buildings, structures, or objects 50 years old or older is eligible (unless proven otherwise) is counterposed against an exemplarist perspective in which not everything is eligible—only 'good' exemplars of the past justified as significant within an historical context, assessed and found retaining enough aspects of integrity are evaluated as eligible for listing. Exemplary cultural resources are, by their very nature, valued more than ubiquitous, common, or mundane resources. The NRB15 purports to evaluate all resources equally, but a resource will always be somewhere on the exemplarist and essentialist significance continuum.

It may be possible to discern and distinguish between essential and exemplary cultural resources if Capitalism is held as a constant or common denominator (Purser 1999); distinctions among other variables can be compared and discussed at various scales of analysis, too. How do

we evaluate real, tangible, material objects and features with an abstract notion? Margaret Purser observed how

... the archaeological and documentary records of Paradise Valley actually track ... the gradual replacement of locally assembled, processed, and maintained consumer goods with goods either more fully processed at distant production centers (like the increasingly processed brand-name foodstuffs of the early twentieth century), or composed of replaceable parts not intended to be either assembled or mended locally (like the vehicles and farm equipment made increasingly of cast- or stamped-metal components following the 1890s). (Purser 1999:129)

Hence, Purser's example of putting the past in order revealed previously unknown intersections of Capitalist ideology and commodity consumption, i.e., change over time.

### **Discussion and Conclusions**

A search for National Register-listed properties containing tin cans was conducted at [www.nps.gov](http://www.nps.gov). Zero properties consisting solely of tin cans are listed. A systematic search at the state-level through all 50 State Historic Preservation Offices was not performed due to access issues. A Google search using the terms 'tin cans' and 'NRHP' produced some sundry results and are summarized here.

The Virginia Can Company and S.H. Heironimus Warehouse (NRHP Reference Number 06000067) is listed. The Virginia Can Company was the first and largest manufacturer of tin

cans in Roanoke Valley which substantiates its significance; the building complex is extant which also lends to its historicity and listing on the Virginia Landmarks Register.

The Eureka Historic District in Eureka, Nevada contains 18 properties including “homes made of flattened tin cans” among other materials (NRHP Reference Number 073001078). The Ute-Ulay Mine and Mill site (5HN.77) and Hinsdale County Metal Mining Multiple Property Documentation Form (MPDF) includes 24 contributing buildings, seven contributing structures, and one contributing site—Dump 1—which contains whole and fragmentary hole-in-top, hole-in-cap, and Sanitary cans among other historic period artifacts (Horn 2017:31).

The registration form for the F. W. Schmidt House (45TN296) in Olympia, Washington primarily concerns the association of the Schmidt Family with the Olympia Brewery and Architect Joseph Wohleb’s design, yet, curiously, includes a discussion of Mrs. Schmidt’s garden, to wit:

Mrs. Schmidt, an avid gardener, planned the landscaping as well. An elaborate gravity fed system watered the grounds which featured a substantial holly hedge, cutting gardens, birches, fruit trees and an expanse of lawn. The holly hedge was planted in a bed of tin cans, which nourished the hedge from locally grown cuttings. (Stevenson 1994:7)

The El Tiradito “shrine” located within the Barrio Libre National Historic District and the Barrio Historico City Historic Preservation Zone of Tucson, Arizona was listed on the NRHP originally in 1971 (HALS No. AZ-8) and is significant for its association at the local level with the Hispanic community’s folklore and folk customs. Based on oral histories, the “shrine” began

ca. 1870 as a “mound of earth surrounded by a few candles protected with tin cans” (Steinbrecher 2012:5) and evolved into a U-shaped structural element with a central niche (or *nicho*) with a central recessed arch forming an alcove “where offerings can be placed against the wall,” thus indicating a continuing cultural practice (Steinbrecher 2012:2). Cans are no longer used to protect candles from snuffing out.

The railroad siding and settlement known as Milligan, California was first recorded in 1978 (CA-SBR3233H) and contains structural remains and several features. Features contain, among other artifacts, over 50 “key-wind sardine, church-key, knife, and can-opener opened cans, sanitary cans, coffee cans, cone top cans, bi-metal pull-tab cans and modern aluminum sardine cans,” (Strauss et al. 2011:33) yet it was the remnants of the siding and the nearby cemetery which were recommended eligible on the California Register of Historical Resources (CRHR) under Criteria 1 and 4 as an individual resource or a contributor to a potential Atchison, Topeka & Santa Fe Railway-Parker Cutoff historic district.

Thomas et al. (2015:44, 58, 76) re-located site  $\text{Æ}$ -2829-19H (among others) which contained ca. 300 hole-in-top and church-key-opened metal cans among ceramic sherds and glass shards and updated the site record to state that the cans were “[s]older-dot condensed milk cans” and church-key-opened cans. Said site, and several others containing domestic refuse, were not considered “significant to the study of the local or regional history and settlement of this part of the Mojave Desert” under Criterion D.

National Historic Landmark J. S. Lore Oyster House in Solomons, Maryland is classified as an early 20th Century marine commercial structure which curiously contains period equipment including “a collection of oyster cans and shipping containers, a foot-operated canning machine, and an electric double-seamer canning machine from Independent Can Corp.,

Baltimore, Maryland (which is identical to the original machine leased at this plant by the Continental Canning Company” (Ehelman 1993:6). Clearly the structure and its retained equipment substantiate this property’s significance in New England maritime commerce history, not the collection of unused oyster cans and shipping containers.

In 1818, Donkin, Hall, & Gamble produced tins of preserved meats for the 1819 Parry Expedition and the search for the Northwest Passage (Ashworthy 2015; Geoghehan 2013). Postmortems on three frozen bodies of members of the Parry Expedition located on Beechey Island, Canada revealed blood Lead concentrations 29-times the normal. Expedition members suffered from acute Lead poisoning, tuberculosis, pneumonia, anorexia, scurvy, weakness, and paranoia resulting in large part due to acid leaching of incompletely sealed soldered cans (Rowbotham 1987) possibly exacerbated by the month-long ‘incubation’ period during which cans were kept at 90°C–110°C; others posit that the internal pipe system on the ships is at cause (Geoghehan 2013). Albeit not an NRHP-listed site, the posit that acid leaching of incompletely sealed soldered cans contributed to Lead poisoning among members of the Parry Expedition is significant within an historical context. Nevertheless, a hypothesis emerges: cans can occasionally constitute contributing elements to historic properties or districts. At the very least, cans are probably the most important chronologically diagnostic artifacts we have in the surviving archaeological record which can aid our efforts in the present to document the past of “a substantial part of the American working class” (Walker 2013:n.p.).

The posit that tin cans can be useful in verifying the age of historic properties related to Emigrant Trails has been raised. The Oregon-California Trails Association Mapping and Marketing Committee published *Mapping Emigrant Trails Manual: Part A: Investigative Procedures & Trail Classifications* (2014) which encourages metal detectorists and remote



sensing specialists to assist in the identification of artifacts and features and ranks the reliability of different types of evidence used to verify trail locations, but does not provide guidance on metal artifact types such as tin cans as temporally diagnostic markers.

In 2017 the Northwest Nazarene University (NNU) and Aerial Archaeology Northwest (AAN) completed Unmanned Aircraft Systems (UAS) flights to collect remote orthoimagery to answer two research questions:

1. Are UAS an effective tool to map and record archaeological sites like the Oregon Trail? [and]
2. Can Machine Learning algorithms identify historic artifacts, and linear features directly from the UAS imagery? (Calkins 2018:9).

The methods were tested at the Owyhee County Can site and the results were that the algorithm “accurately identified the tin cans on the images” and in subsequent tests (Calkins 2018:10). Further tests were planned in 2018 to identify other material and feature types related to wagon trails. Although these results are preliminary and not widely tested, there exists a real possibility that historic wagon routes can be identified and corroborating evidence such as chronologically diagnostic tin cans can assist in the accurate dating of such features and sites. Less charismatic yet still significant local-level historic period wagon routes might benefit from increased attention to temporally diagnostic debris scatters. Wayside camp sites may provide enough artifactual evidence to discern and distinguish an historic period wagon road from a modern off-road vehicle (ORV) road on public land even if the road is and has been used for modern recreation.

Suffice it to say, no isolate, scatter, or concentration of tin cans was found eligible for listing on the NRHP on its own merit in this archival survey, yet the possibility still exists. Further, not all state databases of archaeological records were searched in this paper; there might be sites associated with battlefields, military training camps, emigrant camps and roads, as well as canning factories that exist or have not yet been located, recorded, assessed, evaluated, and recommended eligible for listing on local, state, tribal, or national historic preservation registers. The UAS experiments conducted by NNU and AAN present possibilities for locating sites that would otherwise be obscured or illegible to the naked eye at the ground level. Metal detectorists could also benefit the search for early food cans; ‘bottle pickers’ might also find interest in cans. But without an historic context statement, the significance of cans cannot be advocated much less recommended as eligible for listing on a register. More research is needed to promulgate and promote cans’ potential. And last but not least—it is inadvisable to categorically deny or dismiss all corrugated cans as non-historic; some corrugated cans are 50 years old or older and qualify as historic period artifacts worthy of recordation. Do your due diligence.

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**LIST OF FIGURE CAPTIONS**

**FIG. 1.** Early hand-made tin canister (Bellis 2019)

**FIG. 2.** Underwood Deviled Ham logo (Tucker 2015)

**FIG. 3.** Sheet Metal Can Patent US570591A

**FIG. 4.** Gebee- and McDonald-type, solder seal, and Sanitary cans (Hunziker 1914:74)

**FIG. 5.** A key-wind military B-ration can (<http://yankreenactment.nl/rations/c-ration/b-unit-contents.html>)

**FIG. 6.** US Patent 19063

**FIG. 7.** US Patent 1360256

**FIG. 8.** US Patent 1473306

**FIG. 9.** US Patent 1996550

**FIG. 10.** US Patent 1834563

**FIG. 11.** P-38 can opener (<https://www.mydogtag.com/gear/edc-survival/p-38-can-opener>)

**FIG. 12.** Diagram of competing paradigmatic approaches to NRHP eligibility

**TABLE 1****CAN TYPES, MANUFACTURE DATE RANGES, AND REFERENCES**

<b>TYPE</b>	<b>MANUFACTURE DATE RANGE</b>	<b>REFERENCE</b>
Gebee	after 1904–before 1918	Hunziker 1914:76; Bitting 1937; Rock 1987:47
McDonald	after 1904–before 1918	Hunziker 1914:76, 98–99; Rock 1987:47
Hole and cap hand-soldered	ca. 1810–1850s	Merritt 2014:5; Rock 1988:12–13
Hole and cap machine-soldered	after 1880–before 1918 (rare after 1905)	Gillio 1980; Rock 1984:103
Vent hole, a.k.a. “hole-in-cap”	after 1823–before 1918	Rock 1987:4; Rock 1988:21, 49
Hole-in-top soldered cap condensed milk	after 1875–1914	Merritt 2014:6; Rock 1988:12
Condensed milk hand-soldered seams	1875–1903	
Condensed milk crimped seams	after 1904–present	
Vent hole	ca. 1900–ca. 1985	Rock 1988:21, 49
PUNCH HERE embossed on bottom	1935–1945	University of Utah 2001:471
<b>For chronologies of evaporated milk cans see Reno (2012) and Simonis (1997)</b>		
Stamped end	1840s–1985	Rock 1988:20, 49
Overlapping side seam	ca. 1840–1900s	Rock 1988:4
Internal folded side seam	1859–1890s	Rock 1988:5
improved with gasket	1890s–???	Rock 1988:5
Internal rolled side seam	1888–1993	Rock 1988:6
Sanitary (stamped)	1904–1908	Rock 1988:12, 22; Sutton and Arkush 2002:168
Sanitary (general)	1908–present	Rock 1988:12, 22; Sutton and Arkush 2002:168
Threaded can	1860s–1890s	Rock 1988:17
New products-spice, tea	1890s–1920s	Rock 1988:17
Other products-varnish, etc.	??–1993	Rock 1988:83
Knurled cap	ca. 1924–1993	Lief 1965:29
Key-wind top strip with overlapping side seam	1860s–1900s	Rock 1988:65
Key-wind top strip-drawn	ca. 1897–1993	Rock 1988:66
Key-wind top strip-meat	ca. 1890–1993	Rock 1988:62–63
Key-wind top strip-coffee, vacuum packed	ca. 1903–1960s	Rock 1988:32, 40–42
External friction lid	1880s–1993	Rock 1988:85
Ration	1907–1970s	
Ribbed	after 1936 (juice cans); after 1950 (non-juice cans)	Thompson and Baker 2012:9
Quart-size oil can	after 1933	Sutton and Arkush 2002:169





(No Model.)

M. A.M.S.  
SHEET METAL CAN.

No. 570,591.

Patented Nov. 3, 1896.

FIG. 1.

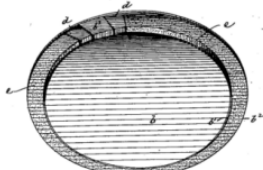


FIG. 2.



FIG. 3.

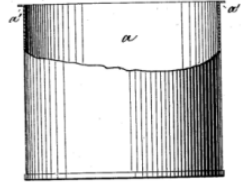


FIG. 4.



FIG. 5.



FIG. 6.



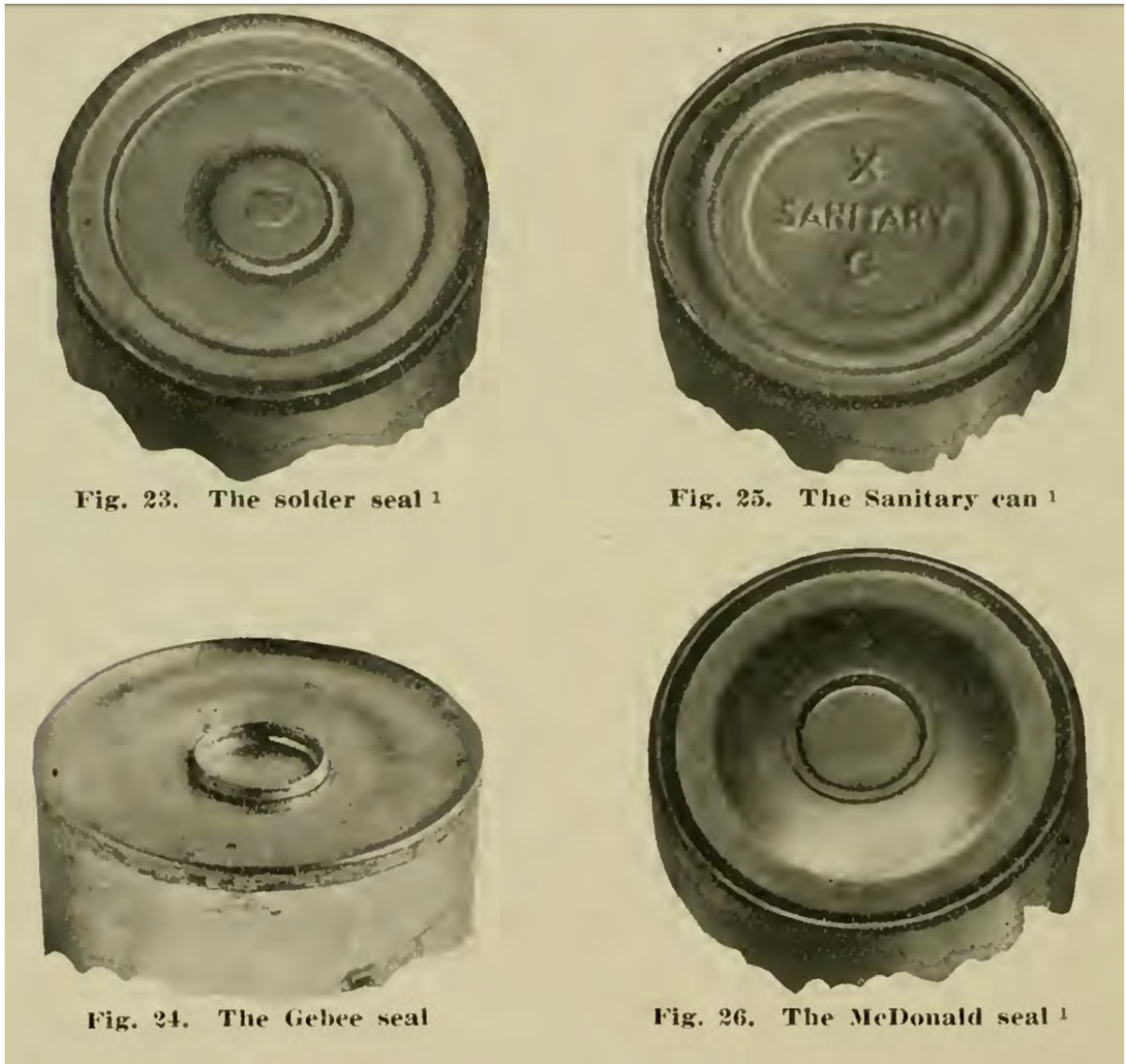
Witnesses:  
*John Decker*  
*Willie Miller*



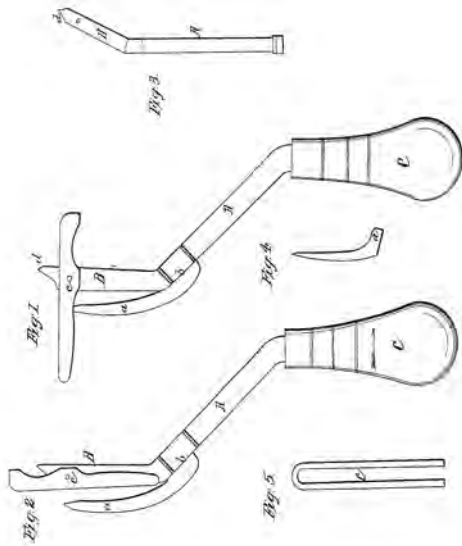
Inventor:

*Max Ames*  
by his attorney  
*Roeder & Wiseman*

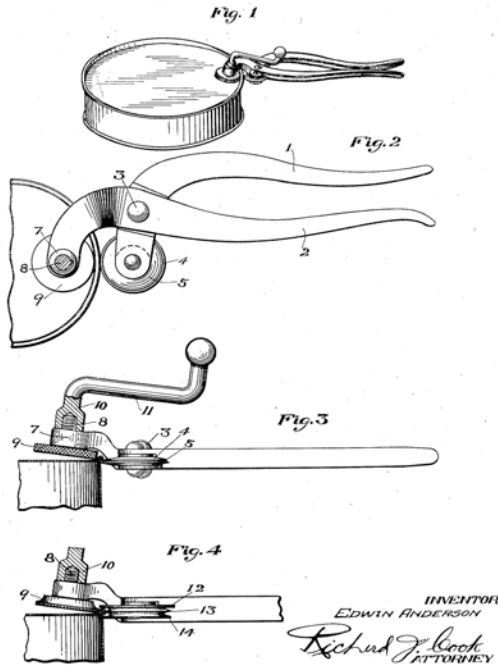
THE SHAW-WORTH CO. PATENT OFFICE, WASHINGTON, D. C.



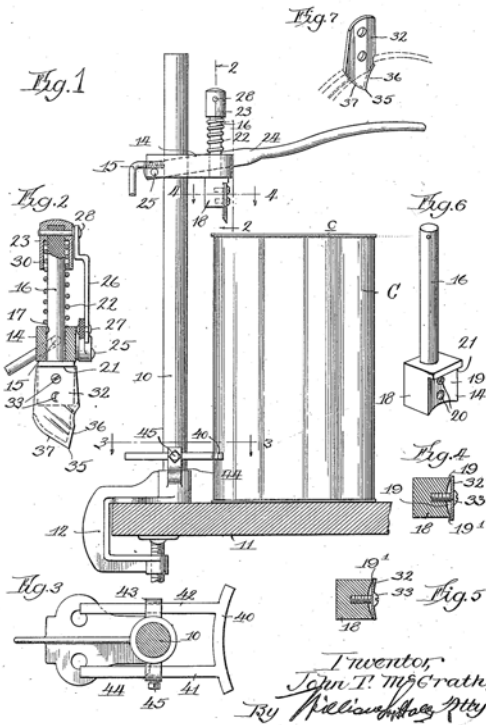
*E. J. Warner,*  
*Can Opener,*  
 No. 12063. Patented Jan. 5, 1858.



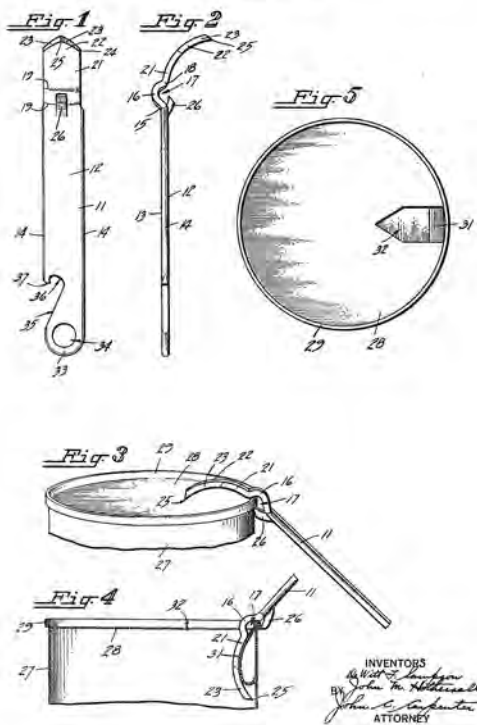
E. ANDERSON,  
 CAN OPENER.  
 APPLICATION FILED APR. 20, 1920.  
 1,360,256. Patented Nov. 30, 1920.



Nov. 6, 1923. J. T. McGRATH 1,473,306  
 RECIPROCATING KNIFE CAN OPENER  
 Filed Aug. 6, 1921



April 2, 1935. D. F. SAMPSON ET AL 1,996,550  
 CONTAINER OPENER  
 Filed April 13, 1933



## **Early Indigenous Publishing, Anthropology, and Cultural Resource Management in the Pacific Northwest**

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My presentation is about a type of recovery work I have been doing. This work has been broadly conceived and conducted, gathering materials representing many tribes from the northwestern United States and British Columbia. I would like to make a case for anthropologists and tribal cultural resource specialists to consider early Native authors and their writing—published work that demonstrated their engagement with alphabetic literacy—prior to the 1960s. While I am not a cultural resource management professional, I do believe these early publications can help us decolonize anthropology by prioritizing an Indigenous perspective, and can also be considered tribal heritage, a cultural resource, material worthy of being collected, archived, and used in ways deemed appropriate to fulfilling tribal needs. Let me begin with a few brief examples to illustrate.

Paschal George (1888-1954) was educated at the De Smet Mission School and at Chemawa, in Oregon. He was a tribal policeman before serving on the Coeur d'Alene Tribal Council. In 1927, George was a valued consultant to anthropologist Gladys Reichard. More to the point, in his adult years, he was a prolific and creative writer, authoring passionate letters to the editor in area newspapers advocating for Native land and hunting rights. He wrote numerous articles for newspapers, church publications, and a tribal newsletter—items that contained

detailed accounts on topics from precontact traditions to reservation life in the 1930s. George also crafted—fifty years before Sherman Alexie—a fair amount of witty poetry, often appropriating stereotypical Indigenous colloquial English to critique cartoon caricatures of Native people in national newspapers—characters such as “Wahoo,” popular in the 1930s. Shortly before World War II, George (1939:11) concluded one poem:

“Across,--no more chow / Soldier eat um all cow /Woman and papoose eat um  
none / Wahoo think em Hittler son-of-gun.”

Clearly, Paschal George was creatively fashioning some transnational political and economic commentary through poetry for his audience at Coeur d’Alene.

Lawrence Nicodemus (1909-2004) was certainly widely recognized for his life-long dedication to preserving Snchitsu’umshtsn, the Coeur d’Alene language, which also entailed consulting for Gladys Reichard. Less well-known, however, was his career as a writer and journalist, contributing numerous articles and letters to local publications on tribal history, culture, sports, and treaty politics. He published his own newsletter during and after World War II, distributing information on Coeur d’Alene matters to both local readers and to distant troops serving in the Armed Forces.

Lawrence’s mother, Julia Antelope Nicodemus (1891-1966), was central to Reichard’s work with the language. But Julia also wrote on Coeur d’Alene cultural matters for a national Catholic periodical and penned dozens of letters to regional newspapers on the abusive behavior of settler culture and the federal government’s unfair treatment of Indian people, and particularly the Coeur d’Alene.

I could just as easily discuss hundreds of other Indigenous writers of the late 19<sup>th</sup> and early 20<sup>th</sup> centuries—from southeast Alaska to northern California to western Montana. Individuals such as Myrtle Johnson Woodcock (1889-1973), who combined poetry and oral history to help unify Chinook tribal members struggling for federal recognition in the 1920s. Or William Beynon's (1888-1958) sideline writing up sacred Tsimshian histories for British Columbia newspapers at the same time he was serving as a consultant for Marius Barbeau. Or Martin Sampson (1888-1980), an Upper Skagit leader at Swinomish who wrote, beginning in 1908, on everything from Lushootseed music to story poles and Puget Salish history. Or the S'Klallam Philip Hugh Howell's (1890-1956) rare booklets on Native place names and his remarkable and rarely cited Native newspaper, *The Real American*, which arguably helped Indigenize Northwest journalism in the 1920s.

These early writers gave us an expansive range of genres and topics that served as acts of preservation and resistance. The items they published kept valued historical, linguistic, and cultural information circulating within Native communities and, as authors, they advocated for Native interests, and generally introduced a Native perspective into the region's wider, and whiter, public sphere. Even as some Native women and men were serving as consultants for the modernist projects of anthropology—which sought to salvage cultural details from the past for Boasian-era monographs—they were simultaneously committing written representations of their history and traditions to the printed page on their own terms, and generating their own writing projects to lobby for tribal needs in the present—though anthropologists rarely acknowledged this agency. This shouldn't surprise us, of course, given Margaret Bruchac's recent work in *Savage Kin* (2018), on the relationship between Native consultants and specific anthropologists who frequently erased or marginalized Native intellectual contributions and aspirations.

What occurred in the Coeur d'Alene area—an omission to acknowledge the political activism and intellectual aspirations of Native consultants—was reproduced by anthropologists throughout the Northwest Coast and Plateau regions. With the exception of a handful of more recent scholars—Jay Miller, working with Mourning Dove materials (1990), and Thomas Buckley (2002) working with Yurok writers—the discipline typically ignored Native authors, especially if they were published. Certainly there was adequate attention paid to material cultures and non-alphabetic forms of communication—from rock art to totem poles—and of course they paid abundant attention to language and oral traditions. But as we now commonly acknowledge, the Boasian approach to a timeless “ethnographic present” stripped away most evidence of recent history and the colonial power dynamic in which fieldwork occurred. Hints of modernity—such as a consultant’s familiarity with publishing—were deemed problematic. The notion of Native writing was simply too inauthentic, a corruption of tradition, and thus not interesting or valuable to the profession (cf. Bauman and Briggs 2003).

In more recent years, however, Indigenous Studies scholars such as Lisa Brooks [Abenaki] (2008), Robert Warrior [Osage] (1994), and Craig Womack [Creek] (1999), and a growing number of ethnohistorians (e.g., Carlson 2020; Round 2010) have been producing a body of work that demonstrates how important early Native writing was to Indigenizing the public sphere, how crucial it was in establishing an oppositional discourse to settler colonialism. By the late 19<sup>th</sup>-century, Native people all over North America had adopted writing as a weapon to resist domination, and Native-authored publications, in the words of Craig Womack, “were used as a complement of oral tradition rather than a replacement” (1999:16) Quite simply, Native people combined orality and print culture to help them preserve culture, reconstruct communities, and reclaim lands.

For Native scholars today, the writing of students forced to attend boarding schools demonstrates the mastering of literary self-representation and the subtle use of coded language and rhetoric to challenge the assimilation process. Tribal newsletters with unique accounts of tradition became “insurgent archives,” for future use (Senier 2020). And the earliest publications of tribal elders represented significant expressions of tribal sovereignty and cultural awareness, worthy of public display in tribal exhibitions today, as the Pokagon Potawatomi have recently done in northern Indiana, with Simon Pokagon’s written inscriptions of traditional stories and political speeches on birch bark pages, originally published in the 1890s. This type of recovery work and resource management of tribal heritage has been burgeoning for over two decades in New England, the American Southeast, and the upper Midwest (e.g., Senier 2014; Haag 2016). Recognition of this literature as a valuable cultural resource in the Pacific Northwest, however, has been slower to emerge.

My own work over the past few years has sought to uncover some of this hidden, forgotten, neglected writing, published prior to the 1960s—the decade in which tribal and national Native publications virtually exploded in the fervor of renewed political activism. I have managed to return copies of a small fraction of this material to individual Native families, communities, and tribal officials, but since I live and work several thousand miles from the Northwest for most of the year, that process of return proved excruciatingly slow. I believe strongly, though, in Vine Deloria’s 1978 manifesto that tribes have a “right to know.. a need to know; to know the past, to know the traditional alternatives advocated by their ancestors, to know the specific experiences of their communities, and to know about the world that surrounds them in the same intimate manner they once knew the plains, mountains, deserts, rivers, and woods” (1978:13) My thought was to compile an annotated bibliography of Northwest Native



writing, and Darby Stapp and the incredibly helpful staff at the *Journal of Northwest Anthropology* were kind enough to publish it this past January (Walls 2021). It included a Foreword by Robert Kentta of the Confederated Tribes of Siletz Indians expressing his thoughts on the value of published writings as tribal cultural resources. Darby Stapp has done an outstanding job getting the news out about the bibliography and distributing copies to the Cultural Resource programs of tribes that are well represented in the bibliography. So we are trying to make sure that this material is useful to the communities from which the original authors wrote.

I could go on at length about what sorts of writing is represented in this work. There are so many examples of obscure publications containing accounts of tribal history; oral traditions; poetry rich in cultural detail; sermons from the Indian Shaker Church; petitions to government officials or religious authorities in Rome; and letter after letter to newspapers demanding attention to Native claims and grievances. Even before I began this project, tribal museums and administrators were beginning to acknowledge the value of this material. For example, this past year, the Hibulb Cultural Center Museum of the Tulalip Tribes established a wonderful public exhibit on the impact of both literacy and specific Tulalip authors on local Indigenous life in western Washington.

Of course, I think the interrogation of these documents will lead to many interesting questions and productive avenues of thought about Native life during the past century and a half. What has been the impact of literacy and print culture on Native peoples of the region? Did writing empower women authors, making them more central to tribal politics? What was the relationship between such writing and the attainment of leadership roles? Why did some Native leaders, who were educated through boarding schools and skilled at writing, decide not to write

for public audiences about tribal concerns? How did writing “travel” through Indigenous and intercultural social networks? And did it help to establish allies, or inspire antagonism? If oral traditions remained vital in community contexts, why did some Native writers choose to commit stories to the relative permanency of the printed page? What historical and cultural topics did Native authors choose to document publicly that anthropologists chose to neglect? Did public writing have an identifiable impact on relations with settler-colonial society?

My hope is that there will be even more appreciation of these remarkable individuals who decided to write and preserve traditional knowledge in print on their own terms, and who mobilized written texts for dispersal among a regional public audience. These authors constituted documents to make carefully worded claims to rights and territories, and thereby expanded their networks of contacts and potential allies within and outside of Indian Country. In so many respects, I think their work demonstrates that putting words into print did not erase Indigeneity; it enhanced its resilience.

The material I have recovered thus far, I believe, represents but a small fraction of writing published by early Native authors. There is much more to be uncovered, particularly from locally published sources not yet digitized or microfilmed. I am hoping that others, in the Northwest, will recover these forgotten writings and find new value in these older materials, which can be used and managed as cultural resources, as tribal heritage, and for whatever purpose is deemed appropriate. I suspect that we were supposed to follow the paper trails left by these writers, who somehow realized we would eventually discover them, and find them useful—as suggested by the 1940s S’Klallam newspaper publisher, Robert Howell, when he inserted an advertisement in his Bellingham-area newspaper, *The American Indian*, noting about

his journalism: “Ethnologists will study the contents Tomorrow – Next Year – And the Next Century.”

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## **Pacific Northwest Collaboration: A Look into the Modification and Repurposing of Artifacts in Chinese-occupied Sites**

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### **ABSTRACT**

This project conducted in collaboration with the Asian American Comparative Collection (AACC) looks at the methods in which material culture has been modified and repurposed in Chinese-occupied archaeological sites. The AACC hopes to standardize these terms and create a comprehensive list of artifacts that show signs of these developments to aid in better understanding the ways Chinese communities lived and worked in the American West. The AACC houses many objects fitting these descriptions, however, to create a fuller, more inclusive view into these artifacts more data is needed. This project contacted archaeologists, archaeology enthusiasts, and historians from around the Pacific Northwest to create a collaborative dataset and to utilize research on the Chinese diaspora previously and currently being conducted.

### **Introduction**

As archaeologists, we often come across fragmented or misshapen artifacts that are usually noted as miscellaneous or broken in catalogs. But what if those breaks and bends are purposeful, conscious decisions? The Asian American Comparative Collection (AACC) has been researching the ways in which material culture has been modified and/or repurposed in Chinese-occupied sites in the Pacific Northwest. This project's main element is collaboration with researchers who focal interest is either in Chinese diaspora archaeology or Chinese material

culture. Through varying forms of outreach, this project connected with archaeologists in the public and private sectors, local historians, and researchers with their own comparative collections who all offered incredibly detailed information that will aid in this research. This project is still in the initial stages of data collection and the following information are the preliminary findings and further areas of interest and avenues of this venture. With this project in looking at the ways artifacts have been modified and repurposed, we are able to get a glimpse into the material cultural practices in Chinese-occupied sites within the Pacific Northwest. Through collaboration with researchers in the United States, the AACC is working to create a comprehensive list of changes that can be used for comparative analysis in future projects.

### **Terminology**

A challenge facing this project was determining appropriate terminology for the changes being observed. Through a review of many sources, there was no established consistency in how the artifacts were labeled. The terms used to describe the changes included: reuse, modified, repurposed, recycled, fashioned into, and made into. Reuse was the term utilized fairly consistently throughout the literature. The term reuse, however, has two meanings; the first to continually use an object in its objective purpose and the second is using an object in a different way than originally intended (Merriam-Webster.com). Through its multiple meanings' definition, reuse has become a common term utilized in the archaeological community to fit several different categories. Using reuse in such an interchangeable way can be problematic when trying to develop studies of changing artifact functions due to the vague nature of the word. The term reuse has also seen changes by archaeologists who utilized the term "adaptive reuse" to describe both repurposing (Rose 2020) and modifying (Wegars 2009). In this fashion,



the term recycling has been noted in studies of glass artifacts in mid eighteenth century America as a material to repurpose (Adams 2002).

What all these varying terminologies have in common is they are describing a change. Whether that change is a physical manifestation on the artifact or an ideological change on how the artifact is used, it still notes variation. And due to “reuse’s” multiple definitions, the AACC is not using reuse in any way other than its first definition; to continually use an object in its objective purpose. There are two terms that the AACC is recognizing and defining in the scope of the project: repurpose and modification. Repurpose is defined as “to give a new purpose or use to”, reflecting the second definition of reuse (Merriam-Webster.com). In an archaeological context, repurposed artifacts do not have any characteristics of physical alterations but rather evidence points to an alternative use. The term modification has multiple meanings outside of the archaeology field, but what all those definitions have in common is the theme of change, synonymous with alteration, refashioning, reworking, variation. The characteristics of modified material is that some physical alteration was made on the artifact, which could be the addition or subtraction of elements or a complete reconfiguration.

Repurposing and modifying characteristics can be found on the same artifact. For example, reports show that tin cans were often cut, and wire handles added to create cups. In that example, the cans were modified by being cut and handles attached, while also being repurposed because the primary purpose of the can changed. While both repurposing and modifying can often be used together, it is not always the case. In the example of Asian coins described later, many of the coins were not modified in any way, but were repurposed instead into gaming pieces, adornments, and in medicinal practices. Modification can also occur to keep using an object in the same way. An example of the AACC shows a small cleaver which was most likely

cut from a larger cleaver that had been chipped or broken. The purpose of that cleaver has not changed, but the cleaver itself has been modified. The examples given in this report show artifacts primarily fitting into both the modified and repurposed classifications.

## **Literature Review**

Modified and repurposed materials have been noted in Chinese-occupied sites in many archaeological records; but research themes and focuses on such artifacts have not been established. Often, modified artifacts are noted in passing but never discussed to a full, research extent. Take the sites along the Northern Pacific Line in Idaho and Montana; Weaver et al. (2016) go into great detail about the Chinese-occupied sites, discussing the historical context of the area, employment opportunities for Chinese migrant communities, and a detailed catalog of the sites was completed. And while in the report modified artifacts are mentioned in two of the sites, these modifications are not described or noted in the catalog (Weaver et al. 2016). While this is only one example and there are plenty, it shows that modifications haven't been seen as something that can be researched and compared because artifacts are repurposed and modified for specific reasons that are relevant for that specific moment in time. Researchers have noted modified and repurposed artifacts in Chinese-occupied sites, and while the secondary function may not be discerned, the volume of these artifacts shows that modifying and repurposing is very much a common occurrence that can be compared.

### *Metal Material Type Artifacts*

Repurposed and modified artifacts in Chinese-occupied archaeological sites have not often been a focal research theme; usually a subsection or thesis chapter divulges information in

this topic. Ritchie and Bedford's (1985) article examined metal containers from mining sites in the Cromwell area of New Zealand, many of which exhibited characteristics of repurposing and modification. This article dedicates a portion to those artifacts; and while the research area is in New Zealand, many of the artifacts have also been noted in the Pacific Northwest. Wire handles were fitted atop kerosine cans with the lids removed with holes punched into the base. Kerosine cans were also purposively flattened and used for roofing, patching, and bordering areas (Ritchie and Bedford 1985:111). Modifying and repurposing metal for architectural purposes is often noted in habitation sites, especially in areas of isolation (Greenwood and Slawson 2008). Opium cans were also extensively repurposed and modified, with small holes punched at the bottom, the main flattened metal there theorized by the authors to be cut down and used in a variety of ways including discs, funnels, and gold blowing trays (Ritchie and Bedford 1985:111). The reuse of brass-like opium cans is seen on the NPRR, the metal was used as game counters and pan weights (Merritt et al. 2012:684).

Sheet metal is a consistent material fitting into this research theme, as seen in Furnis and Maniery's (2015) work in Chinese workers' camps along the Virginia and Truckee Railroad which notes multiple instances of sheet metal modification for funnels and several unidentified functions. While sheet metal is a handy material to modify, many other metal material types are modified to suit the needs of the modifier. One being the commonly observed are tin cans. Tin cans are regularly recorded, and many have had modifications made to them. In a Chinese associated habitation site in the Cortez mining district, tin cans that were modified into cups with handles are recorded (Obermayr and McQueen 2016:96). Another modification to note are tin cans with holes punched out at the base (Obermayr and McQueen 2016). This type of

modification has been recorded in many archaeological sites or noted in field books. The reasoning for this modification has regularly been that the can were used as strainers.

Several of these instances point to the potential blacksmithing in the area. Blacksmith shops are the pinnacle of modification and repurposing, using broken or unneeded materials and creating useful tools for the customer. In a placer mining site in the Boise Basin, the researcher noted a file which had been modified into a wood chisel, tines from a rock fork which were used as spikes, and unknown repurposing of opium brass-like (Geer 1985). Blacksmith shops were not exclusively found in towns, evidence in wilderness areas points to blacksmith occupation near predominantly railroad and mining camps (Merritt et al. 2012).

Artifacts many do not observe with these research themes in mind are Asian coins. These coins found in many Chinese-occupied sites haven't been thought of a local currency, the exchange rate to US dollars so low it wouldn't have much monetary value (Great Basin Institute 1987:417, Akin et al. 2015:114). Instead, these coins were repurposed and were used as gaming pieces, talismanic pieces, decoration, and medical instruments (Akin et al. 2015; Chace and Evans Jr. 2015; Chung 2015:85; Great Basin Institute 1987; Obermayr and McQueen 2016). Archaeological sites along Donner Pass also note that pieces made from copper and iron were fashioned into gaming pieces of the approximate size of the coins (Chace and Evans Jr. 2015:29).

### *Glass Material Type Artifacts*

While metal artifacts are the often discussed artifact types with signs of secondary uses, glass has also been reported to show similar repurposing and modification in past literature. Staski's (1993) work in El Paso, Texas shows glass bottles being repurposed from the residents

of the Chinatown. In the study, the author notes a bitters bottle which was repurposed to hold liquids for cleaning clothes, theorizing that many American made bottles were purchased or collected and repurposed after the contents were used or emptied (Staski 1993:134-135). Rose's (2020:181) book spends a chapter discussing the excavations of the Chinese Quarter in Jacksonville, Or and the use of glass footed compote as a bulb planter.

There are times in which determining if the artifact was indeed repurposed can pose challenges. In a 1985 salvage excavation on the Boise National Forest, the researcher suspected that five black glass bottles observed had undergone repurposing. The idea being that due to the durability of these bottles, it was ideal that they would be reused (Geer 1985). Though no evidence was found supporting this notion, the reasoning behind the theory is understood. In fact, many researchers have used this rationale when discussing the general use and recycling of glass bottles (Geer 1985; Great Basin Institute 1987).

### *Ceramic Material Type Artifacts*

A material type not often associated with repurposing or modification is ceramic. Often, if there are ceramics that appear to be modified, they can mistakenly be labeled as sherd or broken. However, upon closer inspection, characteristics of repurposing and modifications can be ascertained in ceramic artifacts. Rose's work on the Jacksonville's Chinese Quarter's previously discussed also notes a bamboo patterned rice bowl which was repurposed to hold stamp paste (Rose 2020:179). The Boise National Forest salvage excavation also noted examples of ceramic modification. In the placer mining site, ginger jar lids were found to be constructed from sides of Chinese brown glazed stoneware vessels (Geer 1985). Ceramic modifications were also made to smoke opium, noting in the Wong Ho Leun archaeological project in Riverside, California the

use of ceramic inserts for opium bowls. One such insert was constructed for a section Chinese brown glazed stoneware and two were constructed from white stoneware (Great Basin Institute 1987:333). The results of ceramic artifacts showing evidence of modifying and repurposing is limited. The project at the AACC is working to create a bigger comparative sample through collaboration with researchers.

### **Asian American Comparative Collection**

In addition to the instances recovered from past published works and report, the Asian American Comparative Collection (AACC) houses several artifacts with modification and repurposing characteristics. The following is a description of each artifact and the possible reasons behind each repurpose and modification. Like the above literature review, the artifacts described below are sections into metal and ceramic. There are currently no glass artifacts identified as repurposed or modified at the AACC.

#### *Metal Material Type Artifacts*

A majority of the repurposed and modified metal artifacts stored at the Asian American Comparative Collection are fashioned out of opium containers. Two of the “funs” trays, previously mentions in Ritchie and Bedford’s work in New Zealand, were donated to the AACC by Richie in the Arrowtown Chinese Settlement site (Figure 1). These trays were cut from opium cans and bent into the tray shape, used to serve a pellet of opium (Ritchie and Bedford 1985). Many of the artifacts are associated with the continue activity of smoking opium. Along the Northern Pacific Railroad, a wick and wick holder for an opium lamp was constructed out of a rolled brass-like opium can fragment and a shotgun shell was collected and archived into the

AACC. Also in the collection is an opium can with a perforated top in which a rolled piece of opium can was soldered on (Figure 2). These modified characteristics are the result of a homemade opium lamp. Figure 3 depicts brass-like opium can, cut and bent into a matchbox with Chinese characters embossed on the can.

While the previously mentioned artifacts are associated with the continual opium smoking, there are instances in which the brass-like was used in additional ways. One opium can lid was recorded from Old Centerville and has many needle like holes, modifying and repurposing the lid into a grater (Figure 4). As noted previously, holes punched into cans is a common occurrence, though the reason as to why and the function can sometimes be up for debate. The last brass-like artifact's purpose is unknown. The object is made from an opium can body with a section of it wrapped around wood and nailed in with small tacks, the other end is also bent with nail holes (Figure 5). Not much is known on this artifact other than it was acquired by the AACC in 2020 and it is likely from Idaho.

The last two metal typed artifacts represented through the AACC are not made from opium can remnants. The first artifact is an iron Lipton tea can recovered in the Boise Basin. The modifications of this can include a wire handle added to one of the sides, opposite to that side is a large "X" shaped cut with the metal bent inwards, and small holes on the remaining sides. These characteristics point to the tea can being modified into a candle lantern (Figure 6). The final metal artifact represents modification without repurposing. Figure 7 shows a small iron cleaver found near Centerville, Id that was likely hand forged from a larger cleaver. Here while there are modifications being made, the primary purpose is still to chop and prepare food. These metal artifacts in the AACC show that modifications were often being made by using materials

that were either regularly utilized in Chinese communities or were more pliable materials to repurpose.

### *Ceramic Material Type Artifacts*

The ceramic artifacts housed at the Asian American Comparative Collection with repurposing and modification characteristics are in the form of Chinese brown glazed stoneware. Two liquor bottles were purposefully cut, and the bases repurposed into rice bowls both of which were donated from a resident of Warren, ID (Figures 8 and 9). The AACC houses a wide mouth jar that had been modified by a wire wrapped around the neck of the vessel to be used as a handle while the jar itself was used to heat food (Figure 10). The base of the jar is blackened, showing evidence that this artifact had been laid overheat. The final ceramic artifact is a spouted jar which would have originally held liquids such as soy sauce, peanut oil, and vinegar (Yang and Hellmann 1996). Wire netting covers the body of the jar, a bamboo handle was attached, and the lip on top of the container was removed (Figure 11). These modifications were added to fashion the spouted vessel into a teapot and similarly to the wide mouth jar, the base of the teapot is also heat blackened. Unfortunately, the provenience and association of these vessels are unknown, as they were acquired from a gift shop and thrift store respectively in Idaho.

### **Project Methods: Collaboration**

As discussed above, the AACC houses several artifacts fitting into either or both repurpose and modification categories. The artifacts housed at the AACC however are limited and do not provide much provenience, several of the objects were purchased from thrift stores and antique shops in Idaho. The quantity of artifacts and the associated information isn't



substantial enough to produce either a comprehensive list nor meaningful conclusions about the reasons behind such modifications and repurposing. In other words, is this a common occurrence that can be observed throughout space, or is it only noted in one circumstance in one location? This project is looking to provide answers to this questions that could help place small, isolated sites into a more global, transnational context.

To properly address these research objectives, collaboration with researchers is a necessary step that benefits to project. While the first step was to utilize published works and reports to see if modified and repurposed artifacts have been noted, there were limitations to this practice. This review established a pattern of noting while not always describing or focusing on such artifacts in sites around the world. This forms a base level of analysis and the project has since condensed the locational areas of interest to the Pacific Northwest. There were several avenues for focusing on researchers and locations within the Pacific Northwest that were utilized in this research. The email listserv NWChineseHistory, established by Southern Oregon University allowed the AACC to contact those who had specific interests and knowledge on the historic Chinese communities in the Pacific Northwest to introduce the project and the specific information being requested. This avenue received a few preliminary responses, offering a following email when the researchers have the time and resources to investigate collections. Reasonably with require teleworking and limited resources, many have not been able to physically access the collections.

Similar to the email, an article written for the AACC's March Newsletter titled "Call for Resources" engaged with researchers and subscribers to the newsletter who may not be a part of the previously mentioned listserv. This brief article highlighted one of the modified and

repurposed artifacts housed at the AACC as well as explained the project and gave contact information for those with additional information regarding the project. The most recent contacting effort came from directly contacting individuals. The researchers contacted were based on their previous work which may have included modified artifacts or those with professional ties to researchers at the AACC. Each contact was emailed individually with information requested from their specific projects. This method proved the most effective; with compiled reports, references to previously published work, or plans to investigate their collections at a later date. As this project is ongoing, additional calls for resources and correspondence will continue but currently, the information received is promising.

### **Preliminary Results**

Unlike the previous organizing of artifacts through material type, the following information is grouped by which organization or collection supplied the information.

#### *Chinese Comparative Collection by Gary Weisz*

The Chinese Comparative Collection is a culmination of Gary Weisz's work and interest in Chinese diaspora archaeology and material culture. Weisz's collection was provided to the AACC in the form of a pictorial essay which gave considerable detail on the types of Chinese associated artifacts found primarily in Idaho. In this essay, mentions of modified artifacts as well as detailed descriptions and photos were created. Of these artifacts, there are two ceramic ginger jars were modified by widening the top opening and one with a drain hole in the base to repurpose the jars into planters (Weisz 2014). Two stoneware liquor bottles were modified; adding metal spouts, top cover, and a handle on one to serve beverages. In a recent modification,

a spouted stoneware jar was fashioned into a lamp with an added electrical cord coming from a drilled hole on the body (Weisz 2014). Along with these artifacts, Weisz mentions several sources and referenced collections that are potential avenues of further research in this project.

### *Chinese Woodcutting Communities in Nevada*

One of the researchers contacted individually was Emily Dale, who's research in Chinese woodcutting camps in Nevada produced many modified artifacts. While Dale's dissertation project was not located in the Pacific Northwest, the detailed descriptions of the artifacts will benefit the AACC's project and offer more comparative analysis for sites that are located in the northwest. The dissertation notes numerous modified buckets, several with punched holes in the bottom, some with their handles and bottoms removed, one galvanized bucket with half of the side removed, and cans modified and repurposed into buckets (Dale 2016). Dale's theory was that the hole punched bottom buckets were used to sift larger pieces of charcoal. The project also observed a tobacco pail disassembled, inferring that the tin was repurposed in another way as well as ammunition cut and folded, as well as multiple instances of opium cans being modified with punched holes, though there is no conclusive understanding of what the secondary function these cans or ammunition held (Dale 2016). Dale's literature review of "adaptive goods" offers additional insight on modified and repurposed materials. Dale references Hellmann and Yang's (2007:187) in which mentions of repurposed spouted jars into teapots occurred infrequently in rural areas in China (Dale 2016: 251).

### *Kam Wah Chung Collection*

The Kam Wah Chung State Heritage Site is a part of Oregon State Parks. Located in John Day, Oregon, Kam Wah Chung was a general store, doctor's office, gambling house, place of

worship, and provided lodging to Chinese community members in the late 1800s to early 1900s. The building still stands and the artifacts within the building tell a detailed portrayal of life for Chinese migrants and Chinese Americans in rural Oregon. The curator at the site, Don Merritt, provided the AACC with an itemized list of repurposed and modified artifacts from the building. The first of which is a ladle with multiple holes punched into the bottom; modified so it could be used as a strainer; theorized to either be used for cooking food or sift out solid medicinal ingredients from the medicines Ing Hay prescribed (Merritt 2021, pers. comm.). A rough soldered iron with an added handle is in Kam Wah Chung, which looks to be modified from a piece of iron from a local blacksmith. As previously mentioned, blacksmithing is the prime example of repurposing and modifications.

Can lids with holes punched into them attached to mason jars were found at Kam Wah Chung; theorized to be used at a sifter of spices for cooking, this provides another example into the reasoning behind punched lids. Three fly swatters were recorded in Kam Wah Chung, having been modified and repurposed out of a window screen (Merritt 2021, pers. comm). The final artifacts described in this correspondence were cigar boxes, which were repurposed into pharmaceutical bins in Ing Hay's apothecary; holding some of the 560 traditional herbs, minerals, and animal ingredients used in Ing Hay's medicinal formulas (Merritt 2021, pers. comm.). Merritt (2021, pers. comm.) also notes that the building itself exemplifies the very notion of repurposing and modification; the second floor was not a part of the original structure according to oral histories, Lung On, Ing Hay's partner, purchased a house and had it hoisted onto the top of structure to make more bunk space. According to the Merritt, the second floor was never used for lodging, but held most of the documents in the current archives.

*Mon-Tung Site, Bureau of Land Management*

Archaeologist Ron James contacted the AACC and recommended his published report title *Ruins of a World: Chinese Gold Mining at the Mon-Tung Site in the Snake River Canyon* for evidence of repurposed and modified artifacts near Twin Falls, Idaho. The report described multiple instances of repurposing and modification in brass-like opium containers. While the descriptions are vague, describing that containers as “dented, cut up, or otherwise reused”, one opium can was recorded as fully intact with small holes punched into the lid for the use of a sifter or shaker (James 1995:49). This could resemble to the mason jar lids found at Kam Wah Chung. The last artifact recovered from the Mon-Tung site with modifications was a spouted Chinese brown glazed stoneware vessel, the top half was removed, and the bottom portion was repurposed into a rice bowl (James 1995: 47). This modified vessel resembles the liquor bottles housed at the AACC which were also cut into rice bowls recovered from Warren, Idaho.

#### *Payette National Forest*

During the initial search into modified and repurposed artifacts, there were multiple mentions of sites on the Payette National Forest, but no mention of specific reports or records. Kelly Martin, the heritage and recreation assistant, compiled a detailed report of such artifacts organized by site using past excavation reports and updated photos. The sites consisted of garden terraces and features associated with Chinese mining companies and of the seven sites listed in the report, there were numerous accounts of modification and repurposing of artifacts. The most common artifact to fit into these categories are tin cans. Cans such a fuel, tuna and sanitary cans were modified and repurposed as colanders with holes punched into the bases, some larger cans were flattened and used for another unknown purpose, sanitary cans were cut, and one had an added wire handle to make cups, one oil can was fashioned into a font of an opium lamp, and lids were also hole punched (Martin 2021, pers. comm.). Additional metal artifacts include a

wire nail spike modified into a hook, sheet metal with small holes punched throughout, and an enamel basin modified into a strainer, brass-like opium cans flattened and tack nailed to a piece of wood, the purpose of which is unknown (Martin 2021, pers. comm.). Martin (2021, pers. comm.) also describes glass and ceramic artifact modifications in which an olive wine bottle shoulder and neck were used as an opium lamp cover and one black ceramic bottle in which the neck was removed, and the edges smoothed, and soot residue was noted; the researchers theorize that the bottle was repurposed into a type of lantern.

## **Discussion**

This research is still in the preliminary stages of data collection, with continually correspondence and updated information being provided still. The data collected and reported here has already seen established patterns and more research questions than when started. Through this research, it is shown that brass-like opium cans and tin cans were consistently modified and repurposed. What the question is surrounding these are cans are what new functions are being established in these modifications. The common answer is a strainer; but there are other purposes to consider and examine what is being strained or sifted. So far, the call for resources has not turned up many glass artifacts, apart from the Payette. This could be due to mislabeling the glass as fragmented rather than purposefully cut, or even lack of glass artifacts due to bottle collectors. It can also be complicated to establish repurposing of glass bottles without residue for analysis or the means to complete testing. There were also limited ceramics with modification characteristics with exception of two. The jar modified into a rice bowl found at Mon-Tung is particularly interesting because the AACC houses two very similar cut bowls, inferring a possible pattern in ceramic repurposing in Idaho where all three bowls originate from.

In comparing collections across the Pacific Northwest, meaningful results about ways in which Chinese communities lived and worked in the American West. Dale notes that evidence of modification and repurposing was more common in the rural camps rather than in urban environments (Dale 2016). Could this be the same in the Pacific Northwest, can a pattern of where these types of artifacts are found be seen through this project? Are there common modifications and repurposing that can be determined through a comparative list? Looking at the preliminary findings, cans are notoriously repurposed, but the new purpose can be difficult to establish. As this project is in the beginning stages of research, the themes and data are presented in an analytical, scientific lens of functionality. And while this is beneficial, more in depth personable results can be deciphered through this work. Themes of foodways and access to traditional supplies or ways to change what's available for familiarity and presenting customs could benefit from the results of this project. Another modification that isn't described in this research currently are peck marks. These were intentionally pecks made into teacups and rice bowls to mark ownership, often with a name or phrase. With these marks, it is a modification but not for a functional purpose; it is to show and represent identity in a space.

## **Conclusion**

This is where the modification and repurposing project at the AACC is currently at; initial data collection and correspondence with preliminary patterns and results coming to light. It is still at the earliest development stage and more data is still being sent to the AACC. Each collaborator has given invaluable information that will benefit this project. One purposes of this project is to start standardizing the terms used when describing change. The previous reports and articles written about modified artifacts use terms such as modified, repurposed, reuse, fashioned

or made into rather interchangeably. Which can make sense because this area of interest has never been a focal point of research so terms did not need to be regulated. Now with this theme being a central topic, locating instances of change is proving difficult because of these inconsistent terms. By using solely repurposing and modification, all the data compiled in this research will be easier to search through and provide future researchers with steady vocabulary.

The information being sent to the AACC is currently being inputted into a catalog dedicated entirely to modified and repurposed artifacts, fields such as material type, original and new function, site types, contact information, and many more will allow scholars to notice patterns that otherwise would not be observed when looking through one site. This condensed list will allow the AACC to provide researchers with comprehensive information and act as a comparative study. Through connecting with researchers across the United States, and primarily the Pacific Northwest, information surrounding modified and repurposed artifacts will help better understand Chinese communities and how their lives, identities, and decisions made were shaped in the American West.



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**LIST OF FIGURE CAPTIONS**

**FIG. 1.** “Funs” Trays. Photo courtesy of the Asian American Comparative Collection, University of Idaho, Moscow, CCC-84-01 and CCC-84-02.



**FIG 2.** Opium can with a perforated top and a soldered on rolled piece of opium can. Photo courtesy of the Asian American Comparative Collection, University of Idaho, Moscow, AACC-2009-062.



**FIG. 3.** Brass-like Opium Can modified into a matchbox holder. Photo courtesy of the AsianAmerican Comparative Collection, University of Idaho, Moscow, ACC-86-048.



**FIG. 4.** Grater made from an opium can lid. Photo courtesy of the Asian American ComparativeCollection, University of Idaho, Moscow, ACC-86-051.



**FIG. 5.** Unknown object modified from a brass-like opium can, wood, and tacks. Photo courtesy of the Asian American Comparative Collection, University of Idaho, Moscow, AACC-2020- 025.



**FIG. 6.** Tea tin can modified and repurposed into a candle lantern. Photo courtesy of the Asian American Comparative Collection, University of Idaho, Moscow, ACC-93-070.



**FIG. 7.** Small hand forged cleaver in comparison to larger cleaver. Photo courtesy of the Asian American Comparative Collection, University of Idaho, Moscow, ACC-93-073 and AACCC-99-150.



**FIG. 8.** Chinese brown glazed stoneware liquor bottle purposefully made into a rice bowl. Photo courtesy of the Asian American Comparative Collection, University of Idaho, Moscow, CCC-84-066.





**FIG. 9.** Chinese brown glazed stoneware liquor bottle purposefully made into a rice bowl. Photo courtesy of the Asian American Comparative Collection, University of Idaho, Moscow, CCC-84-070.



**FIG. 10.** Chinese brown glazed stoneware wide mouth vessel modified into a cooking pot. Photocourtesy of the Asian American Comparative Collection, University of Idaho, Moscow, ACC- 87-26.



**FIG. 11.** Spouted jar modified into a teapot. Photo courtesy of the Asian American ComparativeCollection, University of Idaho, Moscow, AACC-96-123.

# WESTERN WASHINGTON WOMEN HOMESTEADERS

## SUMMARY STATISTICS AND SPATIAL PATTERNS FOR NINETEEN COUNTIES

### ABSTRACT

Twenty percent (8.5 million acres) of Washington State lands were patented through the Homestead Act between 1866 and 1969, but little is known about the experience of Washington's women homesteaders. Western historians estimate that nearly a quarter of all homesteaders were women and that most of women's homesteading occurred after 1900, however prior to the Washington Women Homesteader project no quantitative studies have been completed in Washington. This poster presents summary data of women's homesteading history in Western Washington and explores the temporal and spatial patterns of women's homesteading history.

### GOALS

The Washington Women Homesteaders project aims to develop a historical context for Washington homestead history that includes female homesteaders. Previous studies (Mathews 2019, 2020) have established that the homesteading experience in Washington may have unique local variations from that of the West in general. The goal of the present study was to summarize statistics for women homesteaders in western Washington to determine 1) how common it was for women to homestead, 2) when homesteading peaked, and 3) if spatial or temporal patterns exist in women's homesteading.

### METHODS

Summary statistics for this research were collected by browsing Homestead Act (12 Stat. 392) records in the [gloreCORDS.blm.gov](http://gloreCORDS.blm.gov) land patents database. Records were browsed by County and tallied by gender by year. In many cases additional research into homesteader's gender was done through primary sources such as census or marriage records. For this study, homesteaders were classified as women homesteaders if they were apparently legally *feme sole* not listed with a male patentee. Spatial data are explored by county by classifying the data into Jenks natural breaks normalized by all homesteading and square miles.

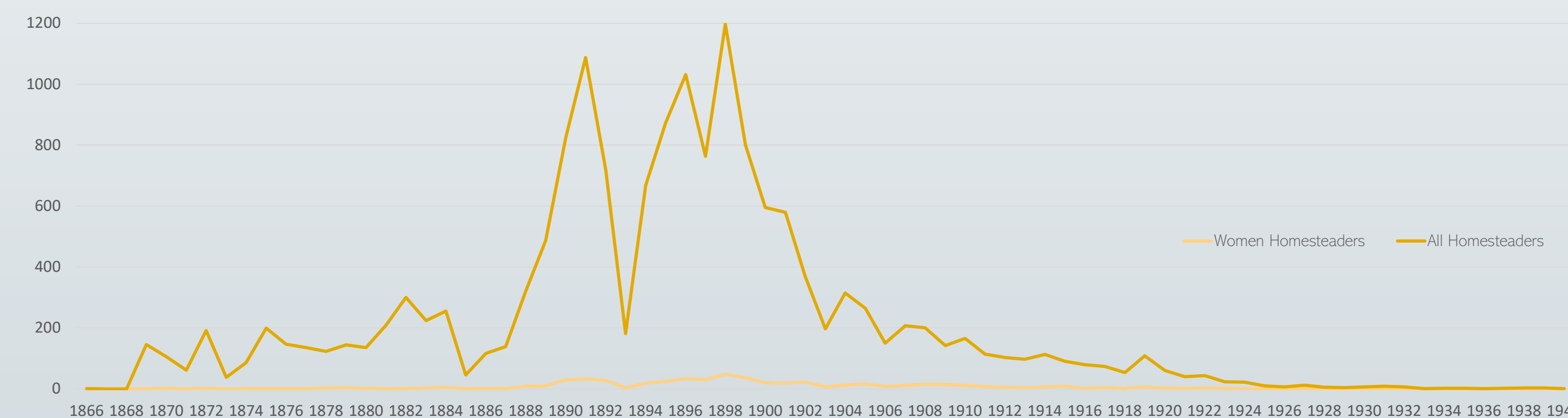
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### WESTERN WASHINGTON HOMESTEADERS, 1870-1940

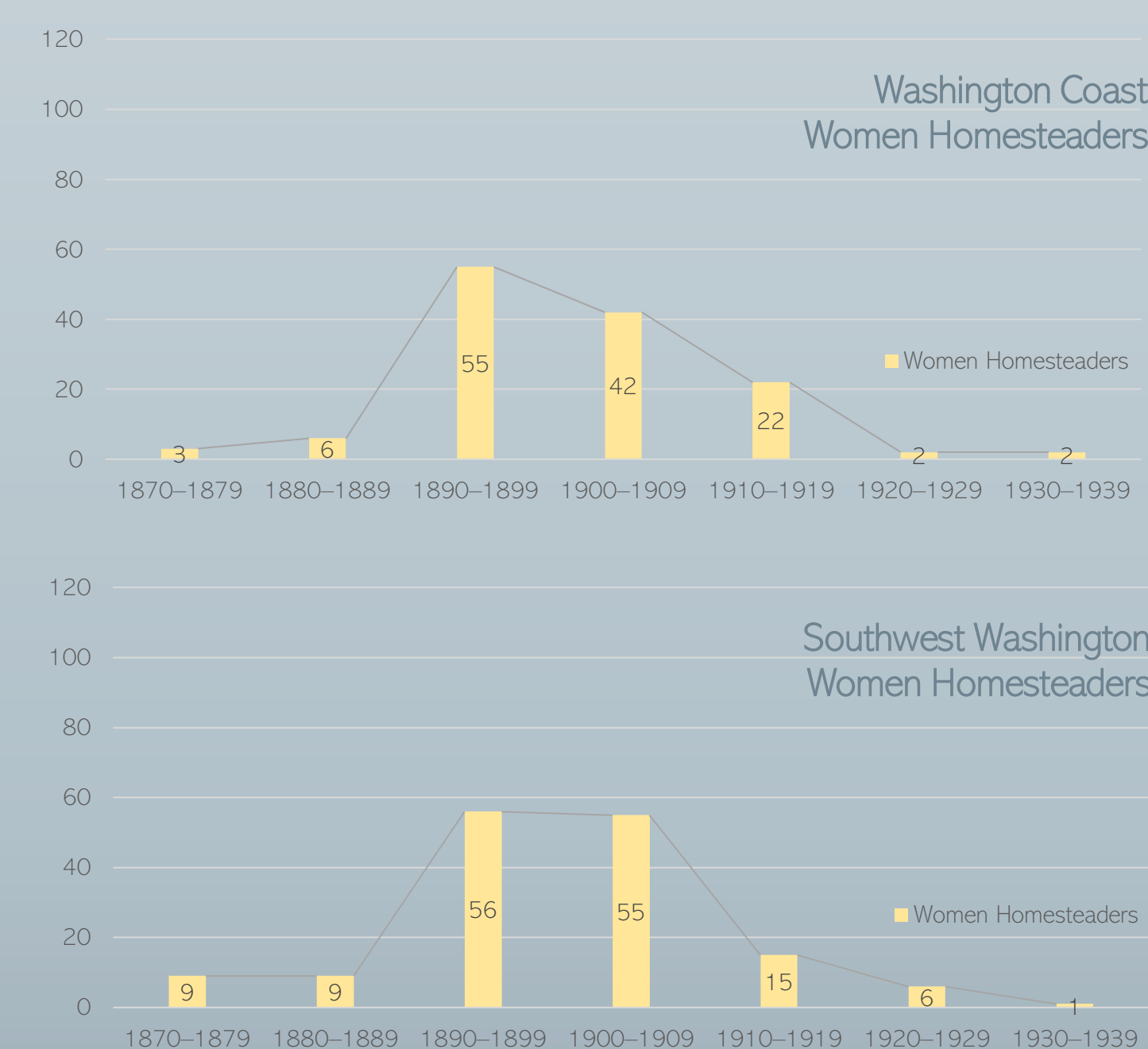
Trends in women's homesteading generally follow those of all homesteaders in western Washington. Regionally, homestead patents begin to peak in the late 1880s, reaching a high in 1898 and sharply decline in 1899. This peak is substantially earlier than the national trend of homestead patents peaking in the 1910s. The proportion of women's patents increases from only 1% in the

1870s to 6% in the 1910s. Significant drops in patents in 1885 and 1893 coincide with national economic recessions. The sharp rise in patents in the 1880s and 1890s may have been influenced by the establishment of transportation systems throughout the region, as well as an increase in native born residents.



In 1870, Mary Marvin and Margaret Hanison were the first women to patent homesteads in western Washington. Only 15 women patented homesteads by 1879, comprising 1% of all homesteads in western Washington at the time. This rate is substantially lower than the female population in Washington, which increased slightly as the population grew from 37% (8,965) in 1870 to 39% (29,143) in 1880.

In each of the four regions of western Washington analyzed here, women's patents increase slightly in the 1880s, spike in the 1890s, and then gradually decrease into the 1930s. The spike in women's patents in the 1890s is especially dramatic in the Puget Sound area.



### WOMEN HOMESTEADERS BY COUNTY

Women were issued 3.5% of the Homestead Act patents in western Washington. By county, the rate of women homesteaders ranges from 1.7% to 7.4%. On average, western Washington counties had 29 women homesteaders, ranging from 4 to 56 women.

County	Women Homestead Patents	All Homestead Patents	Women Homesteaders %
North Puget Sound	160	4863	3.3%
Whatcom	34	900	3.8%
Skagit	36	765	4.7%
San Juan	20	498	4.0%
Island	4	107	3.7%
Snohomish	39	1252	3.1%
King	27	1341	2.0%
South Puget Sound	110	2939	3.7%
Pierce	48	1152	4.2%
Thurston	26	668	3.9%
Mason	24	557	4.3%
Kitsap	12	562	2.1%
Washington Coast	131	3303	4.0%
Clallam	56	1262	4.4%
Jefferson	22	553	4.0%
Grays Harbor	38	915	4.3%
Pacific	15	573	2.6%
Southwest Washington	151	4937	3.1%
Wahkiakum	5	301	1.7%
Lewis	44	1851	2.4%
Cowlitz	33	1101	3.0%
Clark	33	1198	2.8%
Skamania	36	487	7.4%
Western Washington	554	16043	3.5%

Few local differences in rates of female homesteaders are observed by mapping homesteaders by county (Figures 1 and 2), however rates of female homesteaders do cluster in the Puget Sound area in the 1890s (Figure 3). The most remarkable local spike in patents occurred in 1898 in Grays Harbor County when 9 women were issued patents, comprising 8% of patents in the county that year and 24% of all women's patents in that county.

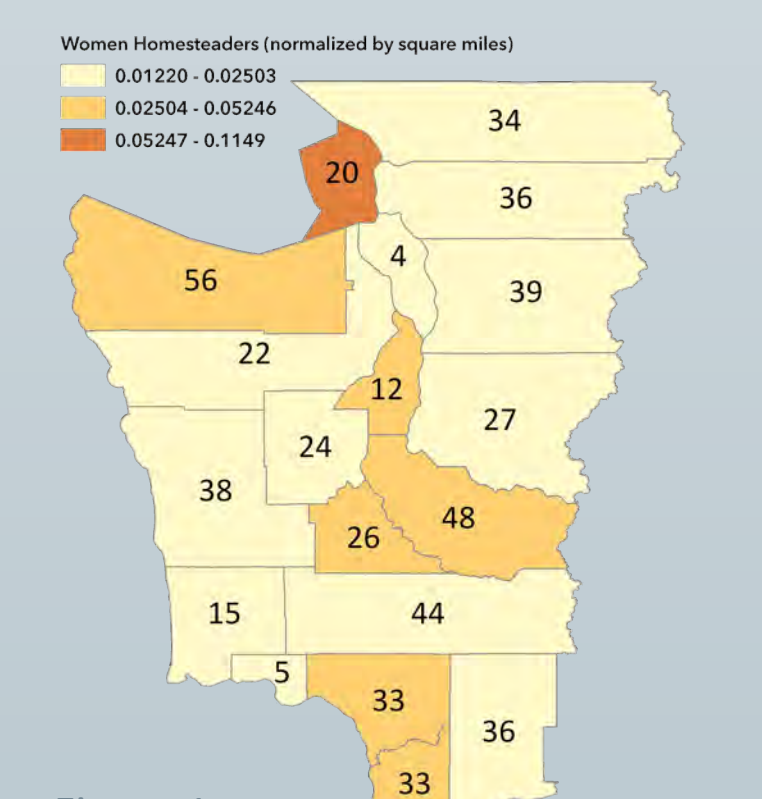


Figure 1

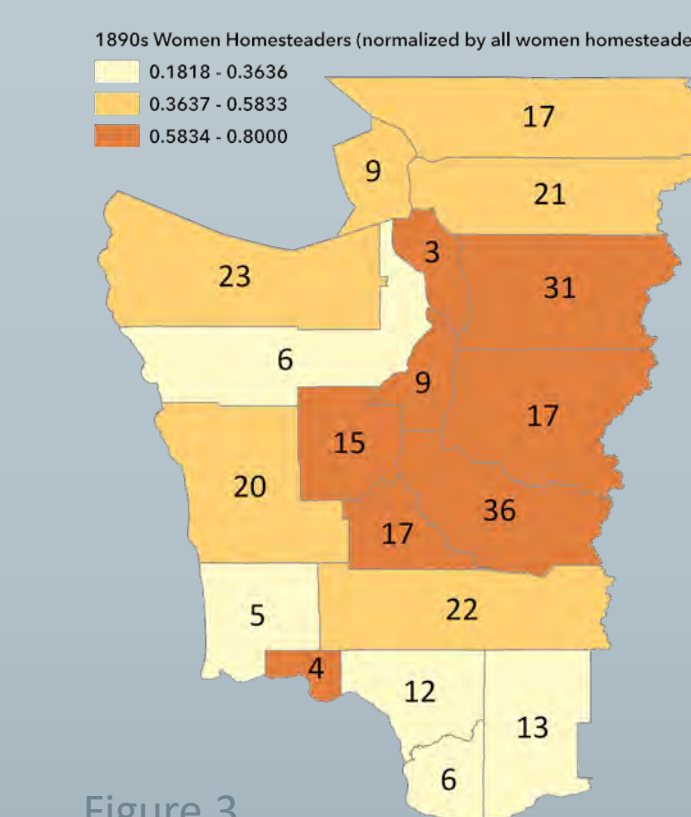


Figure 3

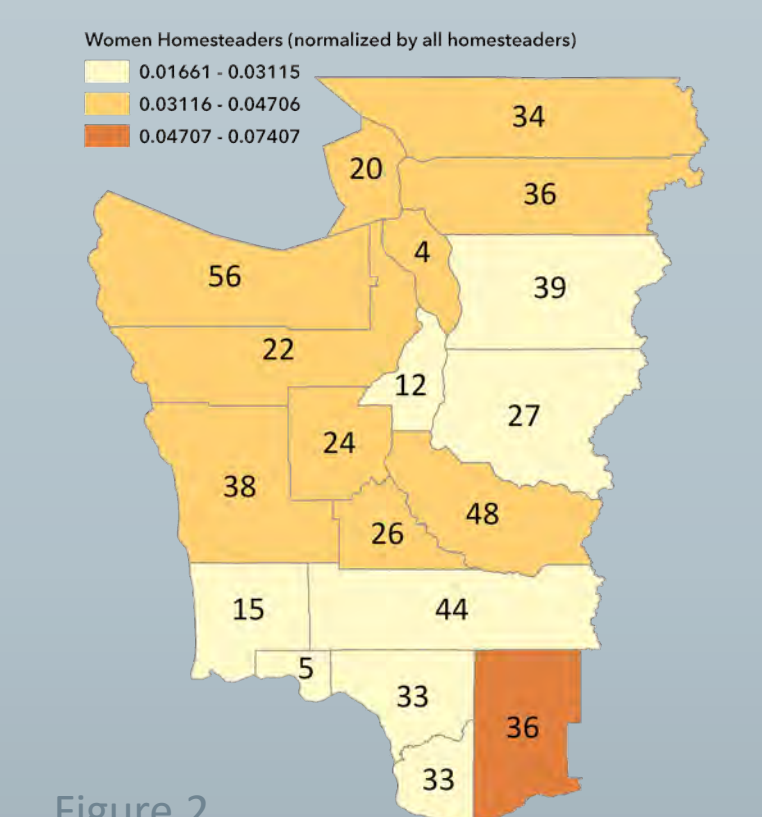


Figure 2

# Quinault Indian Nation (QIN) Cultural Resources Mapping with Ethnographic and LiDAR-Derived Data



Poster by: Faith Webster, M.S., Justine James B.A, Lia Frenchman, Naomi Brandenfels, M.A.

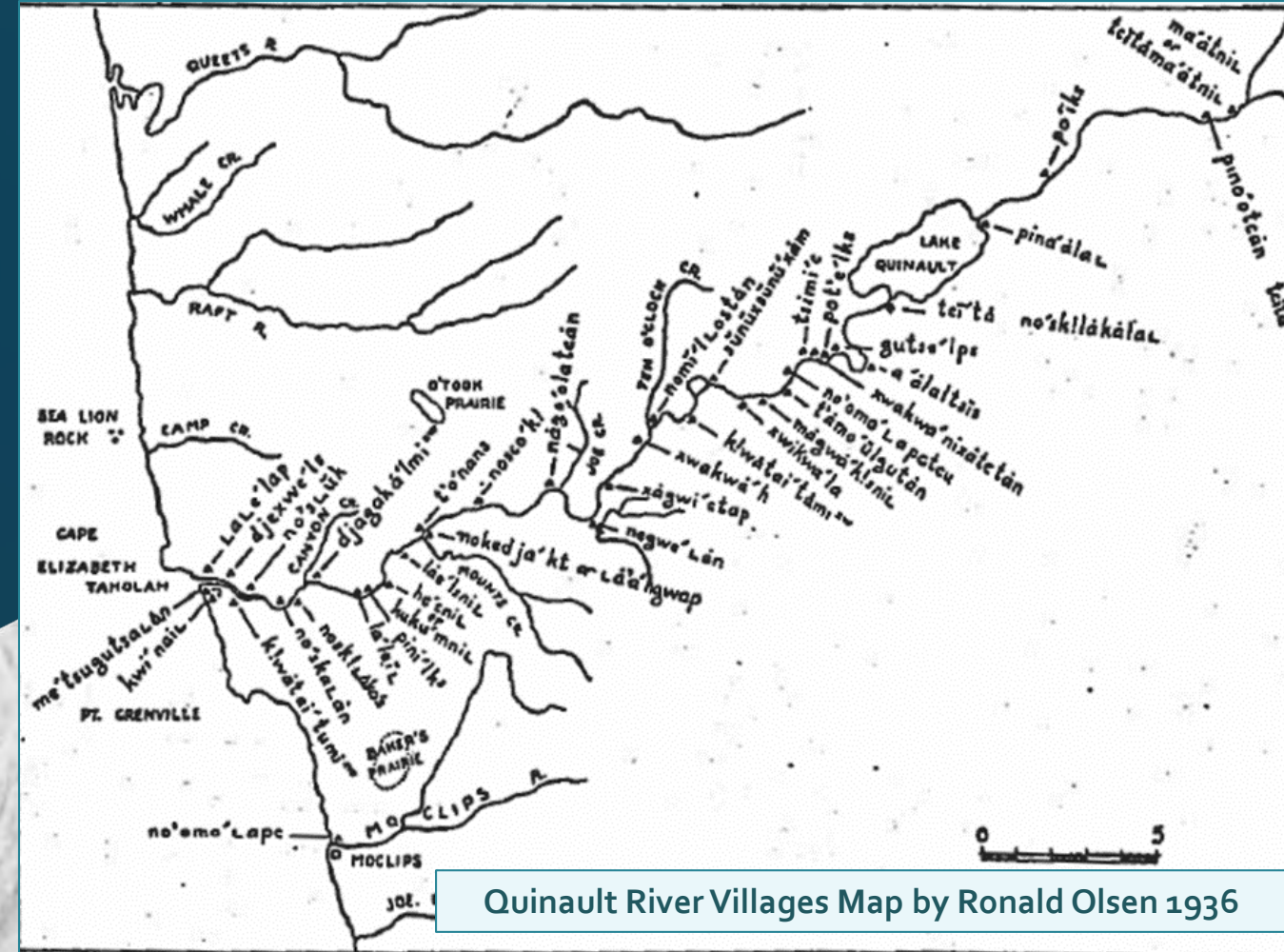
## The Problem

There are 32 ethnographically recorded sites along the Quinault River. Many of these were mapped from information provided by tribal elders based on the locations of confluences (Olsen 1936). Historic maps and aerials reveal that the Quinault River has migrated in its course early surveys starting in the late 1800s. Migrations are a natural part of river action, however, an increase in river course migration has been influenced by several factors: the past history of intensive logging on the Quinault Reservation and the global climate change influence to weather patterns and the effects on ocean elevation rise.

In today's transformed landscape, relocating these village sites from historic maps is difficult. Where the river is today is very possibly different from where the river was when the maps were created.

"Going up and down the river you can see the old river channels, large cutouts of gravel, with large alders growing through them. Many of the surrounding creeks correspond with old village site names."

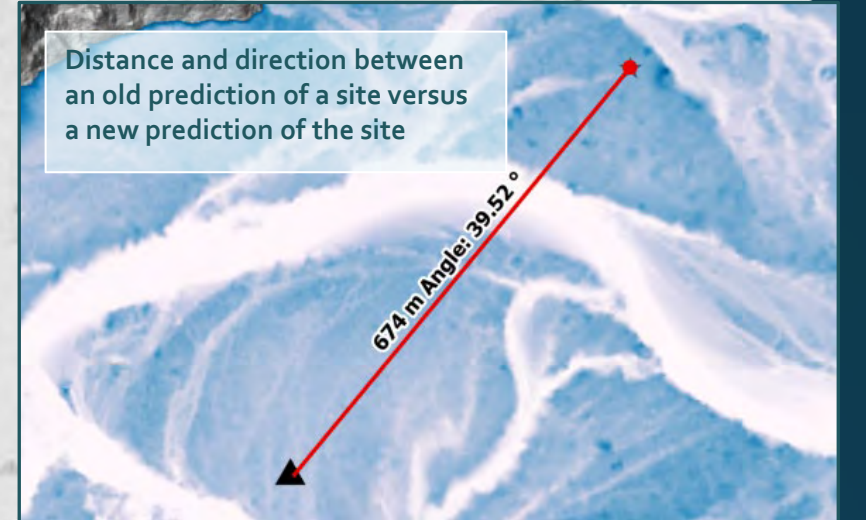
~ John "Tater" Bryson



Quinault River Villages Map by Ronald Olsen 1936

"1970's the tribe took over logging, logging companies honored the buffer zone near the rivers. When the allottees demanded maximum payout from timber sales, and forced the tribe to ignore the buffer zones, logging up to the river, this drastically changed the course of the river with no consideration for the effects on the land or the fisheries."

~Francis "JR" McCrory



Distance and direction between an old prediction of a site versus a new prediction of the site

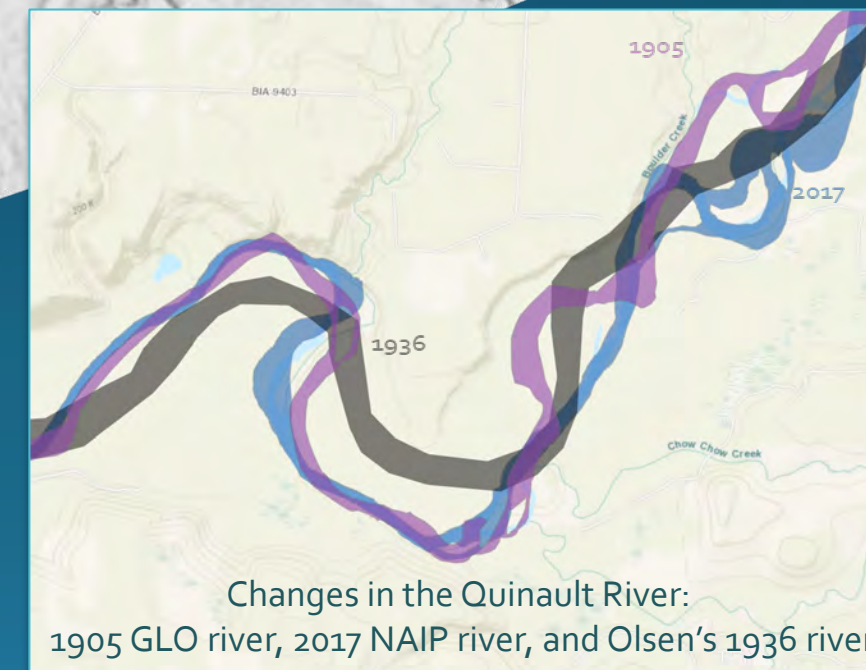
## The Solution

By using an Relative Elevation Model (REM) as a bounding box and guide, the river can be referenced within historic meanders. A REM is a LiDAR derived product that displays elevation relative to the height of the main river channel. That makes the main river show clearly (from time of LiDAR flight) and displays the associated side channels and meanders from within the flood plain. Understanding the history of river meanders is important across disciplines. It has been noted that, "REMs are extremely useful in discerning where river channels have migrated in the past by displaying fluvial features". By using the REM, a likely position of the old channel can be established.

Using ArcGIS Pro, the Olsen Quinault River Villages Map was georeferenced by applying control points at bounding locations along the river. Third-order polynomial affined correction was applied after bounding with control points to account for differences in projections. The final corrected river lines up smoothly and logically within the flood plain. The results has given starkly different predictions of the village sites when compared with a georectification to the Quinault River today.

"Burial site had to be relocated due to fluctuations in the river, families who knew where relatives were, handed the responsibility of moving loved ones to higher ground."

~Norman "JR" Capoeman



Changes in the Quinault River: 1905 GLO river, 2017 NAIP river, and Olsen's 1936 river

**Projectile Points – Point Type Distribution: Tryon Creek House 2 (35WA288),  
Hells Canyon National Recreation Area  
Noella Wyatt - Central Washington University, Mentor – Dr. Steven Hackenberger, CWU**



Figure 1: Aerial Photo of Tryon Creek Site – House 2

**ABSTRACT**

The Tryon Creek assemblage (Hells Canyon) (Figure 1) is curated and studied under an agreement with the USFS. A re-examination of the type and distribution of point types confirm the diversity present in dart and arrow size points. Stratigraphic and activity area analysis of House 2 (500-1500 B.P.) illustrate the correspondence of types, which may reflect behavioral mutualism. Metric analysis of four forms represented in an overall sample of 126 points indicate an expected spread of sizes in arrow points. Twenty-six points were selected for completeness for metric analysis. Corner-Notched points (n=100) dominate in all levels of the house, although Basal-Notched points are common (n=16). Side-Notched points (n=8) also occur in all occupation zones/levels. (Figure 4) Nine lithic sources are represented, (Figure 6) and both Chalcedony and Chert/Jasper are heat-treated. Red-Glassy Basalt is locally available and common. Obsidian is surprisingly rare given the presence of Timber Butte source in the assemblage.

**BACKGROUND**

For sometime, there has been discussion as to the diffusion of style types within excavated units of House 2 (Figure 2). Was there a pattern? Are they distributed evenly within each zone and level or grouped by zone and level? Is it obvious that there was a change in point type based on occupation levels through time? Four point styles were identified within House 2 – Stemmed, Basal-Notched, Side-Notched, and Corner-Notched. Current research tends to follow the old concept that style types/changes occurred through time and should reveal those changes by strata. The intent of this research was to dispute that thought by a thorough examination of available projectile points found at this site. If they were scattered throughout all levels, it would indicate a mutualism. If, however, they were grouped by type within strata, it would confirm the current perception.

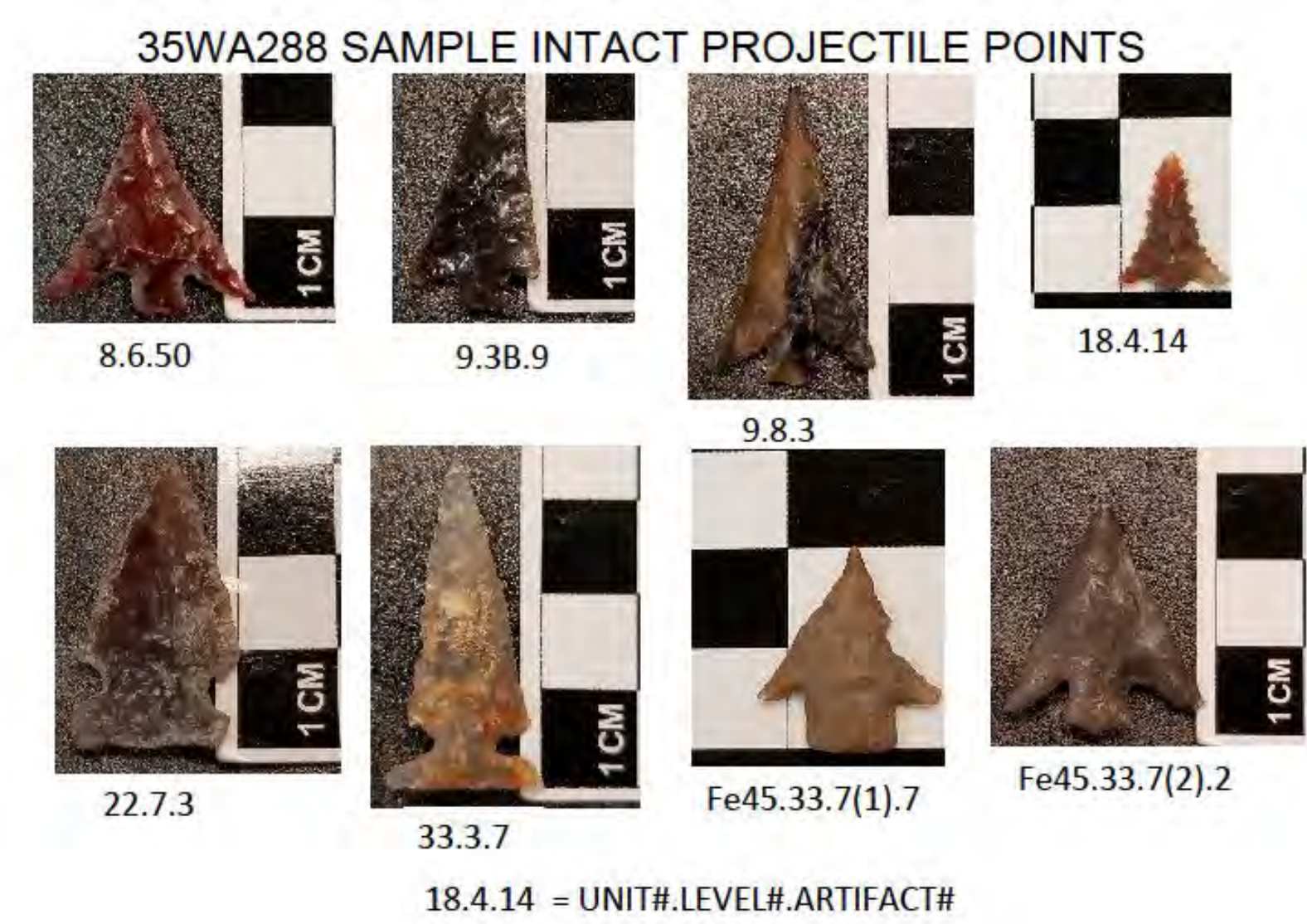


Figure 5: Base Style Samples

COUNT OF NOTCH TYPE BY LITHIC MATERIAL					
Material Type	BN	CN	SN	ST	TOTAL
BlkGBS		1			1
BS	2	10	2		14
CL	1	6			7
CLHT	2	12	2		16
CTJ	3	25		1	29
CTJHT	3	20	1		24
OB		2			2
OP	3	15	3	1	22
RGBS	2	9			11
<b>Grand Totals</b>	<b>16</b>	<b>100</b>	<b>8</b>	<b>2</b>	<b>126</b>

Figure 6: Notch Type by Lithic Material

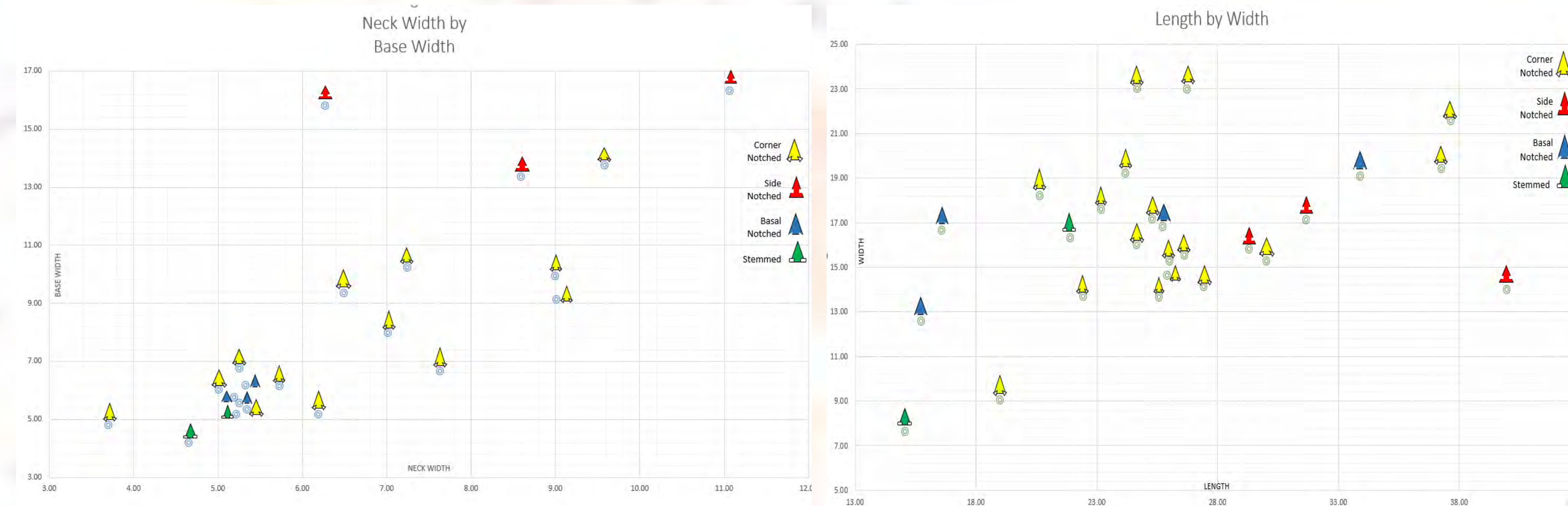


Figure 3a: Neck Width by Base Width

Figure 3b: Point Length by Width

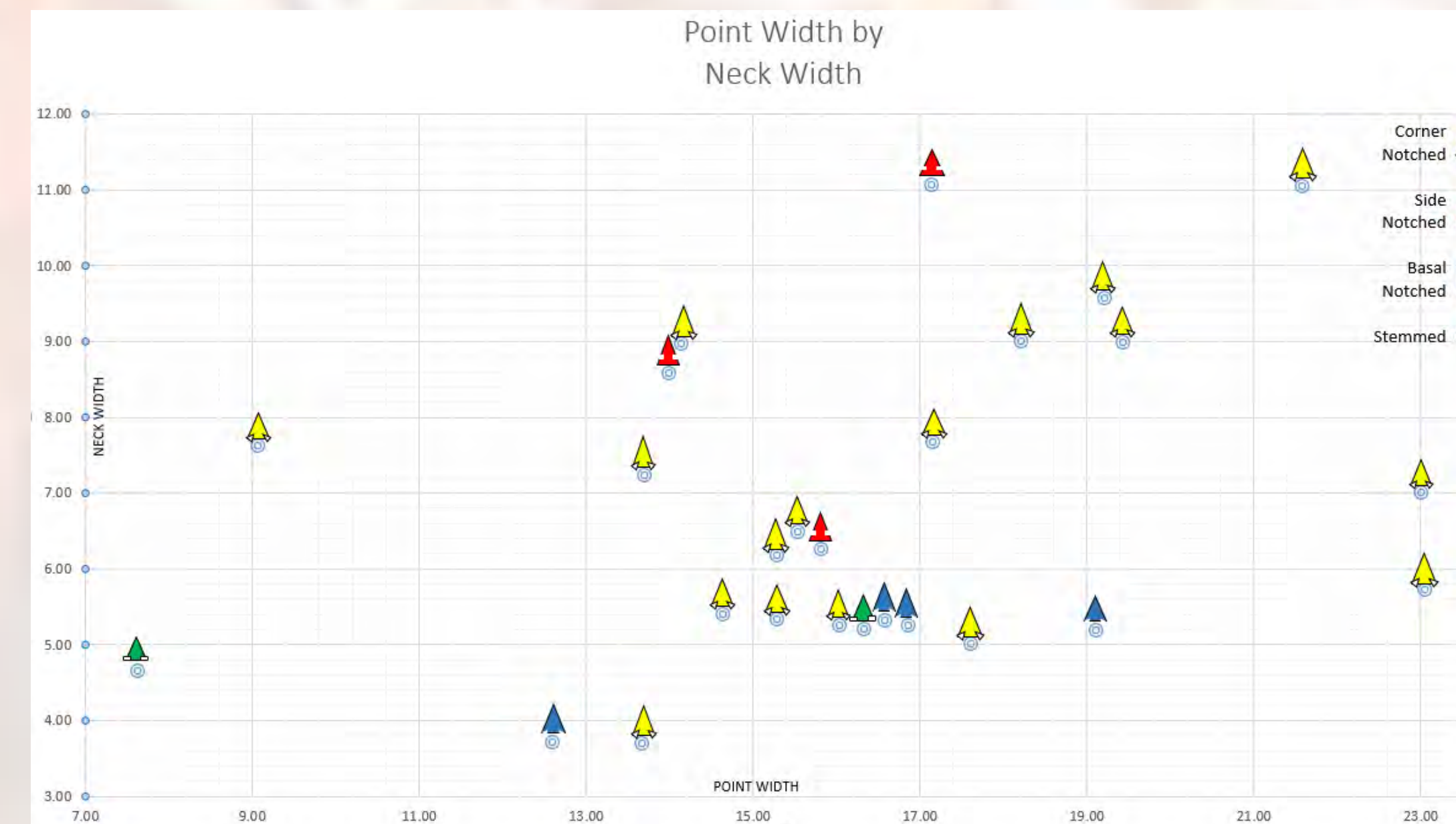


Figure 3c: Point Width by Neck Width

**METHODS**

The electronic database of the site was searched for the designation “PP,” indicating Projectile Points. Then a review of the hard-copy inventory forms was done for any Projectile Points that may have been missed within the database because of coding error.

Once both reviews were complete, a new database was created for the selected points that included provenience information. All points were pulled from their provenience bags to determine if they were complete enough to clearly establish their base type. There were initially 218 points pulled, with only 126 meeting the research criteria. Further investigation was done and entered into this database containing data such as Unit/Strata coordinates and metric measurements for length, width, neck and base widths. Using this additional information, it was possible to pull scatter charts, Figures 3a, 3b, and 3c, to graphically display these distributions of point types. Each type was indicated by color and a stylized graphic.

In order to indicate the location of the various points by excavation levels and zones, a review was done of sections of Correlation of Stratigraphy and Excavation Levels from 1991 and 1992 Archaeological Excavations at House 2, 35-WA-288, Hells Canyon, OR, Idaho State University, October 1992. R. Wayne Thompson. Figures 7, 8, and 48 provided layouts, by Zone, of areas of food processing hearths, work zones, and placement of lithics zones within Units.,

Then projectile points were spatially located within Zones of excavation by strata and placed in accordance within House 2. A handout is available from author of the ten strata levels according to the Zones with a sample Figure 7.

**RESULTS**

Rather than a distribution of point types based on strata, or “through time” occupation, this research shows that all point types/styles are distributed from bottom to top. See Figure 7, (example.)

Further, Corner-Notched points dominate all type styles at 100 (Figure 4), followed by Basal-Notched at 16. Material types (Figure 6), were lead by Chert/Jasper (CTJ and CTJHT), Opal (OP), and Chalcedony (CL) with minimal presence of Black Glassy Basalt (BlkGBS) and Obsidian (OB.) Only two Stemmed points were part of the project due to completeness. One was Chert/Jasper (CTJ) and the other was Opal (OP.)

Point styles/sizes were grouped in each case: Neck Width (NW), Base Width (BW), Point Length (PL) and Point Width (PW)

- Within the chart for Neck Width (NW) by Base Width (BW), there was a cluster of points in the range of NW - 5-6mm by BW - 5-7mm. The outliers were scattered from NW - 3.5-11mm by BW - 4-16mm. Within the central cluster, there were Corner-Notched, Basal-Notched, and Stemmed. The outlier points included three Side-Notched points, one with a NW of 11.06mm and BW of 16.33mm and PL of 31.65mm; another had a NW of 6.27mm, a BW of 15.82mm, and PL of 29.29mm; and NW of 8.59, a BW of 13.36, and PL of 39.96. Their sizes would indicate potential dart points.
- Point Length (PL) by Point Width (PW) contained a cluster of points with PL - 20-28mm by PW - 13-20mm. The outliers were PL - 15-40mm by PW - 8-23mm. A Side-Notched was the largest at 39.96mm length with a 13.99mm width, while a Stemmed point was the smallest at 15.06mm length by 7.62mm width.
- Point Width (PW) by Neck Width (NW) showed a cluster of points at PW - 13-20mm by NW - 5-10mm, with outliers at PW - 8-23mm by NW - 4-11mm. A very small Stemmed point had a PW of 7.62mm with a NW of 4.65 and PL of 15.06mm, while the largest point was a Corner-Notched with a PW of 21.58mm, NW of 11.05mm, and PL of 37.63mm.

Tryon Creek House 2

29	30	19	20	21	22
31	32	15	16	17	18

Figure 2: Layout of excavated units within House 2

33	34	1	2	23	24
35	36	3	4	25	26
37	38	5	6	27	28
		7	8		
		9	10		
		11	12		

NOTCH TYPES BY STRATA					
STRATA	BN	CN	SN	ST	TOTAL
47.20		3			3
47.30		11	2		13
47.40	4	8			12
47.50		7	1	1	9
47.60	5	23			28
47.70	2	7			9
47.80	3	21	1		25
47.90	2	9	2		13
48.00		8	1	1	10
48.30		2	1		3
48.40		1			1
<b>TOTALS</b>	<b>16</b>	<b>100</b>	<b>8</b>	<b>2</b>	<b>126</b>

Figure 4: Notch Types by Strata

**CONCLUSIONS**

Our research indicated that projectile point styles were not aligned spatially by strata, or “through time.” Data showed Corner-Notched (CN) points throughout all strata. With the exception of Strata 5A, 7 and 9, Side-Notched (SN) points were found from the surface to the bottom of the excavation. Basal-Notched (BN) points were found beginning at Strata 3A through Strata 7, with the exception of Strata 6. Stemmed points (ST), of which only two intact examples were found, were located at Strata 6 and 2.

These findings would indicate that within this site there does not appear to be style changes based on dates of occupation. This leads to a question of were styles possibly “traded in,” resulting to point styles being intermixed within strata? While Corner-Notched points were found in every material type, Chert/Jasper predominated, even though a local source of Obsidian was available. Did material availability have an influence on point styles?

The next step in this project will be to try to identify the styles as to indigenous group by using the metrics found and adding in Shoulder Length to the data.

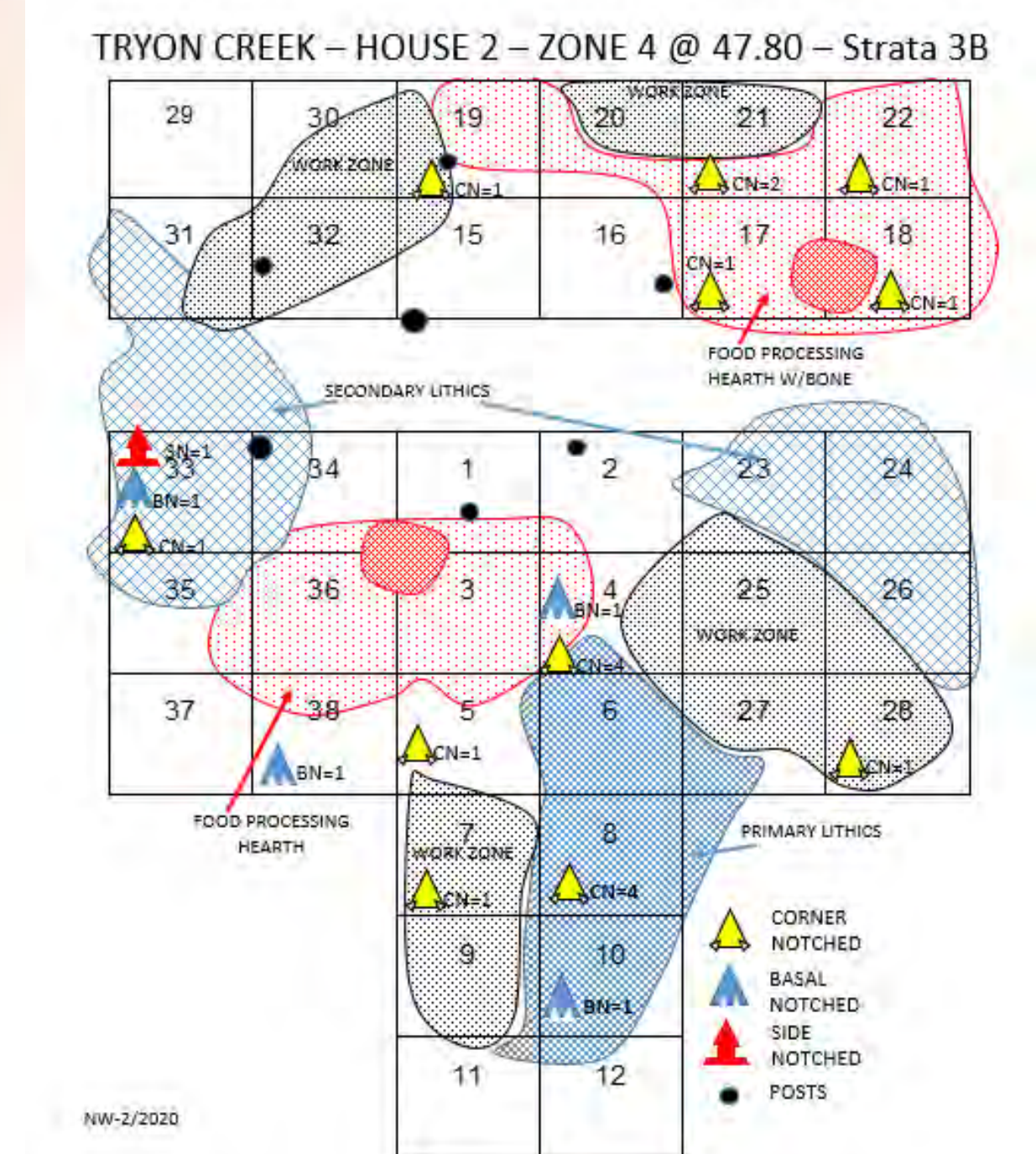
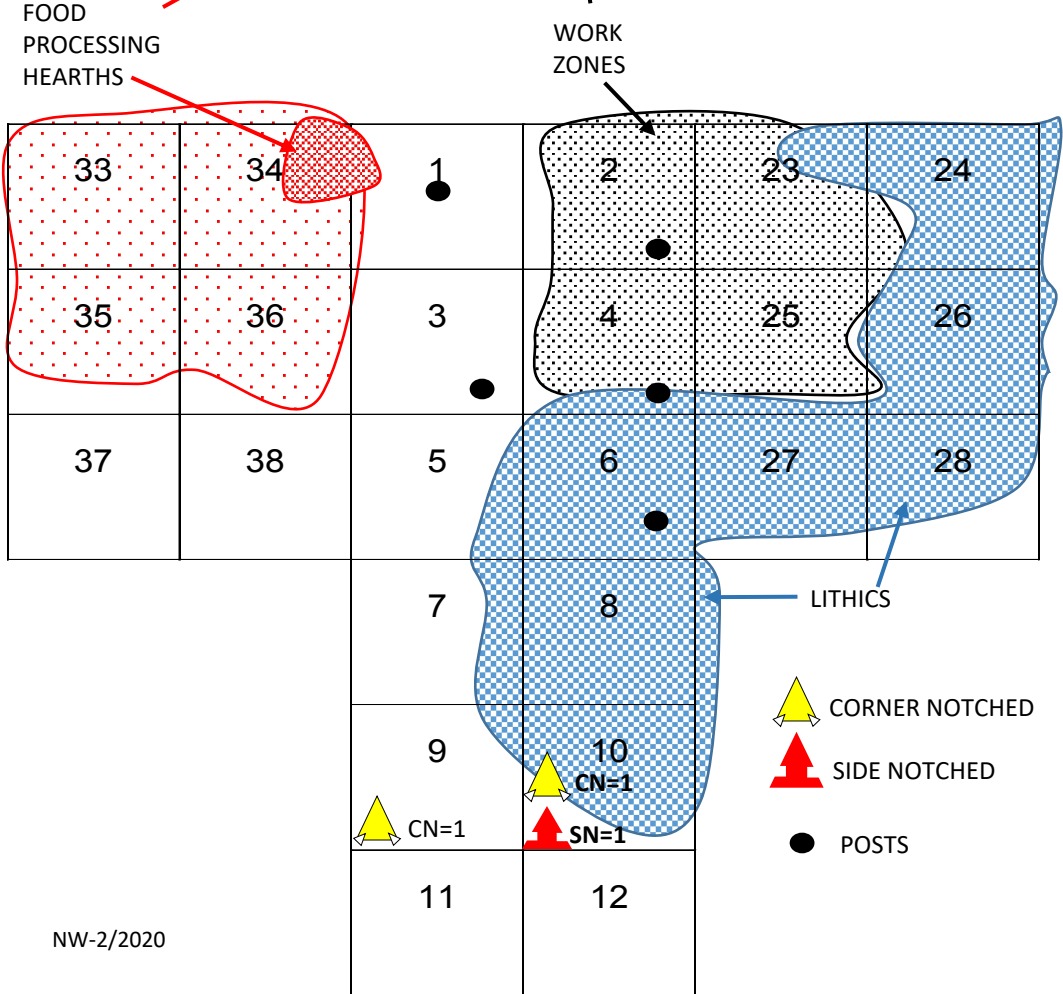
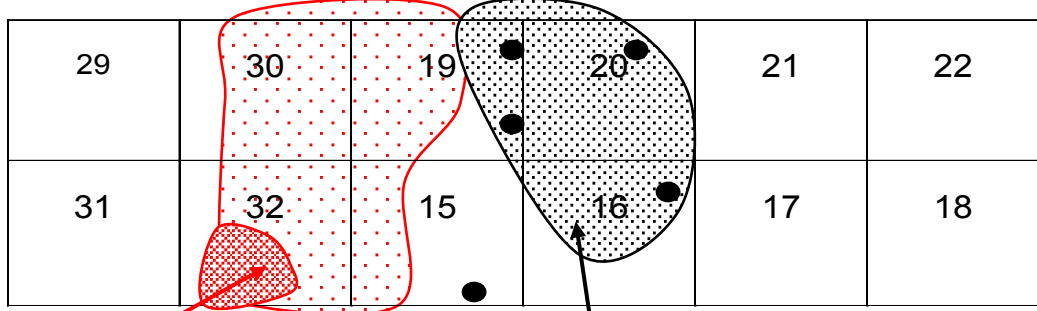


Figure 7: Zone 4 - Strata 3B Example of Zone/Strata Layouts- Complete group available upon request from author.

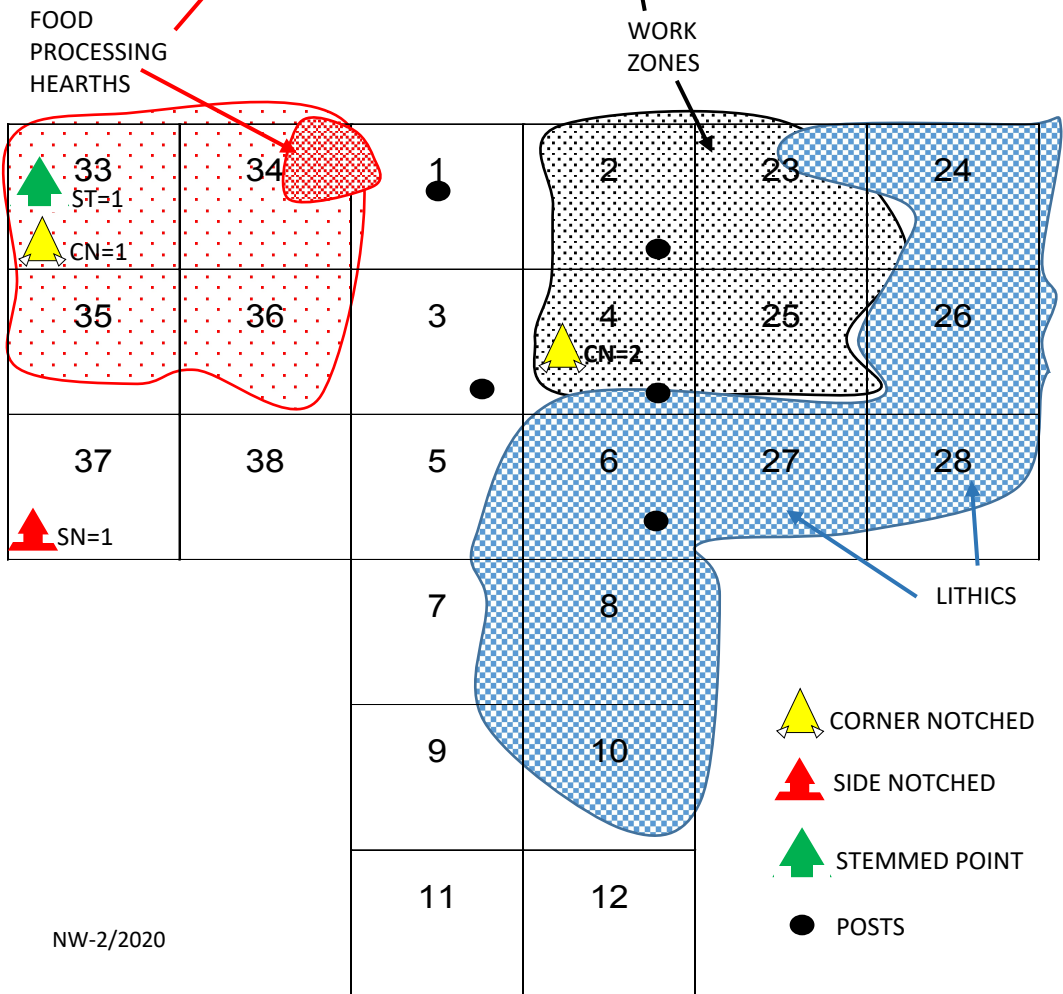
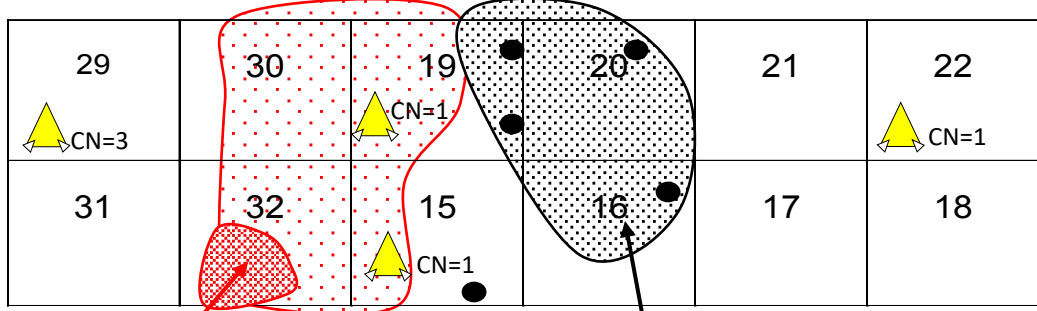
**References:** Master's Thesis of R.Wayne Thompson, CORRELATION OF STRATIGRAPHY AND EXCAVATION LEVELS FROM 1991 AND 1992 ARCHAEOLOGICAL EXCAVATIONS AT HOUSE 2, 35-WA-288, HELLS CANYON, OR, Idaho State University, October 1992.

**Acknowledgements:** We wish to thank the U.S. Forest Service for their continued assistance with this project.

TRYON CREEK – HOUSE 2 – ZONE 5 @ 48.30 – Strata 1

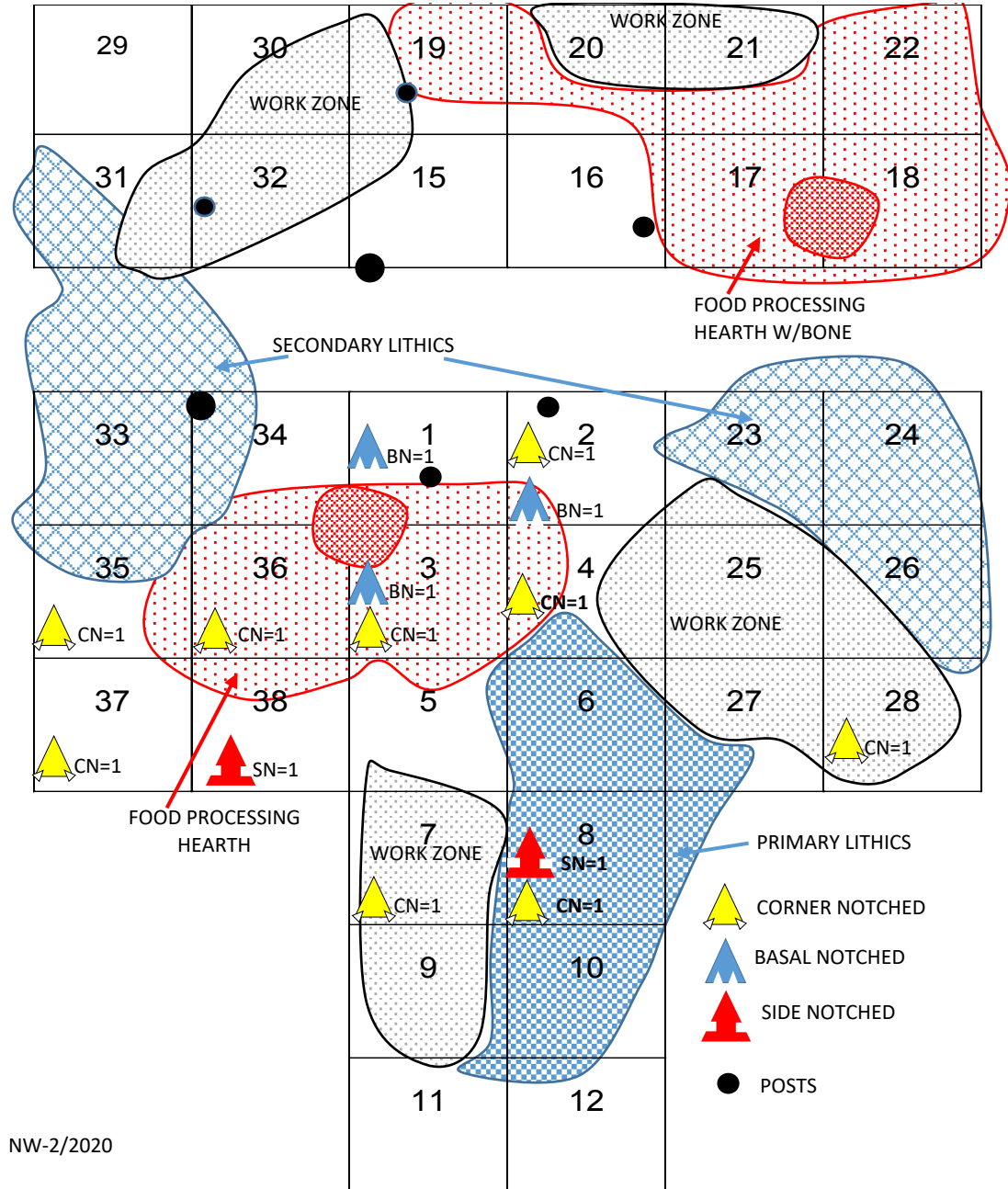


# TRYON CREEK – HOUSE 2 – ZONE 5 @ 48.00 – Strata 2



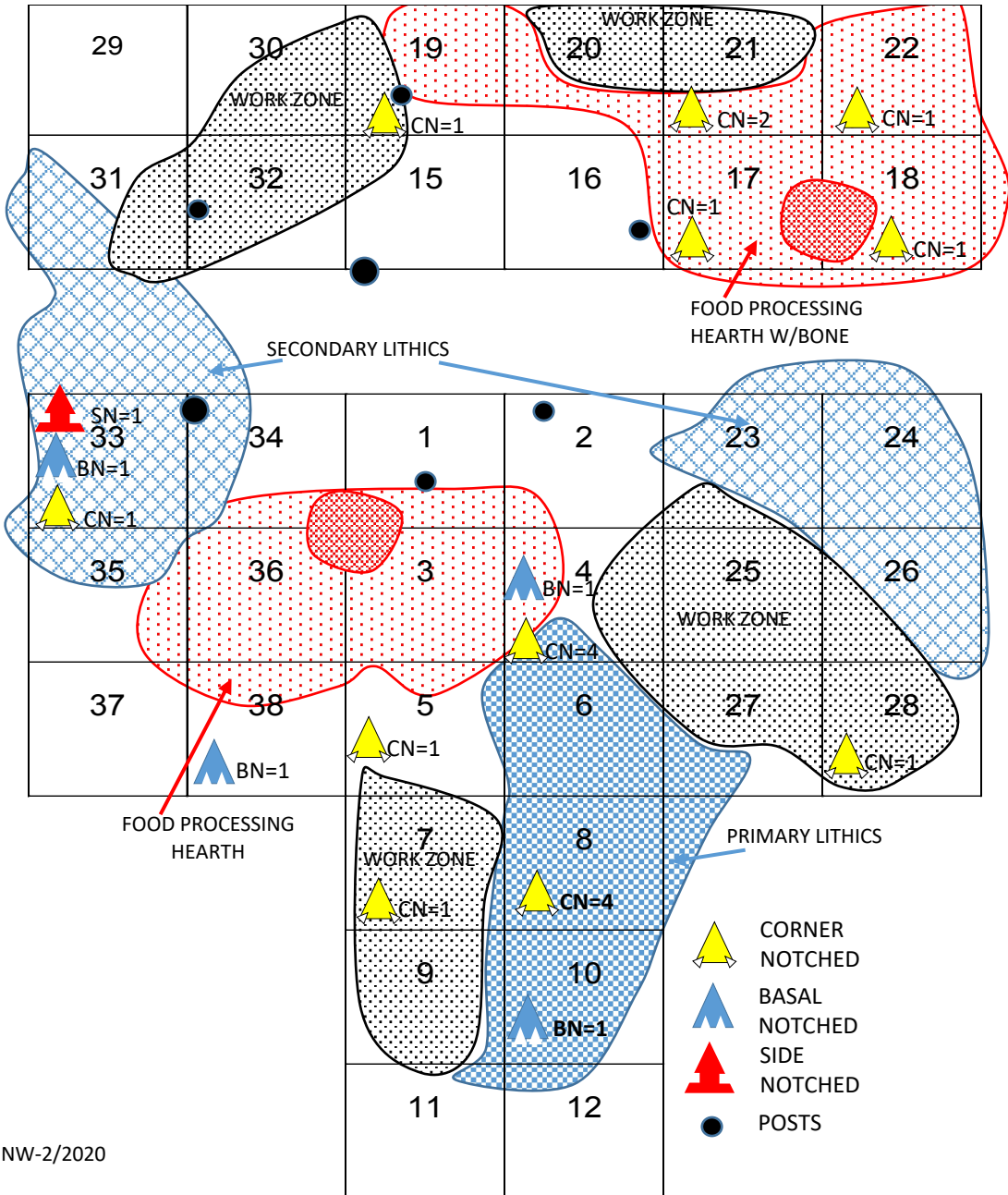
- ▲ CORNER NOTCHED
- ▲ SIDE NOTCHED
- ▲ STEMMED POINT
- POSTS

# TRYON CREEK – HOUSE 2 – ZONE 4 @ 47.90 – Strata 3A

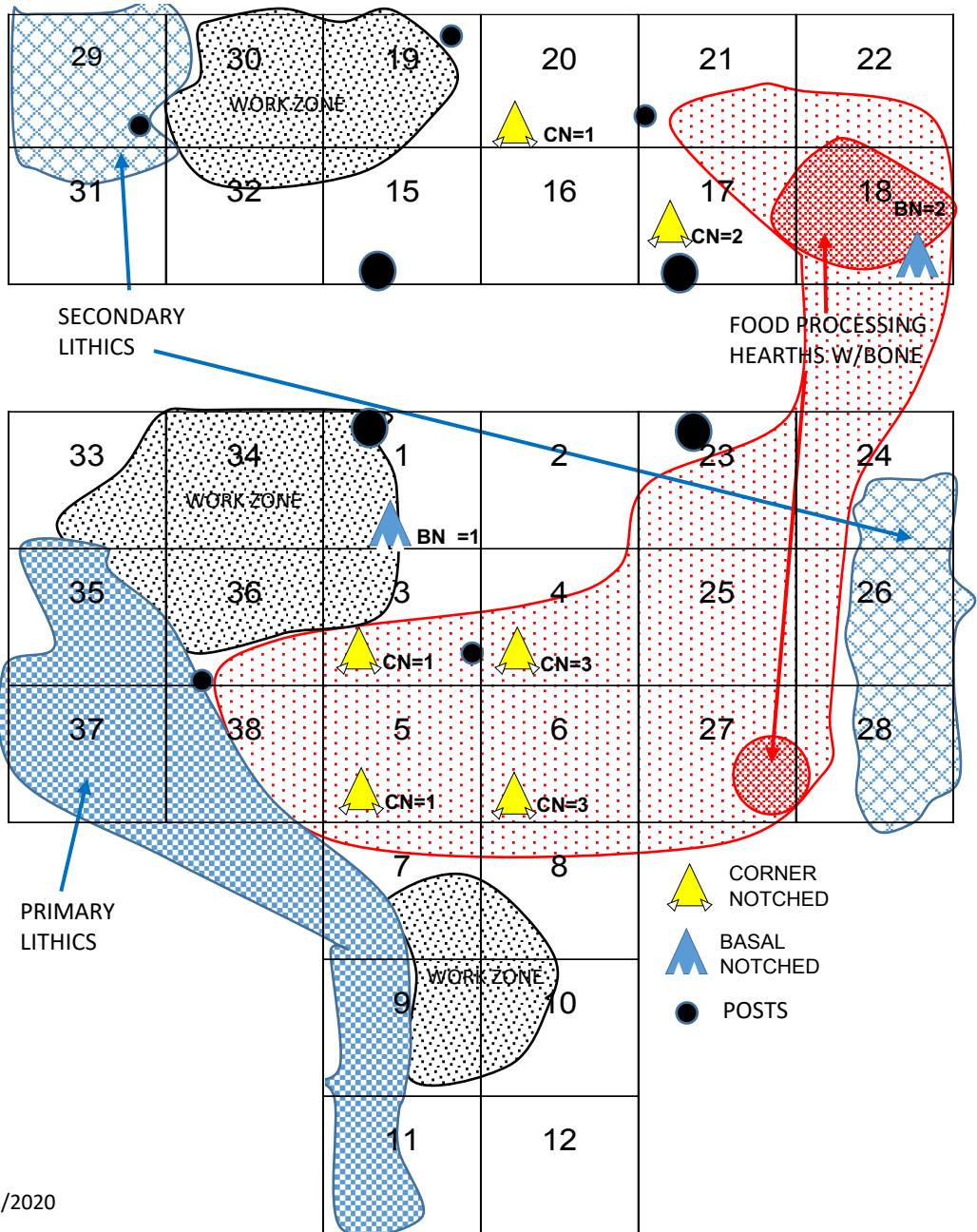




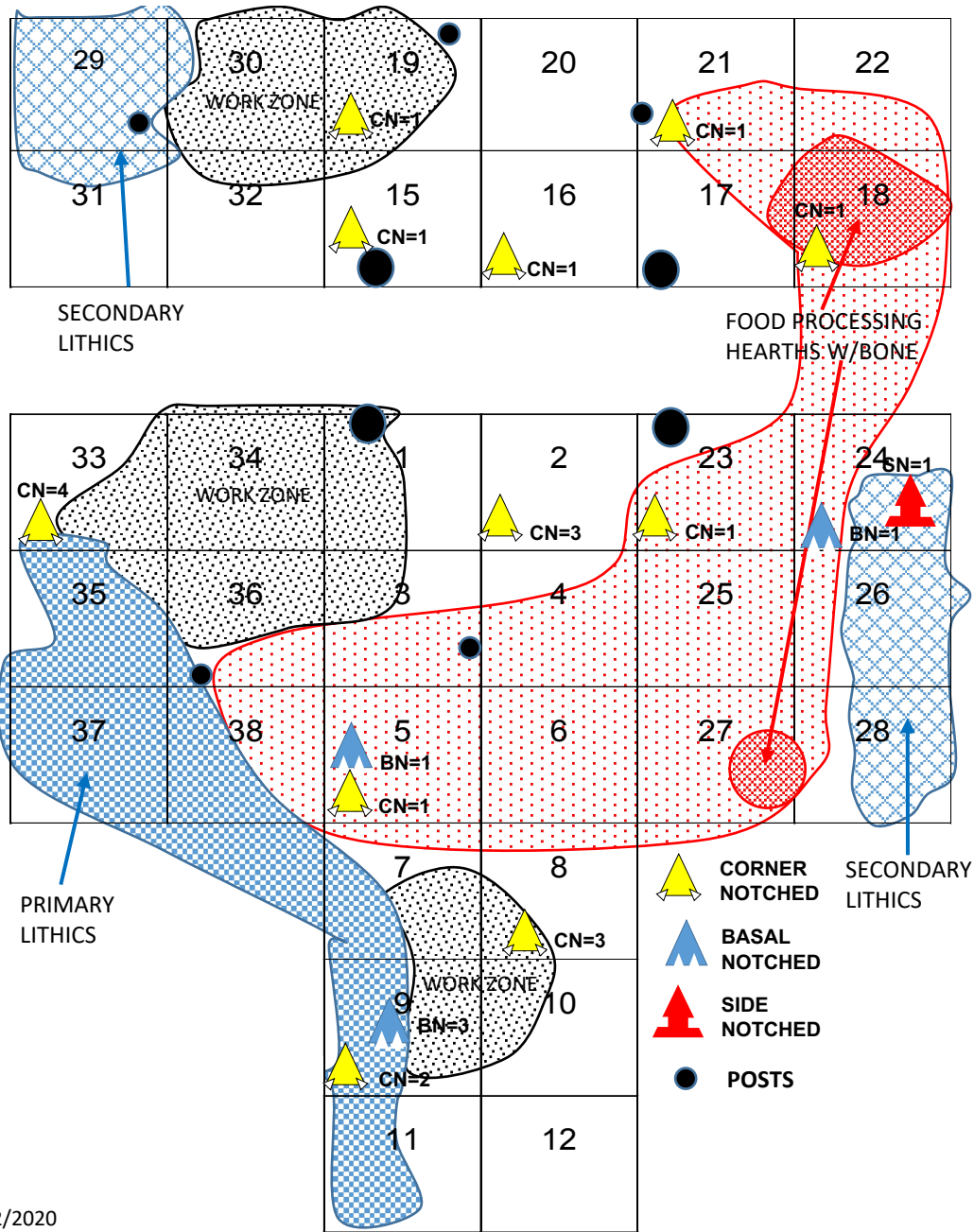
# TRYON CREEK – HOUSE 2 – ZONE 4 @ 47.80 – Strata 3B



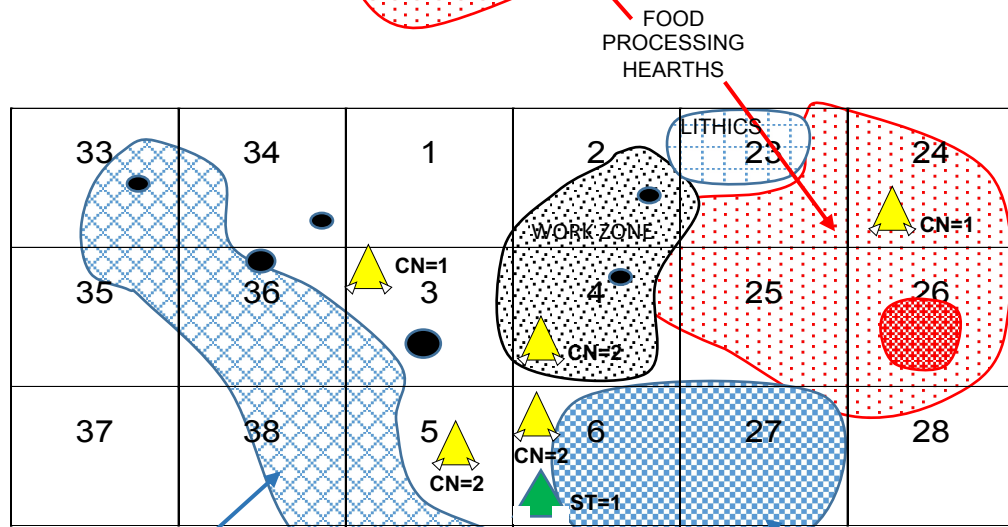
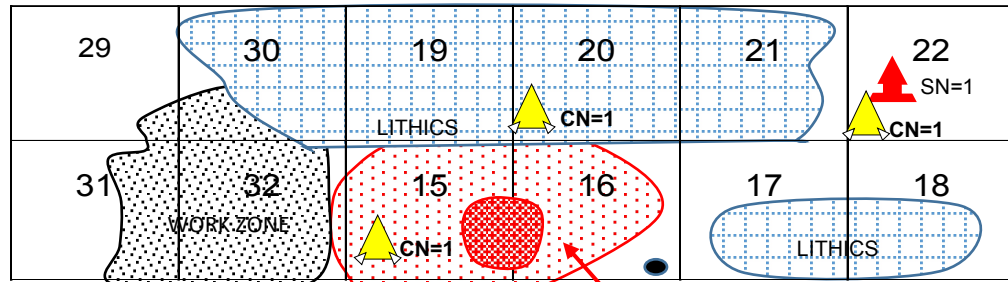
# TRYON CREEK – HOUSE 2 – ZONE 3 @ 47.70 – Strata 5A



# TRYON CREEK – HOUSE 2 – ZONE 3 @ 47.60 – Strata 5B

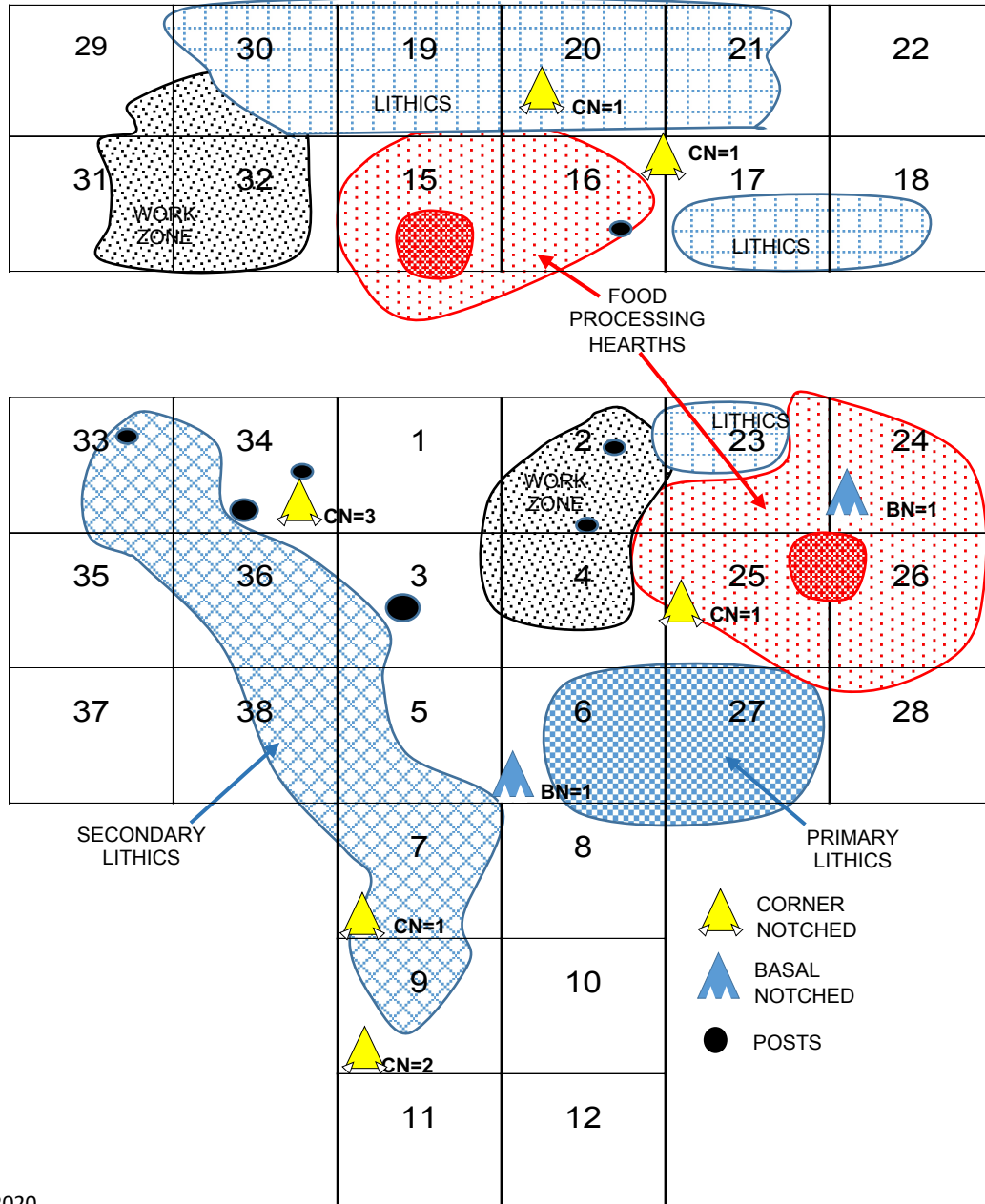


# TRYON CREEK – HOUSE 2 – ZONE 2 @ 47.50 – Strata 6



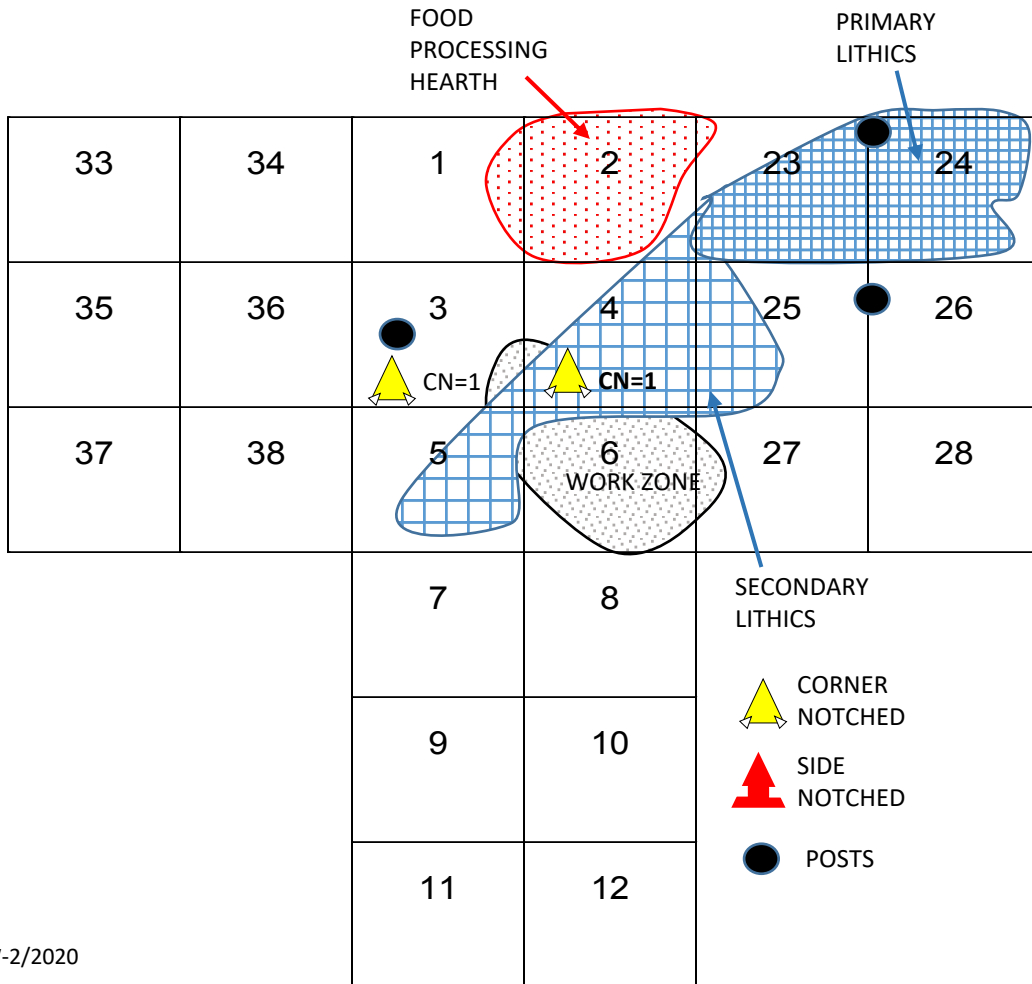
- CORNER NOTCHED
- SIDE NOTCHED
- STEMMED POINT
- POSTS

# TRYON CREEK – HOUSE 2 – ZONE 2 @ 47.40 – Strata 7



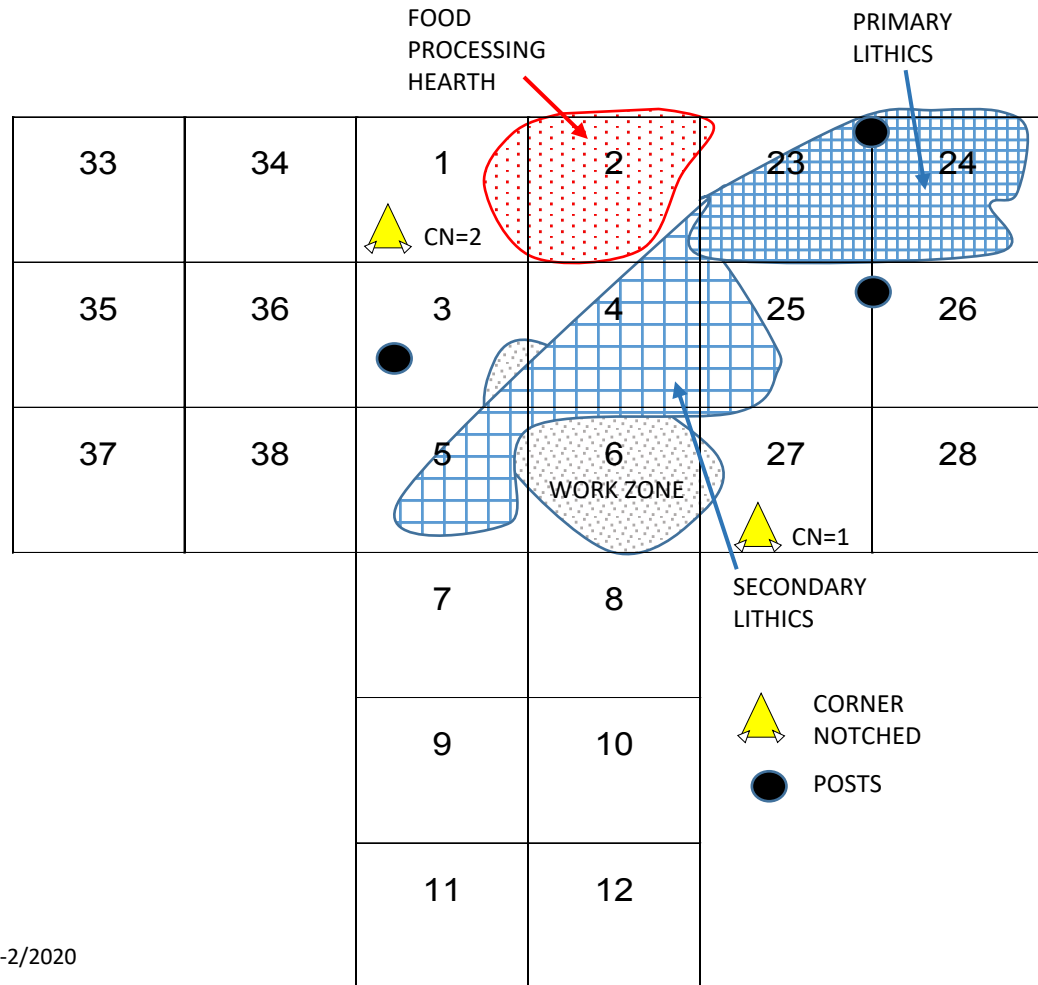
# TRYON CREEK – HOUSE 2 – ZONE 1 @ 47.30 – Strata 8

29	30	19 ▲ CN=2	20 ▲ SN=1	21 ▲ CN=1	22 ▲ SN=1 ▲ CN=2
31	32	15 ▲ CN=1	16	17 ▲ CN=1	18



# TRYON CREEK – HOUSE 2 – ZONE 1 @ 47.20 – Strata 9

29	30	19	20	21	22
31	32	15	16	17	18





LISTEN, LEARN, CHANGE:  
CELEBRATING DIVERSE  
PERSPECTIVES  
IN ANTHROPOLOGY

74<sup>TH</sup> NORTHWEST ANTHROPOLOGICAL CONFERENCE  
APRIL 7-9, 2021  
VIRTUAL



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## Listen, Learn, Change: Celebrating Diverse Perspectives in Anthropology

The Pacific Northwest is a complex mosaic of voices which we as anthropologists must listen to, learn from, understand, and partner with. Anthropology has a history of taking these voices for granted or being oblivious to their existence.

To challenge such tendencies and reiterate the intentional inclusivity that should characterize anthropological practice, the cancelled 73rd Northwest Anthropological Conference (NWAC) intended to focus on the importance of forming and celebrating inclusive partnerships in 2020. Although this conversation was interrupted, we ask our colleagues to continue to commit to creating a more connected and thoughtful future in 2021.

As anthropologists it is our privilege to attend NWAC every year. In 2021, we are asking our colleagues to forge spaces for inclusive dialogue. We want to be mindful to create

spaces for the voices of the people we work with so that all attendees have an opportunity to engage in constructive, inclusive dialogue. Whether this kind of approach is already fundamental to your anthropological practice or not, we invited you to share your partnership experiences and aspirations at this conference by organizing sessions or presentations that open spaces for the many voices that we anthropologists must hear.

The Northwest Anthropological Association and NWAC 2021 Planning Committee acknowledge that our community is living through a tumultuous historic moment and we thank you for being with us in 2021. Our 74<sup>th</sup> NWAC will be hosted virtually April 7-10, 2021 and we hope that this year's format and theme bring more of our Northwest colleagues together than ever before.

## 2021 NWAC Planning Committee

The Northwest Anthropological Conference is organized by volunteers from the northwest anthropology community. The Northwest Anthropological Association, a 501(c)3 non-profit, was formed to facilitate the NWAC. All NWAC attendees are NWAA members and are invited to join the annual business meeting which is held at the NWAC. Interested in hosting NWAC 2022 or beyond? Please reach out to the NWAA board. For more information visit: <https://www.nwaconference.com/about-the-nwaa>

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## 2021 Northwest Anthropological Conference Attendee Code of Conduct

### Overview

The organizers of the 2021 Northwest Anthropology Conference (NWAC) are committed to facilitating a safe, respectful environment for all conference attendees. The organizers will work to provide a welcoming and inclusive experience for everyone, regardless of gender, gender identity and expression, age, sexual orientation, disability, physical appearance, race, ethnicity, religion (or lack thereof), marital status, pregnancy, parenthood, veteran status, or any other category. We do not tolerate harassment of conference participants in any form. Sexual language and imagery is not appropriate for any conference venue, including talks, workshops, parties, and/or social media. Conference participants violating these rules may be sanctioned or expelled from the conference at the discretion of the conference organizers. Please refer to the final section of this Code of Conduct for a list of definitions and impermissible conduct. This Code of Conduct applies to all NWAC events, including all conference venues, virtual or in-person, and any conference-related social activities during or after the NWAC Virtual Meeting.

### *COVID-19, Xenophobia, and Racism*

Across the United States right now, COVID-19 infections are increasing along with feelings of anxiety, isolation, and fear. Along with those feelings, the world has seen an increase in misinformation, xenophobia, and racism. This has resulted in physical, financial, emotional, and psychological harm to our Asian and Pacific Islander colleagues, and will not be tolerated during any NWAC event, including this year's virtual conference. Please only use the names provided by the World Health Organization (WHO), "coronavirus" or "COVID-19," when discussing COVID-19 topics.

### Rules and Guidelines for Digital Discussion

- One speaker at a time. Please allow others to finish before speaking. Please do not interrupt or talk over others
- Please mute your microphone when not speaking or making a comment and utilize digital features, such as "Raise your hand," to allow for structured discussion
- If possible, silence email and text notifications to avoid interruptions
- NWAC leadership, session organizers, panel organizers, and breakout moderators will coordinate, refocus the group, and minimize crosstalk as needed
- This is a space where we believe the experiences of marginalized individuals (BIPOC, LGBTQIA2S+, the disabled community, social class, and so forth)
- If you are ever uncomfortable, or have a question or concern, and do not wish to speak out loud about it, feel free to send a private message to the program coordinator, session organizer, or NWAC leadership
- It is considered inappropriate to share the specifics of individuals' experiences, or attribute comments to individuals, when discussing the conference with those outside of the conference. Sharing ideas and experiences are fine, but be respectful of the privacy of your colleagues
- We will not allow microaggressive statements at any time during the conference. If someone makes a microaggressive statement by accident, be understanding when others take notice and call it out. If you

hear such a statement occur that goes unnoticed or unaddressed, please reach out to NWAC leadership with pertinent details (i.e. time of the event, session title, names, etc.)

- We recognize that there are many identities among our group and individual conference attendees have many intersecting identities themselves. Attendees and organizers should not feel compelled to share these identities if they do not wish to do so. Furthermore, we will try to express our concerns and thoughts in ways that do not make assumptions about the identities of fellow group members
- Background images should be appropriate, and public domain or owned by Socio
- Avoid attire with offensive messaging or imagery (profanity, nudity, cultural appropriation/insensitivity, etc.)
- No political messaging
- If you're unsure if something will be allowed, consult above section

### Use and Reproduction of Conference Content

Your registration entitles you to access to the 2021 NWAC Virtual Event Platform for which you have registered. Any and all other costs associated with your attendance shall be borne solely by you, and the 2021 NWAC organizers shall have no liability for such costs.

Use of Likeness: By participating in the 2021 NWAC you acknowledge and agree to grant 2021 NWAC the right at the 2021 NWAC to record, film, live stream, photograph, or capture your likeness in any media now available or hereafter developed and to distribute, broadcast, use, or otherwise globally to disseminate, in perpetuity, such media without any further approval from you or any payment to you. This grant to Virtual Event includes, but is not limited to, the right to edit such media, the right to use the media alone or together with other information, and the right to allow others to use or disseminate the media.

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Limitations on Use: By registering for the 2021 NWAC you agree not to sell, trade, transfer, or share your access, unless such transfer is granted by the 2021 NWAC Planning Committee. If the 2021 NWAC Planning Committee determines that you have violated this policy, they may cancel your access, retain any payments made by you, and ban you from future NWAC events.

Recording, Live Streaming, and Videotaping: Participants may not record or broadcast audio or video of sessions at 2021 NWAC.

### Incident Reporting at the Conference

Conference attendees who experience or witness harassment as defined in this Code of Conduct and/or the Northwest Anthropological Association's Policy on Harassment; and/or who are aware that a conference participant has been (or is in the process of being) sanctioned for assault or harassment by an adjudicating body and can provide documentation of the outcome; are encouraged to report such information.

The incident reporting system is not intended to constitute legal advice. In the event of any conflict between this Policy and applicable laws or institutional policy, the applicable laws or institutional policy prevails. Members and institutions are encouraged to seek their own counsel for advice regarding any specific situation. NWAA is not an adjudicating body; however, there are processes in place to support members in getting their grievances addressed when unwanted behaviors occur in the context of NWAA sponsored events and activities

(e.g. conferences, editorial activities, governance events). In accordance with the Northwest Anthropological Association (NWAA) Policy on Harassment Effective February 25, 2020, the NWAA Board of Directors will:

1. Receive complaints of harassment in the context of NWAA settings and activities.
2. Discuss the complaint with the alleged harasser and give them an opportunity to respond to the complaint if the complainant wishes for the Board to actively participate in resolving the complaint.
3. Record the dates, times, and facts of the incident and the results of the resolution process.
4. Be authorized to deem a complaint to merit no further pursuit by NWAA.
5. Make clear to any complainants that the Board is not providing legal advice and that the availability of the Board is not intended to substitute for a complainant's either making use of internal institutional mechanisms for addressing complaints, for consulting expert legal advice, or for seeking formal legal redress.
6. Make clear to all parties that NWAA can only promise confidentiality within the parameters of the law.
7. Prepare an annual report containing general information about the number and types of complaints received. This report will be made available to NWAA members.

Identification with documentation of prior adjudication needs to be provided to bar an individual from participating in NWAC events. If concerns about an individual are raised but documentation of adjudication cannot be provided, the review of the complaint will follow the procedures outlined above. Reports of incidents and prior sanctions can be made via the Northwest Anthropological Association website anonymous reporting page: [www.nwaconference.com/report](http://www.nwaconference.com/report).

Please contact any or all members of the [NWAA Board of Directors](#) to discuss any concerns.

### Acknowledgement

By registering for NWAC, you accept the obligation to treat everyone with respect and civility. You also accept the obligation to uphold the rights of all participants and attendees (including organizers, moderators, and ombudsmen; to be free from harassment. Attendees are bound by the Northwest Anthropological Association's (NWAA) Policy on Harassment (2020) and this conference's Code of Conduct. Attendees should also be aware that they are also bound by the codes of conduct at their home institution(s).

By registering for NWAC, you commit to maintaining respectful, ethical, and professional decorum throughout the conference. The organizers reserve the right to remove any individual(s) violating this Code of Conduct without warning or refund, and to prohibit attendance at future NWAC conferences. Should the organizers have concerns about an individual's attendance at this conference creating a safety (physical or mental) issue, the organizers may bar the individual from registering for and attending this or future conferences and related events.

Individuals proven to be harassers and/or assailants will be barred from participation in this conference. Late and/or day-of registrations will be rescinded immediately should information be received documenting a proven violation. Documented harassers/assailants should be identified to NWAC organizers by survivors or other reporters as early as possible. The organizers of this conference will not conduct their own investigation(s), but will allow investigations by law enforcement agencies, the RPA, the EEOC, universities, and employers.

## Definitions and Examples of Impermissible Conduct

The organizers understand that anthropological research presentations may include discussions and/or imagery of sexuality or sexual representation. Presentations may also include content on gender and/or gender identity, age, disability, physical appearance, body size, race, ethnicity, religion, and other categories. Should your presentation include any of the aforementioned sensitive content, please be sure that approval for their use has been obtained by appropriate entities/institutions, and that you provide the audience with an adequate warning of the type and nature of sensitive content.

### Definitions

**Discrimination:** the unjust or prejudicial treatment of others based on human differences

**Harassment:** offensive, belittling, threatening, or otherwise unwelcome behavior directed at someone based on protected characteristics. Harassment includes, but is not limited to:

- Comments or actions that minimize a person's lived experiences[i], identity, or safety
- Deliberate misgendering or use of "dead"[ii] or rejected names[iii]
- Deliberate "outing" of any person's lived experiences or identity without their consent
- Sustained disruption of talks or other events
- Physical contact without consent or after a request to stop
- Unwelcome sexual attention
- Deliberate intimidation or stalking of any kind – in person or online
- Collection or distribution of harassing photography or recordings
- Threats or acts of violence
- Advocating for, or encouraging, any of the above behavior

**Discrimination/Harassment is not:**

- Feeling persecuted for your social privilege
- 'Reverse' -isms, including 'reverse racism,' 'reverse sexism,' and 'cisphobia'
- Reasonable communication of boundaries, such as "leave me alone," "go away," or "I'm not discussing this with you."
- Refusal to explain or debate social justice issues when the person being asked is put in a defensive position based on their lived experience, personal identity, or safety
- Communication in a 'tone' you don't find congenial
- Discussion of sensitive topics
- Criticizing racist, sexist, cissexist, or otherwise oppressive behavior or assumptions

**BIPoC:** An acronym used to refer to Black, Indigenous, and People of Color. It is based on the recognition of collective experiences of systemic racism. As with any other identity term, it is up to individuals to use this term as an identifier

**Bullying:** seeking to harm, intimidate, or coerce someone perceived as vulnerable



**Trigger:** a reminder of a past trauma caused by a stimulus (a smell or sound, specific words or topics, etc.)

**Microaggression:** the verbal, nonverbal, and environmental slights, snubs, insults, phrasing, or belittlement, whether intentional or unintentional, which communicate hostile, derogatory, or negative messages to target persons based solely upon discriminatory belief systems

**Consent:** permission for something to happen or agreement to do something

**People of Color:** a collective term for people of Asian, African, Latinx, and Native American backgrounds, as opposed to the collective "White"

**Privilege:** a special right, advantage, or immunity granted or available only to a particular person or group

**Gender identity:** an individual's personal sense of having a particular gender. Gender identity may or may not relate to a person's birth sex

**Cisgender:** denoting or relating to a person whose sense of personal identity and gender corresponds with their birth sex

**Non-binary:** a term used to describe genders that don't fall into one of the two "binary" categories: male or female

**Queer:** describes sexual and gender identities other than heterosexual and cisgender. It is sometimes used to express that sexuality and gender are complicated, change over time, and might not fit neatly into traditional binary identities

**LGBTQIA2S+:** an inclusive acronym for those who identify as lesbian, gay, bisexual, transgender, queer, intersex, asexual, and two-spirit

**Preferred pronouns:** the pronoun that a person prefers to be used when they are referred to, in order to indicate their gender identity (e.g. "Anna lost her car keys"; "Taylor is an artist. They enjoy drawing and painting"). Often presented in the format (she/her/hers), (he/his), (they/them/theirs), etc. People may prefer more than one pronoun or use them interchangeably (e.g. him/him/they)

**Cultural appropriation:** the use of objects or elements of a non-dominant culture in a way that doesn't respect their original meaning, give credit to their source, or reinforces stereotypes or contributes to oppression

**Decolonize:** the active and intentional process of unlearning values, beliefs, and conceptions that have caused physical, emotional, or mental harm to people through colonization. It requires a recognition of systems of oppression

**Safe space:** Refers to an environment in which everyone feels comfortable expressing themselves and participating fully, without fear of attack, ridicule, or denial of experience

**Tokenism:** presence without meaningful participation. For example, a superficial invitation for the participation of members of a certain socially oppressed group, who are expected to speak for the whole group without giving this person a real opportunity to speak for themself

Additional definitions:

<https://environment.uw.edu/about/diversity-equity-inclusion/tools-and-additional-resources/glossary-dei-concepts/>

<https://www.antiviolenceproject.org/glossary/#microaggressions>

*Attribution: this Code of Conduct is based on examples from the SHA Virtual Conference Presenter Access Guide (Quinlan 2020), the NWAAP Policy on Harassment (2020), American Alliance of Museums 2021 AAM Annual Meeting and MuseumExpo, and the Association for Washington Archaeology Diversity Committee.*

[\[i\]](#) *“lived experiences” means the first-hand accounts and impressions of living as a member of a minority or oppressed group.*

[\[ii\]](#) *“deadnaming” means to use someone’s old name. It specifically refers to the practice of deliberately referring to a trans person by their pre-transition name. Not only is it disrespectful, it can be considered an act of violence, especially when a person is not publicly out as trans.*

[\[iii\]](#) *“rejected name” can also include persons who have changed their names for non-transition related reasons such as relationships, political statements, etc. Malcolm X changed his name for very specific reasons related to his identity; it is disrespectful to refer to him as anything besides Malcolm X*

2021 Northwest Anthropological Conference  
Daily Schedule

Wednesday, 7 April 2021

9:00 - 12:00 Tribal Caucus (Invitation Only)

Thursday, 8 April 2021

9:00 - 10:20 Opening: Conference Welcome, Student Paper Awards, Keynote Address  
 8:30 - 5:00 Making Your Way: Information for New Professionals in Anthropology in the Northwest  
 10:20 - 12:20 Geoarchaeology and Archaeological Lithics (Poster Session)  
 10:20 - 1:40 Archaeology Presentations (General Session)  
 10:20 - 12:00 Geoarchaeology and Archaeological Lithics (Poster Session)  
 10:20 - 3:00 Historical Archaeology (General Session)  
 12:00 - 1:00 Lunch  
 LGBTQIA2S+ Social Hour  
 1:00 - 2:00 Biological Anthropology and Archaeology (Poster Session)  
 1:00 - 3:00 Partnerships and Cultural Resources at the Hanford Site  
 1:00 - 3:00 Beyond Land Acknowledgements: Responsibilities to People and Place  
 3:00 - 4:00 History and Historical Archaeology (Poster Session)  
 3:00 - 4:00 Association for Washington Archaeology Mentorship Program  
 3:00 - 5:00 Engaging Hidden Contexts: New Examinations of Researcher Positionality  
 3:00 - 5:00 Annual Transportation Symposium  
 5:00 - 6:30 Association of Oregon Archaeologists Meeting

Friday, 9 April 2021

9:00 - 9:40 Opening: Tribal Caucus Public Highlights  
 10:00 - 5:00 Walking the Walk: Navigating an Archaeology Career in the Field and Beyond  
 10:00 - 11:00 Indigenous Perspectives in Anthropology and CRM (General Session)  
 10:00 - 12:00 Diversity in Archaeology  
 10:00 - 12:00 Anthropology Presentations (General Session)  
 10:00 - 5:00 Asian American Diaspora Archaeology in the Pacific Northwest  
 12:00 - 1:00 Lunch  
 BIPoC Social Hour  
 Northwest Anthropological Association Meeting  
 1:00 - 3:00 From Consultation to #landback: The Continuum of Agency Engagement with Tribal Nations  
 1:00 - 3:40 Assessing Colonial Heritage in the Northwest through Historical Archaeology  
 1:00 - 5:00 Nevertheless, She Persisted: Intersectional and Multivocal Perspectives on the Contributions of Women in Pacific Northwest Anthropology  
 1:40 - 5:00 Protecting Places that Matter: A Discussion Exploring Historic Properties of Religious and Cultural Significance to Indian Tribes  
 5:00 - 6:30 Association for Washington Archaeology Meeting

9:00 – 10:20	Conference Opening
9:00	<p>Welcome to NWAC 2021 Presented by the Northwest Anthropological Association</p> <p>Student Paper Awards Presented by Northwest Anthropological Association, Journal of Northwest Anthropology, Willamette Cultural Resources Associates, and Equinox Research and Consulting International</p>
9:20	<p>Keynote Address William A. White, III, PhD Assistant Professor, Department of Anthropology, University of California, Berkeley</p> <p><b>Building an Anti-Racist Anthropology</b> The 2020 Race Uprisings and ongoing anti-Asian American and Pacific Islander violence has pushed many anthropologists to take a stand against racism. We all want to do something to help but are finding ourselves stymied by the sheer size of the problem. At its core, racism is rooted in inequity and is perpetuated through trauma. None of us in the United States are immune of its effects. This talk addresses how taking a trauma-informed approach to our work and careers has the potential to address anthropology's role in structural racism. It also shows us a pathway toward helping us become anti-racism advocates in our own lives, workplaces, and communities. I draw upon examples of archaeology organizations in the United States who are working to realizing the anti-racist institutions BIPOC communities need. An anti-racism archaeology can be one of the tools this country uses to heal from the intergenerational trauma we have all suffered.</p> <p>William "Bill" White, III is an Assistant Professor of Anthropology at UC Berkeley where he specializes in historical archaeology of the African Diaspora, historic preservation, and community-based research. Born in Boise, Idaho, he completed his Bachelor's in anthropology at Boise State University in 2001 and an anthropology Master's at the University of Idaho in 2005. Since 2004, Bill has worked for environmental companies that took him to archaeology sites across the American West. His career in academia started while attending the University of Arizona where he worked for the Bureau of Applied Research in Anthropology (BARA) as an archaeologist. Bill completed his PhD at Arizona in 2017. His archaeological work also seeks to reach larger audiences by using blogging, vlogging, podcasting, and online publishing. He also employs local youth from underserved communities, specifically African Americans and Native Americans, in local archaeology projects. Bill currently resides in Hercules, California.</p> <p>The Keynote Address is sponsored by Boise State University.</p>

8:30 - 5:00 | Making Your Way: Information for New Professionals in Anthropology in the Northwest

A career in one of the many subfields of anthropology requires navigating a complex path using a wide array of knowledge, skills, and training. This session, organized by the NWAC New Professionals subcommittee, delves into the essential skills that new professionals will need to develop their careers. The major topics presented throughout the day include professional conference networking, how to apply for a job and the unique requirements of federal government, state government, and private sector jobs, considerations for choosing and applying for a graduate education program, and skills of tailoring a resume that will highlight your professional capabilities. Throughout the day this session will give participants the opportunity to interact with experienced professionals from throughout the region.

	Chairs: Sarah Steinkraus (she/her; Stell Environmental Enterprises), Sydney Hanson (she/her; WA Dept. of Archaeology and Historic Preservation)
8:30	<b>Conference Networking 101</b> Steve Hackenberger (he/him, Central Washington University)
11:00	<b>The Art of Applying for Federal Archaeological Positions</b> Carla Burnside (USFWS), Jamie Litzkow (BLM), Ayme Swartz (USFS)
12:00	Lunch
1:00	<b>Applying for State Jobs</b> Sydney Hanson (she/her; WA Dept. of Archaeology and Historic Preservation), Sarah Thirtyacre (she/her; WA Recreation and Conservation Office)
1:10	<b>Applying for Private Sector Jobs</b> Stephenie Kramer (she/her; Willamette Cultural Resources Associates)
1:20	<b>Grant Writing 101</b> Molly Carney (she/her; Washington State University), Kirsten Jenkins (she/her; Tacoma Community College)
2:00	<b>Choosing and Applying to Graduate Programs</b> James Brown (he/him; Washington State University), Patrick McCutcheon (he/him; Central Washington University), Catherine Zeigler (she/her; University of Washington), Gyoung-Ah Lee (she/her; University of Oregon), Mark Warner (University of Idaho)
2:40	<b>New Professionals Coffee Hour</b> Hosted by the NWAC New Professionals Subcommittee
3:40	<b>Resume and CV Workshop</b> Sarah Steinkraus (she/her; Stell Environmental Enterprises), Jennifer Ferris (she/her; HDR)

2021 Northwest Anthropological Conference Session Schedule  
Thursday, 8 April 2021

10:20 – 12:20	Geoarchaeology and Archaeological Lithics (Poster Session)
	Posters will be posted for the duration of the conference in the Poster Room. Please visit the poster at the scheduled time to chat live with the author/s.
10:20	<b>Projectile Points – Point Type Distribution: Tryon Creek House 2 (35WA288)</b> Noella Wyatt (Central Washington University)
10:40	<b>Developing a morphometric protocol for identifying and analyzing morphological variability in stone tools</b> Nik Simurdak (they/them; Central Washington University), Patrick T. McCutcheon (he/him; Central Washington University)
11:00	<b>Chemical Sourcing and Technical Analysis of Volcanic Glass Lithics from the Grissom Site (45KT301)</b> Nik Simurdak (they/them; Central Washington University), Patrick T. McCutcheon (he/him; Central Washington University)
11:20	<b>Quinault Indian Nation Cultural Resources Mapping with Ethnographic and LiDAR-derived Data</b> Naomi Brandenfels (she/her; Quinault Indian Nation), Faith Webster, Justine James, Jr., Lia Frenchman
11:40	<b>Are We Digging Deep Enough? Deeply Buried Holocene and Pleistocene Surfaces in the Moses Lake Dune Field, Grant County, Washington</b> Sean Stcherbinine (he/him; Archaeological and Historical Services - Eastern Washington University)
12:00	<b>A Geoarchaeological Investigation at Sentinel Springs (45KT297), southcentral Washington</b> Mackenzie Hughes, Steven Spencer, Josh Allen, Steven Hackenberger, Karisa Terry (Central Washington University)

2021 Northwest Anthropological Conference Session Schedule  
Thursday, 8 April 2021

10:20 - 1:40	
	Archaeology Presentations (General Session)
	Chair: James Brown (he/him; Washington State University)
10:20	<b>Assessing Settlement Dynamics in the San Juan Islands and Northwestern Washington, a Bayesian Approach</b> Adam Rorabaugh (Washington State Department of Fish and Wildlife), Amanda K. Taylor
10:40	<b>Ancient Cordage and Knotting on the Northwest Coast of North America</b> Dale Croes (Washington State University)
11:00	<b>The Good, the Bad, and the Ugly: Chronometric Hygiene of Southern Cascade Radiocarbon Chronologies</b> James Brown (he/him; Washington State University), Patrick T. McCutcheon (he/him; Central Washington University)
11:20	<b>The Stylistic Evolution of Pecos River Style Pictographs and their Relationship with other Archaic Rock Art Styles in the Southwest: A Hypothesis</b> James Macrae (he/him; Falcon Cultural Resources, LLC)
11:40	<b>Using Debitage Analysis to Infer Artifact Transport: A Case Study from Harney Basin, Oregon</b> Galen Miller-Atkins (he/him; Anderson Perry and Associates, Inc.)
12:00	Lunch
1:00	<b>Exploring the Analytical Contribution of 0.3175 cm Mesh Sized Lithic Debitage at the Sunrise Ridge Borrow Pit Site (45PI408), Mt. Rainier National Park, Washington</b> David Davis (Central Washington University), Patrick T. McCutcheon (he/him; Central Washington University)
1:20	<b>After the Fire: Disaster Archaeology as Community Service</b> Chelsea Rose (she/her; Southern Oregon University Laboratory of Anthropology), Alex DeGeorgey, Emily Taber, Kassandra Rippee, Michelle Stegner

2021 Northwest Anthropological Conference Session Schedule  
Thursday, 8 April 2021

10:20 – 3:00	Historical Archaeology (General Session)
	Chairs: Bethany K. Mathews (she/her; Antiquity Consulting), Natalie Bankuti (she/her; Antiquity Consulting)
10:20	Goian Bego: Basque Gravestone Symbol Analysis in the Intermountain West States Saffron Brooks (she/her; University of Idaho)
10:40	Gunboats on the Columbia River: The Attack on Long Island, the “Perkins Massacre” (45BN02123), and the Bannock War of 1878 Nathan May (Confederated Tribes of the Umatilla Indian Reservation)
11:00	The History of the Tutuilla Presbyterian Church on the Umatilla Indian Reservation, Umatilla County, Oregon Kristen Tiede (she/her; Confederated Tribes of the Umatilla Indian Reservation)
11:20	Shedding Light on Early Twentieth Century Logging: The Archaeological Remains of a Lighting Power Plant at Camp A of the Bridal Veil Lumbering Company, Multnomah County, Oregon (ca. 1910~1920) and its Implications for Camp Life and Industrial Culture of the Period Chris Donnermeyer, Trent Skinner, Bobby Saunters, Brian Lay
11:40	A Can of Worms? William Schroeder (they/them/their and/or he/him/his; Arête Cultural Resources Management)
12:00	Lunch
1:00	Pull Tab Archaeology: participatory archaeology without borders Jobbe Wijnen (International Centre for Pull Tab Archaeology)
1:20	pXRF in Historical Archaeology: Understanding Publishing Disparities and Possible Appropriate Uses Emma Altman (she/her; University of Idaho)
1:40	Mapping Dirt Roads and Rail Grades from Drone Imagery Using a Mask Region-based Convolutional Neural Network Dale Hamilton (Northwest Nazarene University), Gabriel Johnson
2:00	Implementation of Deep Learning to Map Dredge Tailings from Hyperspatial Aerial Imagery Dale Hamilton (Northwest Nazarene University), Robert White
2:20	Some Very Interesting Artifacts I Emily Hodgman-Richter (she/her; University of Idaho, Chemistry Dept.), Ray von Wandruszka
2:40	Some Very Interesting Artifacts II Nikaila Price (she/her; University of Idaho, Chemistry Dept), Ray von Wandruszka



2021 Northwest Anthropological Conference Session Schedule  
Thursday, 8 April 2021

12:00 – 1:00 LGBTQIA2S+ Social Hour

This space is meant to serve as a professional and/or academic network as well as a support system for LGBTQIA2S+-identifying students and professionals. The goal of this session is to provide an informal and inclusive environment in which attendees can safely share their thoughts, experiences, challenges, and questions.

Chairs: Katie Kitch, Mars Galloway

1:00 – 2:00 Biological Anthropology and Archaeology (Poster Session)

Posters will be posted for the duration of the conference in the Poster Room. Please visit the poster at the scheduled time to chat live with the author/s.

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| 1:00 | <b>Northwest Native Plants: An Online, Digital Space for Ethnobotanical and Paleoethnobotanical Knowledge</b><br>Molly Carney (she/her; Washington State University), William Clements, Jade d'Alpoim Guedes (UC San Diego), Shannon Tushingham (she/her; Washington State University) |
| 1:20 | <b>Working with Canine Forensic Teams: Collaborative Disaster Archaeology</b><br>Kassandra Rippee (she/her; Coquille Indian Tribe), Kassandra Rippee, Chelsea Rose, Alex DeGeorgy, Emily Taber, and Michelle Stegner   |
| 1:40 | <b>Camera trap data sampling methodology of long-tailed macaques (<i>Macaca fascicularis</i>) at Don Chao Poo Forest, Phana, Thailand</b><br>Ashton Asbury (she/her; Central Washington University), Hingey, M. D., Sheeran, L. K., Gabriel, K., Whiting, L. D.                        |

1:00 – 3:00

Partnerships and Cultural Resources at the Hanford Site

The Hanford Site Cultural Resources Working Group brings area Tribes to the table in the context of the Department of Energy's responsibility for one of the largest nuclear cleanup efforts in the world and the largest superfund cleanup site in the country. For over thirty years, the group has worked hard to balance the essential task of environmental cleanup and the goals of cultural resources management. Session participants will discuss the evolution of the longstanding partnership and various challenges and successes of the working group.

1:00

Chairs: Mary Petrich Guy (she/her; Hanford Mission Integration Solutions)  
Keith Mendez (Hanford Mission Integration Solutions)

**Panel**

Warren Hurley (Department of Energy)  
Trina Sherwood (Yakama Nation Environmental Restoration/Waste Management)  
Alyssa Buck (Wanapum)  
Rose Ferri (Yakama Nation Environmental Restoration/Waste Management)  
Jonathan Meyer (USFWS)  
Chris Wilson (Advisory Council on Historic Preservation)  
Keith Mendez (Hanford Mission Integration Solutions)  
Rob Whitlam (Department of Archaeology and Historic Preservation)  
Ira Matt (FPO NRCS, Former DOE Tribal Affairs Program Manager at Hanford)  
Josiah Pinkham (Nez Perce Tribe)

1:00 – 3:00 Beyond Land Acknowledgements: Responsibilities to People and Place

Land acknowledgements are a widely-deployed practice for opening events and are intended, in some way, to acknowledge the Indigenous people within whose homelands an event takes place. They are performed by Indigenous people within whose ancestral territories an event is hosted, as well as non-Indigenous and displaced Indigenous people. What does it mean to acknowledge our presence within occupied Indigenous homelands within our personal and/or professional lives, and how does the land acknowledge us? How do land acknowledgements articulate with the differing ontological, epistemological, and axiological frames that shape our responsibilities and rights vis-a-vis Indigenous people (as community member, guest, or occupier) and their homelands? What does it look like to go beyond the performance of land acknowledgement? How can/does that manifest personally and/or institutionally? This session is open to multiple presentation formats including papers, open discussion, poetry/spoken word, visual or arts, performance arts, or other means of self-expression.

	Chair: Adam Rorabaugh (Washington State Department of Fish and Wildlife)
1:00	<b>Intro</b> Dr. Karen Capuder (she/her; Confederated Tribes of the Colville Reservation)
1:20	Mo Major
1:40	<b>Buffalo Whispers and Rematriation in the Moses Coulee Region of Central Washington State</b> Dr. Karen Capuder (she/her; Confederated Tribes of the Colville Reservation), Randi Shaw (she/her; The Nature Conservancy of Washington)
2:00	<b>Bent but not Broken: Overcoming Barriers to Cooperative Management</b> Kat Russell (Bureau of Land Management)
2:20	Breakout with Questions
2:35	Regroup for Discussion, Q&A

3:00 – 4:00 History and Historical Archaeology (Poster Session)

	Posters will be posted for the duration of the conference in the Poster Room. Please visit the poster at the scheduled time to chat live with the author/s.
3:00	<b>Western Washington Women Homesteaders: Summary Statistics and Spatial Patterns for Nineteen Counties</b> Bethany K. Mathews (she/her; Antiquity Consulting)
3:20	<b>Historical Archaeology of Transferware on Northwest Coastal Sites</b> Natalie Bankuti (she/her; Antiquity Consulting)
3:40	<b>Retracing Garnett's Raid: geographic context of the 1858 War of Ruthlessness in the Cascade Mountains and Columbia River Basin</b> Matt Breidenthal (Stell Environmental Enterprises)

3:00 – 4:00 Association for Washington Archaeology Mentorship Program

Join us to hear about the new Association for Washington Archaeology Mentorship Program. With the roll out planned for April 2021 come to hear how this program is being structured and what the hope for this program is. If you have questions or might want to sign up for this great program please join us for the 1 hour session with short presentations about the program including the roll out and the matching program and what we hope both mentors and mentees will get from this program.

- 3:00
- Chairs: Anna Coon (Central Washington University),  
Elizabeth Dyess (Archaeological and Historical Services, EWU)
- Session Participants**  
Anna Coon (she/her; Central Washington University)  
Elizabeth Dyess (she/her; Archaeological and Historical Services, EWU)  
Kelly Bush (Equinox Research and Consulting International Inc.)  
Gunnar Werhan (University of Aberdeen)  
Julia Furlong (Archaeological and Historical Services, EWU)

3:00 – 5:00 Engaging Hidden Contexts: New Examinations of Researcher Positionality

Anthropologists are well aware that our personal context in relation to our research is crucial. With time and effort, we have become better at reflecting on our impacts to our own research. How do we expand this reflexivity to larger sociopolitical contexts? How do we come to examine how our own contexts affect not just our research, but our professional relationships and citational practices? In today's technopolitical climate where information is more accessible, how do we critically engage in discussions about our place in the world and how it affects our professional lives? This round-table discussion will examine the ways we contextualize the positionality of historic and modern researchers. We will also discuss how to engage new forms of information relevant to positionality discussions and how to unveil previously obscured information. Our place in the world affects more than just our research areas.

- 3:00
- Chairs: Victoria Capell (she/her; Central Washington University),  
Nikolai Simurdak (they/them; Central Washington University)
- Panel Participants**  
Victoria Capell (she/her; Central Washington University)  
Nikolai Simurdak (they/them; Central Washington University)  
Jazmin Gonzalez (she/her, Central Washington University)  
Dr. Marwa Ghazali (she/her, Central Washington University)

3:00 – 5:00 Annual Transportation Symposium

A collection of papers and presentations focusing on transportation projects from across the region. This year's session will include consideration of archaeology and historic-period built environment resources in Oregon and Washington. Participants include cultural resource management professionals from state and local transportation agencies, private consulting firms, and state regulatory agencies.

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|      | Chairs: Alexander Stevenson (he/him; Sound Transit),<br>Scott Williams (he/him; Washington State Department of Transportation)   |
| 3:00 | <b>Deep impacts working group: A conceptual outline</b><br>Alex Stevenson (Sound Transit)  |
| 3:20 | <b>Fish Passage Barrier Removal and Cultural Resources, So Far: Some Interim Data and Discussion</b><br>Paula Johnson (she/her; Willamette Cultural Resources Associates, Ltd.)  |
| 3:40 | <b>Same Places, New Eyes: Applying the Cultural Landscape Evaluation Approach to Transportation Infrastructure Projects</b><br>January Tavel (she/her; ICF), Tait Elder (he/him; ICF); Cassandra Manetas   |
| 4:00 | <b>The State of the State's Transportation Cultural Resources Management: the View from WSDOT and DAHP</b><br>Scott Williams (he/him; Washington State Department of Transportation), Dennis Wardlaw (WA Dept. of Archaeology and Historic Preservation) |
| 4:20 | <b>Discussion</b>  |

5:00 – 6:30 Association of Oregon Archaeologists Meeting

Please join the Association of Oregon Archaeologists for a Happy Hour to discuss updates on current efforts by the organization and plan for future events, including potential workshops and the 2021 Business Meeting.

OA Virtual Happy Hour Itinerary

1. Treasurer's Report

- Current balance \$8,688.00
- Current membership: 129
- NWAC Sponsorship of \$250 sent

2. CAHO:

- May need to skip an issue due to lack of submissions
- Encourage NWAC presenters to submit their papers for inclusion in CAHO

3. Updates:

- SHPO Update: John Pouley
- Legislative Update: Anna Neuzil/Brad
- Contractor database fee startup, discuss uses for any excess fees: Katie/Jamie
- Workshop status: Stephanie/Rory
- Committee Updates

4. Potential Discussion Topics (not an exclusive list!)

- Grants: Research Grant, potential for two this year. Call for submissions.
- Workshop brainstorm
- Service award: Call for nominations

5. What's on YOUR mind?



2021 Northwest Anthropological Conference Session Schedule  
Friday, 9 April 2021

9:00 – 9:40 Tribal Caucus Public Highlights

Chair: Jon Shellenberger

10:00 – 5:00 Walking the Walk: Navigating an Archaeology Career in the Field and Beyond

Working in archaeology requires education beyond the classroom. The NWAC New Professionals subcommittee has organized several informative presentations and panels that will provide people who are new to the field with information that may not be covered in a classroom. This session will build on yesterday's, beginning with a discussion of careers in physical anthropology. Next, the session will cover situations that are unique to archaeological fieldwork in the northwest and how to effectively navigate them. Topics will include best practices for construction monitoring, tips for fieldwork, health and safety rights as a fieldworker, and considerations for selecting a field school. Experts from the northwest and beyond will share their knowledge to help new professionals gain confidence as they begin their careers.

Chair: Kirsten Jenkins (she/her; Tacoma Community College)

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|-------|---|
| 10:00 | <b>Physical Anthropology Jobs: Options and Advice</b><br>Guy Tasa (he/him; WA Dept. of Archaeology and Historic Preservation), Juliette Vogel (she/her; WA Dept. of Archaeology and Historic Preservation), Alyson Rollins, Nichole Fournier (she/her), Chris Casserino |
| 10:40 | <b>Archaeological Monitoring Pro-tips and Fieldwork Pro-tips</b><br>Chris Noll (Archaeological and Historical Services), Cassie Manetas, Mark Steinkraus (he/him; Stell Environmental Enterprises)  |
| 11:40 | <b>Worker's Rights and COVID-19 Safety</b><br>Sarah Steinkraus (she/her; Stell Environmental Enterprises)   |
| 12:00 | <b>Lunch</b>  |
| 1:00  | <b>Field Schools</b><br>Kirsten Jenkins (she/her; Tacoma Community College), Matt Emerson (Amherst College), Karisa Terry (Central Washington University), Colin Grier (Washington State University), James Brown (he/him; Central Washington University)               |
| 2:40  | <b>New Professionals Coffee Hour</b><br>Hosted by the NWAC New Professionals Subcommittee   |
| 3:40  | <b>Anthropology Job Fair</b><br>Hosted by the NWAC New Professionals Subcommittee   |

2021 Northwest Anthropological Conference Session Schedule  
Friday, 9 April 2021

10:00 – 11:00	<b>Indigenous Perspectives in Anthropology and CRM (General Session)</b> Chair: Sela Kalama (Nisqually Indian Tribe Historic Preservation Office)
10:00	<b>Mitigating Crisis: Lessons Learned at Warm Springs Geo Visions</b> Eve Dewan (she/her; Warm Springs Geo Visions), Angelina Howell (Warm Springs Geo Visions)
10:20	<b>Listening to and Learning from Tribes, Researchers, and Participants—changing research processes to encourage co-equal production and research sovereignty</b> Elizabeth Redd Kickham (she/they; Idaho State University), Laticia Herkshan
10:40	<b>Resilience Through Writing: Early Indigenous Publishing and Anthropology in the Pacific Northwest</b> Robert Walls (University of Notre Dame)

10:00 – 12:00	<b>Diversity in Archaeology</b>
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Archaeologists/Anthropologists of European ancestry dominate the profession, and who generally have no cultural affinity to their research topics. This raises the question why POC archaeologists are under-represented in this discipline. Is this due to systemic racism or perhaps economic considerations? Is it because the profession itself is not generally looked favourably upon by various visible minority groups? This session will touch upon these questions and many others. This event will be unique because the panelists want the conversations to be meaningful and impactful. To accomplish this, we want this session to touch on topics that are uncomfortable. Bring all your questions, stereotypes, and misperceptions. Let's talk about them. We encourage participants to ask questions that are socially uncomfortable. We need to have uncomfortable conversations if we want this profession to move forward and be inclusive for all.

	Chair: Tommy "Yukon" Ng (Bison Historical Services)
10:00	<b>Participants</b> Tommy Y. Ng (Bison Historical Services Ltd., Calgary, Alberta) John Somogyi-Csizmazia (North Island College, Campbell River, B.C.) Rick Budhwa (Crossroads CRM, Smithers, B.C.) Kevin Black Plume (Blackfoot Confederacy) Anna Coon (she/her; Central Washington University)



2021 Northwest Anthropological Conference Session Schedule  
Friday, 9 April 2021

10:00 – 12:00	Anthropology Presentations (General Session)
	Chairs: Mary Petrich Guy (she/her; Hanford Mission Integration Solutions), Noella Wyatt (Central Washington University)
10:00	Your medical opinions aren't welcome though your medicines are: Western and traditional medicine in the Peruvian Amazon Laura Putsche (University of Idaho)
10:20	On the Q.T. or Everything You Ever Wanted to Know About Queer Theory* (but Were Afraid to Ask) William Schroeder (they/them/their and/or he/him/his; Arête Cultural Resources Management)
10:40	The New Face of Mass Movements: Internet Collectivization, Radicalization, and Societal Transformation from an Applied Anthropological Perspective Kirk Packwood
11:00	Religious Propositions: An Outgrowth of Social Exchange? Grace Kohler (she/her; Boise State University), Karl J. Mertens, Sally Clark, Annemarie Hasnain, Ann Wozniak, John P. Ziker,
11:20	Pant Leg Pedagogy: Subtle and Diverse Hermeneutic Aaron Weiss (College of Idaho)
11:40	Turning over the land: the uncertain promise of demographic and ecological transformation in Willamette Valley agriculture Alex Korsunsky (he/him; Vanderbilt University)

2021 Northwest Anthropological Conference Session Schedule  
Friday, 9 April 2021

10:00 – 5:00 Asian American Diaspora Archaeology in the Pacific Northwest

This session marks the second effort to bring together and highlight important work occurring across the region to document the archaeology of the Asian American diaspora. This year we have asked our participants to share research that aligns with the conference themes of collaboration, inclusivity, and the ways in which these previously untold stories are being commemorated, corrected, refined, or re-imagined based on new data.

	Chairs: Chelsea Rose (she/her; Southern Oregon University Laboratory of Anthropology), Rena Campbell (she/her; University of Idaho)
10:00	Successful Partnerships: The Oregon Chinese Diaspora Project Katee Withee
10:20	Merchant Status: Life, Labor, and Politics in the Time of Chinese Exclusion Chelsea Rose, Jacqueline Y. Cheung, Eric Gleason
10:40	“Send Receipt and Oblige:” Chinese Merchants, Miners, and the Cultivated Consumer Networks of the Boise Basin Rena Campbell (University of Idaho)
11:00	Finding Missing Voices: Chinese Kongsu Mining Partnerships in 18th Century Borneo and 19th Century Oregon Don Hann
11:20	Revisiting the Chinese Store near Chelan Falls, Washington, and the 1875 Massacre of Chinese Miners Eric B. Gleason and Jacqueline Y. Cheung
11:40	Pacific Northwest Collaboration: A look into the modification and repurposing of artifacts in Chinese-occupied sites Tatiana Watkins (University of Idaho)
12:00	Lunch
1:00	Stone Drugs in Traditional Chinese Medicine Ray von Wandruszka (University of Idaho)
1:20	Dip into Soba-Choko Yuumi Danner (she/her; Asian American Comparative Collection)
1:40	Laundry, Bathing, and Relaxation: Patterns of Residence in a Japanese American Communal Bathhouse at Barneston, WA (1907-1924) David Carlson (University of Washington)
2:00	Discussion Period 1 Douglas Ross
2:40	Break
3:00	Discussion Period 2 Rena Campbell, Chelsea Rose, and Douglas Ross

12:00 – 1:00 | BIPoC Social Hour

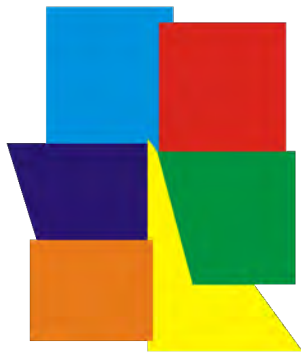
This space is meant to serve as a professional and/or academic network as well as a support system for BIPoC students and professionals. The goal of this session is to provide an informal and inclusive environment in which attendees can safely share their thoughts, experiences, challenges, and questions.

Chair: Katie Kitch

12:00 – 1:00 | Northwest Anthropological Association Business Meeting

Curious about how the Northwest Anthropological Conference (NWAC) is organized? Would you like to host? Please join the Northwest Anthropological Association (NWAA) Board of Directors for our annual business meeting. This year's meeting topics include future meeting planning, and board officer position nominations. All NWAC attendees are welcome to attend and participate in the business of the NWAA.

Chairs: Lee Sappington, Chris Noll



**Northwest  
Anthropological  
Association**

1:00 – 3:00 From Consultation to #landback: The Continuum of Agency Engagement with Tribal Nations

Consultation, despite the largesse implied by the term in the abstract, is enacted through a wide range of practices fraught with varying degrees of tension and filled with the possibility of justice. The continuum along which agency consultation with Tribal Nations takes place regarding cultural resource issues can range from a "Dear Tribal Leader" form letter that fails to meet the lowest standards to which relations between sovereigns should be held, to intimate engagement around issues such as the restoration of lands and land-based traditional cultural practices.

This session invites the sharing of diverse experiences of federal, state, and local agency consultation with PNW Tribal Nations - ranging from generic notification and box checking, to collaboration and contracting, to free and informed prior consent, to practiced acceptance of tribal sovereignty.

	Chair: Ron Fox (he/him; Washington State Department of Fish and Wildlife)
1:00	<b>Leading by Example: Collaborative Cultural Resources Management on the Chief Joseph Dam Project</b> Dr. Karen Capuder (she/her; Confederated Tribes of the Colville Reservation)
1:20	<b>Criticism, Compliance, Consent – A Personal View of Government-to-Government Consultation, and the Road Forward</b> Kat Russell (Bureau of Land Management)
1:40	<b>Discussion</b> <i>Moderator: Ron Fox (he/him; Washington State Fish and Wildlife)</i>  Ron Fox has spent more than 30 years with the Washington Department of Fish and Wildlife working in land management and habitat restoration. He is currently the Manager of the Chelan Wildlife Area. His first experience with consultation started in 2006 while working on the Beebe Springs Project. With DFW not having a staff Archaeologist, a crash course at the School of Hard Knocks and generous mentoring by Becky Shipman and Guy Moura got him through his first consultation.  <i>Dr. Karen Capuder (she/her; Confederated Tribes of the Colville Reservation)</i>  Dr. Karen Capuder (Mohawk/French/Irish) is a Senior Archaeologist for the Confederated Tribes of the Colville Reservation History/Archaeology (CCT H/A) Program. She serves as the Principal Investigator (PI) for the Chief Joseph Dam Project and lands managed by The Nature Conservancy, as well as co-PI for the Wells Dam Project. She also assists with and engages in consultation with numerous federal, state, and local agencies and private landowners. She has supported the assertion of tribal and traditional cultural sovereignty over ancestral burial sites and cultural resources for 18 years, the last 7 of which have been with the CCT H/A Program.  <i>Kat Russell (she/her; Bureau of Land Management)</i>  Kat Russell (Western Celtic, Eastern Galician) traded the toothless, federal Historic Sites and Monuments Act and the somewhat more robust B.C. provincial Heritage Conservation Act, for the opportunity to use the relatively keen edges of the Archaeological Resources Protection Act (ARPA) and the National Historic Preservation Act (NHPA) to protect cultural resources. After almost 20 years of working for the Bureau of Land Management on the First Nations (Native American) homeland she's seen changes in G2G consultation directive, but few resulting advancements from those

changes. Having reached elder status, she looks forward to retirement and the opportunity for unsupervised heritage resource protection.

*Maurice Major (he/him; Washington State Fish and Wildlife)*

Mo Major (some people call him Maurice) has protected "cultural resources" for a state agencies and a museum in Washington and Hawai'i since 1990 and currently does so for the Washington Department of Fish & Wildlife. Occasionally, he does so for environmental restoration projects in the South Sound. Frequently, he keeps an eye on threatened cultural places near home. His first land acknowledgement was clinging to the back of an SUV on Moloka'i. He was educated by public schools, punk rock, University of Hawai'i, and Native people.

*Dr. Adam Rorabaugh (he/him; Washington State Fish and Wildlife)*

Adam N. Rorabaugh is an archaeologist for the Capital and Assets Management Program (CAMP) at WDFW. He completed his PhD at Washington State University in 2015. He has worked in cultural resource management in the private, tribal, and state sectors. The work at CAMP provides an opportunity for praxis in the development of comanagement of cultural resources with tribal nations.

*Sarah Thirtyacre (she/her; WA Recreation and Conservation Office)*

Sarah Thirtyacre is the Cultural Resources Program Manager for the Washington State Recreation and Conservation Office (RCO), she has been with the Agency since 2007. The RCO is a small state agency that provides statewide leadership and funding to protect and improve Washington's natural and outdoor recreation resources. Before working at RCO, Sarah was employed by the Department of Natural Resources as a land manger and grant writer. Sarah graduated from The Evergreen State College with a degree in environmental science and has spent the past 25 years working in the natural resources field. Sarah enjoys facilitating efforts that help bring together natural resources restoration efforts, cultural preservation while attempting to move beyond box checking in consultation practices.

1:00 – 3:40 Assessing Colonial Heritage in the Northwest through Historical Archaeology

Colonial projects and settlement profoundly impacted both indigenous and immigrant peoples. The legacy of colonialism in the Pacific Northwest can be mediated through a fuller and more nuanced understanding of its history and effects. Improved narratives enable communication and interpretation of colonial places to the many stakeholders who are invested in remembering, commemorating, reinterpreting and de-silencing these sites. These papers explore the material and historical remains of colonialism in a variety of contexts including fur trade forts and communities, places of immigration and settlement, and U.S. Army forts. These historical archaeology studies assess the nature of colonial and indigenous heritage and its intersections. They strive to challenge colonial history by exposing those silences in the narrative that ignore marginalized communities and expand on connections that are important for the heritage of all peoples of the northwest.

- Chair: Douglas C. Wilson (he/him; Portland State University)
- 1:00 Smudge Pit Features at the Hudson's Bay Company's Fort Vancouver Village as Signs of Hide Processing and Disease Prevention  
Katie Wynia (she/her; Portland State University)
- 1:20 Vivre sur la terre: Archaeological and Palynological Investigations of the Laborer's Village at the 19th century Hudson's Bay Company's Fort Vancouver  
Elaine C. Dorset, MA, RPA (National Park Service)
- 1:40 Preliminary Results of Archaeological Testing at the McLoughlin House National Historic Site (35CL318)  
Robert J. Cromwell, Ph.D. (National Park Service)
- 2:00 Segregation and Hierarchy Under Duress: Social and Physical Space at Miner's Fort, a Rogue River War Settler Fortification on the Oregon Coast  
Mark Axel Tveskov (he/him; Southern Oregon University)
- 2:20 Material Expressions of Class, Status and Authority amongst Commissioned Officers at Fort Yamhill and Fort Hoskins, Oregon, 1856-1866  
Justin E. Eichelberger, Ph.D. (he/him; National Park Service)
- 2:40 Break
- 3:00 Talking About Plates: Analyzing French Transferprint Ceramics at U.S. Army Fort Vancouver  
Kaitlyn Hosken (she/her; Portland State University)
- 3:20 Sacred Places, History, and Archaeology at the Hudson's Bay Company Cemetery at Fort Vancouver  
Douglas C. Wilson (he/him; Portland State University and National Park Service)

1:00 – 5:00

Nevertheless, She Persisted: Intersectional and Multivocal Perspectives on the Contributions of Women in Pacific Northwest Anthropology

The historical and continued contributions of women in anthropology are expansive and far reaching, yet the multiplicity of voices and diversity of identities among women anthropologists in the Pacific Northwest remain inadequately appreciated, contextualized, and understood in many settings. Following the spirit of the original “Nevertheless, She Persisted” Northwest Anthropological Conference session of 2018, this session celebrates the contributions of women in Pacific Northwest anthropology, while highlighting the intersections of identity, status, and professional occupation that impact engagement and multivocality within the discipline. The insights, experiences, challenges, and produced knowledge of women of color, LGBTQIA2S+ women, women in tribal communities, women with disabilities, women from diverse professional backgrounds, and women who confront the dominant discourses in anthropology are among the narratives that this session aims to highlight.

Chairs: Tiffany J. Fulkerson (she/her, Washington State University),  
Shannon Tushingam (she/her; Washington State University)

1:00

**Introduction: Diversity, Intersectionality, and Multivocality among Women in Pacific Northwest Anthropology**

Chairs: Tiffany J. Fulkerson (she/her; Washington State University), Shannon Tushingam (she/her; Washington State University)

1:20

**Problems and Prospects for Transgender People in Pacific Northwest Archaeology**  
Anna Marie Prentiss (she/her; University of Montana)

1:40

**Intergenerational Trauma, Disenfranchisement, and the Impacts of Engagement with Indigenous Communities: A Conversation with Anthropology Colleagues and Allies**  
Juliet McGraw (she/her; Friends of the Ridgefield National Wildlife Refuge)

2:00

**I Ka Nana No A 'Ike: By Observing, One Learns**  
Angela Neller (Wanapum Heritage Center)

2:20

**A Call for More: Diverse Stories in Archaeology**  
Anna Coon (she/her; Central Washington University)

2:40

Break

3:00

**Panel Discussion**

Anna Coon (she/her; Central Washington University)

Jamie Litzkow (Bureau of Land Management)

Juliet McGraw (she/her; Friends of the Ridgefield National Wildlife Refuge)

Angela Neller (Wanapum Heritage Center)

Anna Marie Prentiss (she/her; University of Montana)

Maia Wilson (she/her; University of Idaho)

4:20

**Audience Q&A**

1:40 -5:00

Protecting Places that Matter: A Discussion Exploring Historic Properties of Religious and Cultural Significance to Indian Tribes

The purpose of this session is to explore the concept of Historic Properties of Religious and Cultural Significance to Indian Tribes (HPRCSITs). HPRCSITs are a new addition to the types of properties identified as part of the legal mandate established by Section 106 of the National Historic Preservation Act and the National Environmental Policy Act. The format will be a two-hour panel discussion with questions posed to a diverse group of land managers, members of American Indian Nations, and government agency officials. Questions are designed to generate discussion on the nature of HPRCSITs, different approaches to the potential presence of HPRCSITs and to what extent one should be documented. Participants will also be encouraged to share their experiences devising methods to record and appropriate ways to manage HPRCSITs. There will be an audience question/comment period after the formal discussion.

1:40

Chairs: Angela Rooker (she/her; Indiana University of Pennsylvania),  
William Marquardt (North Zone Archaeologist, Umatilla National Forest)

**Panel Participants**

Catherine Dickson (Archaeologist, Confederated Tribes of the Umatilla Indian Reservation)

Don Hann (Heritage Program Manager, Malheur National Forest)

Briecce Edwards (RPA, Manager of the Historic Preservation Office, Confederated Tribes of Grand Ronde)

Angelina Howell (PhD candidate; CEO and Principal, Warm Springs GeoVisions)

Will Marquardt (MS; RPA; North Zone Archaeologist, Umatilla National Forest)

Guy Moura (Manager of the History Archaeology Program, Confederated Tribes of the Colville Reservation Historic Preservation Office)

Liz Oliver (U.S. Army Corps of Engineers, Portland District)

John Pouley (State Archaeologist, Oregon SHPO)

Kassie Rippee (Coquille Indian Tribe, Tribal Historic Preservation Officer)



5:00 – 6:30

Association for Washington Archaeology Meeting

Join us for the Association for Washington Archaeology Annual General Meeting! This has been an amazing year at AWA, and you will be inspired by what members have been working on!

Say hello to your incoming Board, including new President Jason Cooper. Say thank you to the outgoing board members-Bob Kopperl, Alex Stevenson, and Michelle Hannum-who will be stepping back after over a decade serving on the AWA board. Hear what has been going on from the committee heads and learn about what is coming up. Connect with conferences buddies. Get entered for a chance to win some great giveaways.

While we will be without our usual keg, let's raise a virtual glass to all the work the AWA members have done this past year, and to another prosperous new year!



## NWAC 2021 Abstracts

Altman, Emma (she/her, University of Idaho)

### *pXRF in Historical Archaeology: Understanding Publishing Disparities and Possible Appropriate Uses*

Portable x-ray fluorescence spectrometry (pXRF) is one of many currently available scientific techniques used to examine archaeological materials. However, pXRF's growing popularity in archaeological research has raised concerns in both the archaeological and scientific communities regarding the appropriateness of the technology's use in archaeological contexts. While lithic sourcing is one common and generally well-accepted use, there is a lack of research involving pXRF in historical archaeological settings. A mixed-methods qualitative study involving both interviews with historical archaeologists using pXRF and a scoping review of historical archaeological peer-reviewed literature of the past two decades was undertaken to better understand the disparity in the use of pXRF in the archaeological community. This presentation will explore possible explanations for the relative lack of use of pXRF in historical archaeology as well as possible appropriate applications of the technology in historical contexts.

Asbury, Ashton (she/her; Central Washington University), Hingey, M. D., Sheeran, L. K., Gabriel, K., & Whiting, L. D.

### *Camera trap data sampling methodology of long-tailed macaques (*Macaca fascicularis*) at Don Chao Poo Forest, Phana, Thailand*

Don Chao Poo forest is a conservation site where ~ 1,000 long-tailed macaques (*Macaca fascicularis*) live. From June 1 to September 13, 2020, motion-detection camera-traps positioned throughout the forest were utilized to capture 3,181 videos. In total, from those videos, 317 one-minute videos were sampled and coded. Coding for each video occurred at still images at 30 s and 60 s as well as all-occurrence sampling for contact behaviors for the full one-minute videos. We examined if: 1) the 30 s and 60 s still image data correlated with each other; and 2) the averaged data from the 30 s and 60 s still images correlated with the data from the corresponding full video. Our findings reveal that: 1) each behavior in the 30 s and 60 s still images positively correlated with the exception of rare macaque contact behaviors; and 2) all data from the averaged 30 s and 60 s images positively correlated with the full video data. These findings suggest that still image scan samples were accurate representations of the data present in the full video except for behaviors that are less common which may be more accurately observed by a different sampling method.

Bankuti, Natalie (she/her; Antiquity Consulting)

### *Historical Archaeology of Transferware on Northwest Coastal Sites*

During the post-contact period of West Coast colonization by Euro-Americans, the popularity of transferware ceramics can be seen from the coastal cities to the inland settlements which dotted the landscape of what is now Washington State. The geographical focus will be, however, limited to the coastal sites of the state and feature artifacts uncovered during Cultural Resource Management excavation projects. The establishment of a market for European-imported dinnerware is a well-studied aspect of United States historical archaeology, however the scope of this poster will encompass transferware ceramic decoration technology from an archaeological perspective. The artifacts are represented by a 100 year span of time; approximately 1840-1940 CE. While exact manufacturing provenance and dating cannot always be calculated, estimates provide enough context by which to sufficiently compare them. These objects and their various forms, decoration styles, and

depositional contexts will function as lenses by which I compare their function and popularity among European American settlers on the Northwest Coast during this time period. This poster will also serve as a guide to field technicians throughout the Northwest Coast in the field of cultural resource management, where finds such as these are commonplace but in the opinion of the author somewhat ignored.

Black Plume, Kevin (Blackfoot Confederacy)

*Diversity in Archaeology (Panel Participant)*

Brandenfels, Naomi (she/her; Quinault Indian Nation), Faith Webster, Justine James, Jr., Lia Frenchman

*Quinault Indian Nation Cultural Resources Mapping with Ethnographic and LiDAR-derived Data*

The Quinault River is known to have changed course historically. This poster depicts the status of a current project using existing ethnographic information and LiDAR data to analyze the river meanders. By georeferencing the historic map onto the LiDAR-derived relative elevation models (REM) for floodplain visualization, we are able to see new possibilities in relocating ethnographic village sites. This data may also inform the potential for precontact village locations on the exterior of the former oxbows.

Breidenthal, Matt (Stell Environmental Enterprises)

*Retracing Garnett's Raid: geographic context of the 1858 War of Ruthlessness in the Cascade Mountains and Columbia River Basin.*

This study reconstructs the course of U.S. military operations in Chelan and Douglas Counties in the summer of 1858; a pivotal phase of the 1855-1859 regional conflict intended to extinguish Indigenous peoples' title to lands adjacent to key travel routes across the Cascade Mountains and Columbia River Basin. In support of these objectives, the U.S. War Department implemented a two-column campaign initiated by George Wright at Fort Walla Walla in the east, and by Robert Garnett at Fort Simcoe in the west. Although Wright's invasion of the Spokane River Valley was well documented, historical records of Garnett's raid are limited. However, by synthesizing 9th and 4th U.S. Infantry regimental records, personal correspondence, Hudson's Bay Company records, newspaper articles, and landform analysis, a model was constructed to provide geographic context. Results indicate that Garnett's operations were extensive and likely utilized a mountain trail between the Wenatchee River and the Entiat River that had been previously exploited by the Hudson's Bay Company. These data may contribute to future cultural resource management efforts by identifying areas which are likely to preserve archaeological material associated with these significant historical events.

Brooks, Saffron (she/her; University of Idaho)

*Basque Gravestone Symbol Analysis in the Intermountain West States*

Cultural continuity representation in death varies throughout the American tradition, due to multiple ethnic groups that are present in the United States. The Basque communities of Emmett, Idaho, and Jordan Valley, Oregon, are no exception. These two cemeteries are parts of a larger community that settled in the Intermountain region that covers eastern Oregon, south-western Idaho, and northern Nevada. This paper will provide an overview of the history of the Basque in the Intermountain West, and what cultural symbols were used on their gravestones to signify their unique cultural heritage.

Brown, James (he/him; Washington State University), Patrick McCutcheon (he/him; Central Washington University)

*The Good, the Bad, and the Ugly: Chronometric Hygiene of Southern Cascade Radiocarbon Chronologies*

Archaeological analysis of radiocarbon chronologies must be critical of the quality of radiocarbon dates. Without uncritical radiocarbon dating, chronologies lack any anthropogenic meaning. Uncritical sampling of radiocarbon dates has been problematic in the history of archaeological research. Evaluating the quality of radiocarbon dates using chronometric hygiene protocols is necessary to create radiocarbon chronologies that are centered on dates that are anthropogenic in origin. This study uses a case study of radiocarbon dates (n=103) from the Southern Cascades to understand changes in radiocarbon summed-probability distribution models as poor-quality dates are removed and only the best quality remains. A model of purely anthropogenic dates shows the artificial peaks and nadirs that are created from poor quality dates.

Brown, James (he/him; Washington State University), Patrick McCutcheon (he/him; Central Washington University), Catherine Zeigler (she/her; University of Washington), Gyoung-Ah Lee (she/her; University of Oregon), Mark Warner (University of Idaho)

*Choosing and Applying to Graduate Programs*

What do graduate school programs look for in students? What should students look for in graduate school programs? Join a diverse group of program chairs, advisors, and students to learn how to choose the right program for you.

Buck, Alyssa (Wanapum)

*Partnerships and Cultural Resources at the Hanford Site (Panel Participant)*

Budhwa, Rick (Crossroads CRM, Smithers, B.C.)

*Diversity in Archaeology (Panel Participant)*

Bush, Kelly (Equinox Research and Consulting International Inc.)

*Association for Washington Archaeology Mentorship Program (Session Participant)*

Burnside, Carla (US Fish and Wildlife Service), Jamie Litzkow (Bureau of Land Management), Ayme Swartz (US Forest Service)

*The Art of Applying for Federal Archaeological Positions*

Mystified by the federal job hiring process? Looking for some practical advice as you navigate the employment process? Do you wonder what work experience you possess that would be of interest to prospective employers? Federal Archaeologists from the Association for Washington Archaeology, East Regional Group will guide you through the often convoluted process of preparing your resume so it fits the job; offer advice about the best way to decipher federal job announcements; explain what the different positions are actually about; provide an overview of what federal archaeologists do; help you understand all aspects of the application process; explain the best way to highlight the skills and experience that employers seek; and answer questions you have about working as a federal archaeologist.

Campbell, Renae (she/her; Asian American Comparative Collection, University of Idaho, Moscow)  
*Asian American Diaspora Archaeology in the Pacific Northwest (Discussant)*

Campbell, Renae (she/her; Asian American Comparative Collection, University of Idaho, Moscow)  
*"Send Receipt and Oblige:" Chinese Merchants, Miners, and the Cultivated Consumer Networks of the Boise Basin*

In Southern Idaho's Boise Basin, an influx of Chinese miners in the late nineteenth century revitalized the local economy and temporarily reversed a declining population trend. While historical and archaeological research has demonstrated the financial contributions of Chinese miners and the social influence of Chinese merchants, little is known about the extent to which these actors shaped material flows in rural communities like the Basin. This presentation uses merchant correspondence and new data generated from previously excavated collections to explore the ways in which Chinese merchants and miners created, refined, and participated in the commercial networks that supplied the Basin with everyday material goods.

Capell, Victoria (she/her; Central Washington University)  
*Engaging Hidden Contexts: New Examinations of Researcher Positionality (Panel Participant)*

Capuder, Dr. Karen (she/her; Confederated Tribes of the Colville Reservation)  
*Intro, Beyond Land Acknowledgements: Responsibilities to People and Place*

Capuder, Dr. Karen (she/her; Confederated Tribes of the Colville Reservation)  
*From Consultation to #landback: The Continuum of Agency Engagement with Tribal Nations (Discussant)*

Capuder, Dr. Karen (she/her; Confederated Tribes of the Colville Reservation)  
*Leading by Example: Collaborative Cultural Resources Management on the Chief Joseph Dam Project*

This presentation explores the history and current contours of the partnership between the Confederated Tribes of the Colville Reservation History/Archaeology (CCT H/A) Program and the United States Army, Corps of Engineers, Seattle District (Corps) regarding the management of cultural resources and care of ancestral burial sites within the Chief Joseph Dam Project (CJD). The CCT H/A Program's current Principal Investigator for the CJD will share their perspectives regarding the history of the CJD, from the establishment of the Colville Indian Reservation and allotment of reservation lands, to the dynamics and effects of hydropower development within the reservation, to the genesis of the CCT's early archaeology program, to the CCT's current role as both consulting Tribe and contracting partner to the Corps in the protection and management of cultural resources and ancestral burial sites within the CJD. Highlights from current research, site treatment, and creative mitigation efforts within the CJD will be shared as examples of ways in which agencies can seek to move beyond mandated, and often formulaic, consultation to co-creating meaningful opportunities for engagement grounded in the recognition of, and respect for, tribal sovereignty.

Capuder, Dr. Karen (she/her; Confederated Tribes of the Colville Reservation)  
*Buffalo Whispers and Rematriation in the Moses Coulee Region of Central Washington State*

The mere acknowledgement of one's presence within occupied Indigenous homelands does little more than reinforce settler colonial power dynamics when it is not paired with concrete action. The cession of Settler

privilege is necessary to the actualization of Indigenous sovereignty. This presentation explores the burgeoning partnership between The Confederated Tribes of the Colville Reservation History/Archaeology (CCT H/A) Program and The Nature Conservancy of Washington (TNC). Together, we seek to develop a shared vision for the protection and culturally-guided management of the myriad cultural resources within TNC's Moses Coulee, McCartney Creek, and Beezley Hills Preserves. Central to this effort is the ideal of the repatriation of these places, along with the teachings they hold and relations they sustain, to the people whose ancestors have cared for them for countless generations. Discussants will share their perspectives on their partnership, from its genesis in happenstance, to the first steps to co-create and implement culturally informed management practices, articulate policies and guidance that support the reconnection of people with place, and facilitate the fulfillment of ancestral responsibilities.

Carlson, David (he/him; University of Washington)

*Laundry, Bathing, and Relaxation: Patterns of Residence in a Japanese American Communal Bathhouse at Barneston, WA (1907-1924).*

Originating in the archaeology of colonialism, residence offers a framework for understanding how marginalized groups work to meet their needs while navigating discriminatory and oppressive institutions and structures. Residence focuses on the fact that, in such contexts, simply existing—being present—can be a political action. This paper details some preliminary examples of residence in the context of racial exclusion at the Japanese Camp at the Barneston Townsite (45KI1424). Investigated during the Issei at Barneston Project, 45KI1424 was occupied by Japanese American laborers and their families and was part of the sawmill company town of Barneston. It evidences considerable integrity and thus is an ideal site for investigating the lived experiences of its inhabitants as they confronted racism, corporate paternalism, and attempts at class uplift. This paper will discuss the preliminary results of fieldwork at a communal bathhouse there and then use said results to reconstruct practices of residence.

Carney, Molly (she/her; Washington State University), Kirsten Jenkins (she/her; Tacoma Community College)

*Grant Writing 101*

Do you have a great idea but don't know how to fund it? Need research support but don't know where to look? In Grant Writing 101 we will cover the basics: What are grants? What expenses do they cover and what doesn't qualify? What are the key elements of a grant proposal? This presentation specifically covers funding sources for students, including tips for grant writing success and innovative places to seek external funding.

Carney, Molly (she/her; Washington State University), William Clements, Jade d'Alpoim Guedes (UC San Diego), Shannon Tushingham (she/her; Washington State University)

*Northwest Native Plants: An Online, Digital Space for Ethnobotanical and Paleoethnobotanical Knowledge*

Archaeobotanical and ethnobotanical information can be used in a variety of ways to strengthen cultural identity, improve human health and well-being, identify and re-learn traditional ecological knowledge, and inform modern restoration ecology and land management decisions. In the northwest region of North America, however, the carbonized remains in paleoethnobotanical assemblages are difficult to identify. Here we share an online website and database designed to document and share ethnobotanical knowledge and paleoethnobotanical identification criteria. The website is designed using the Murkurtu platform, which is specifically built around sharing and protecting traditional knowledge across social groups and preserving

multivocal epistemologies. Users can add protocols which grant various levels of access to digital materials and adapted to local communities' needs. The ethnobotanical information in this digital "work in progress" has the potential to contribute to future archaeological and interdisciplinary investigations as well as human-plant relationships in the past and in the future.

Coon, Anna (she/her; Central Washington University)

*Association for Washington Archaeology Mentorship Program (Session Participant)*

Coon, Anna (she/her; Central Washington University)

*Diversity in Archaeology (Panel Participant)*

Coon, Anna (she/her; Central Washington University)

*Nevertheless, She Persisted: Intersectional and Multivocal Perspectives on the Contributions of Women in Pacific Northwest Anthropology (Panel Participant)*

Coon, Anna (she/her; Central Washington University)

*A Call for More: Diverse Stories in Archaeology*

This presentation will introduce my upcoming docuseries showcasing stories from underrepresented members of the archaeological community in order to bring attention to their unique experiences and inspiring contributions to this field. As an Asian American archaeologist, I will share my own obstacles and discuss the importance of hearing from diverse perspectives, and how those stories can be beneficial to others like myself.

Croes, Dale (Washington State University)

*Ancient Cordage and Knotting on the Northwest Coast of North America*

The aim here is to provide a new line on Northwest Coast Archaeological research. The value of this category of artifact has not been fully represented in the context of our region's unique ancient history. Wet site cordage has, so far, been dated from 10,700 cal BP in central B.C. and typically is the most common wet site artifact (>2,000 examples from Hoko and Ozette). Since over 90% of the material culture from ancient NW wet sites was made from wood and fiber, it makes sense that these ancient perishable artifacts will dynamically expand our understanding of this "missing majority" from shellmidden archaeological sites. Ancient cordage artifacts from coastal wet sites are explicitly defined on several levels, allowing them to be compared among sites and through time. Using cluster and cladistic analysis, cordage groups into the three regional areas of proposed cultural continuity. In an attempt to further test these patterns, Bayesian phylogenetics is used to interpret the temporal complexities of cordage evolution since this method allows the integration of temporal information in order to time-calibrate the trees. Results complement earlier tests. Cordage/knotting analysis demonstrate an undeniable and critical analytic value for cordage in ongoing Northwest Coast archaeological research.

Cromwell, Robert (National Park Service)

*Preliminary Results of Archaeological Testing at the McLoughlin House NHS (35CL318)*

The National Park Service (NPS) conducted limited archaeological testing in the summer of 2020 around the immediate footprint of the foundation of the historic McLoughlin House in Oregon City, Oregon (35CL318). The McLoughlin House NHS became a unit for Fort Vancouver NHS in 2003, and the NPS has conducted

limited sub-surface archaeological surveys of the property since then, but no formal sub-surface archaeological testing had been conducted to date. Previous sub-surface surveys have revealed both historic and a pre-contact archaeological contexts at the site. The NPS is planning rehabilitation efforts to the McLoughlin House, including to the foundation of the structure, necessitating limited archaeological testing prior to this important stabilization work. This paper will summarize the work conducted and provide a preliminary synopsis of the observations and findings of these test excavations. These limited archaeological test units provided updated data of the sedimentary profile of the site, additional evidence of both historic and pre-contact contexts, and heighten the National Register status of the previously recorded archaeological site.

Danner, Yuumi (she/her; Asian American Comparative Collection, University of Idaho)

*Dip into Soba-Choko*

Some artifacts have many stories to tell. As historical archaeologists continue to refine their understanding of Japanese ceramics, more of these stories emerge. This presentation outlines research on the history of soba-choko and demonstrates how in-depth identification of vessels helps archaeologists to understand artifacts and their former owners. There are a variety of Japanese vessels; some are considered zakki (vessels for diverse usage), and others have specialized functions. A type of small cup, soba-choko, is the latter. It is a dipping sauce cup for buckwheat noodles. However, its role was not always serving noodle sauce, nor was it always called a soba-choko. In the early Edo era (1603-1867), it was part of a ceremonial vessel set for kaiseki ryori (a party meal served on a tray). The introduction of new cuisine and a growing middle-class population in the late Edo era resulted in the current name and role of the soba-choko. Through the development of its shape and function, this small cup has meant more to its owners among the Asian diaspora than just an ordinary cup.

Davis, David (Central Washington University), Patrick T. McCutcheon (Central Washington University)

*Exploring the Analytical Contribution of 0.3175 cm Mesh Sized Lithic Debitage at the Sunrise Ridge Borrow Pit Site (45PI408), Mt. Rainier National Park, Washington*

To evaluate the analytical contribution of small-sized lithic debitage at the Sunrise Ridge Borrow Pit site (45PI408), results of the attribute analysis of all 0.3175 cm mesh sized lithic artifacts (n = 9,086) were combined with and compared to results of the attribute analysis of just the > 0.635 cm mesh sized lithics (n = 3,672). This ongoing effort reveals that substantial technological variation resides within the 0.3175 cm mesh sized lithic artifacts. Literal and graphic description, interpretation, and practical discussion of significant non-random statistical results will center on their relevance to currently understood upland adaptations, the interconnected relationship between mobility/settlement patterns, availability of lithic raw material, and lithic technological organization. A final consideration and discussion of these results will focus on their relevance to the overall utility of collection and analysis of < 0.635 cm mesh sized lithics.

Dewan, Eve (she/her, Warm Springs Geo Visions), Angelina Howell

*Mitigating Crisis: Lessons Learned at Warm Springs Geo Visions*

Since its founding in 2002, Warm Springs Geo Visions has been a small, independent, Tribally-owned firm committed to meeting the environmental compliance needs of the Pacific Northwest. Collaborating with stakeholders on every level, the company provides services including cultural resource surveys, ethnographic overviews, geospatial analyses, and oral historical research using its unique suite of strengths and interdisciplinary perspectives. The Northwest and the wider world have faced challenging issues over the past year, most prominently the COVID-19 pandemic and accelerated climate change. Despite these obstacles--and



in some ways, spurred by the need to adapt to them--the company has recently experienced unprecedented growth. It has opened a second office to better serve the Portland area, hired new staff, and continued the transition to more sustainable work practices. In this paper, we reflect on some of the lessons we have learned in order to provide one model of how to adapt the work of cultural resources management to a post-COVID world. Our work depends on a host of relationships and partnerships. We look forward to sharing with the NWAC audience in hopes of connecting with others who strive to integrate care, compassion, and Indigenous perspectives and modes of knowledge production into their work.

Dickson, Catherine (Archaeologist, Confederated Tribes of the Umatilla Indian Reservation)

*Protecting Places that Matter: A Discussion Exploring Historic Properties of Religious and Cultural Significance to Indian Tribes (Panel Participant)*

Donnermeyer, Chris, Trent Skinner, Bobby Saunters, Brian Lay

*Shedding Light on Early Twentieth Century Logging: The Archaeological Remains of a Lighting Power Plant at Camp A of the Bridal Veil Lumbering Company, Multnomah County, Oregon (ca. 1910~1920) and its Implications for Camp Life and Industrial Culture of the Period*

The Bridal Veil Lumbering Company harvested timber from the slopes of Larch Mountain, Oregon for half a century (ca. 1886-1936). Dozens of logging camps faded in and out of existence over the life of the company. Archaeological investigations over the last several decades have revealed the remains of six camps, each an architype of the technological and cultural milieu of the decade in which it operated.

Recent investigations documented a seventh, Bridal Veil Camp A (ca. 1910~1920). The camp remains include a unique find: the remnants of a power plant consisting of a concentration of glass-encased batteries, and a generator. Adoption of this emerging technology likely had a profound effect on camp life and industrial culture. The archaeological remains of the plant are described along with the evident cultural and technological impact of electricity. A performance matrix is presented discussing competing technologies in lighting and powering logging camps.

Dorset, Elaine (National Park Service)

*Vivre sur la terre: Archaeological and Palynological Investigations of the Laborer's Village at the 19th century Hudson's Bay Company's Fort Vancouver*

The distinct peoples that were employed as laborers by the fur-trading Hudson's Bay Company at Fort Vancouver during the 19th century lived outside of the fort proper, in the "Village." Questions related to how these peoples lived on the land around their small homes were addressed through the diverse but integrative perspectives of archaeological, palynological and documentary investigation. These documents speak of, for example, ordered streets and ethnic separation. Can these characteristics of structural organization and transportation patterns be further evidenced by excavations, artifacts and soil samples? Did these working class people from around the globe bring a bit of home to Fort Vancouver and can we tease out ethnic separations in the material remains on the land? Was the Village landscape altered from one system of care and production by indigenous peoples to another to provide new foods, remedies and social change? This presentation will provide the results of archaeological and palynological investigations conducted by the 2012 joint Portland State University, Washington State University, National Park Service Public Archaeology Field School. Palynological results and analyses were provided by the Andrew Fiske Memorial Center for Archaeological Research at the University of Massachusetts Boston.

Dyess, Elizabeth (she/her; Archaeological and Historical Services, EWU)

*Association for Washington Archaeology Mentorship Program (Session Participant)*

Edwards, Briece (RPA, Manager of the Historic Preservation Office, Confederated Tribes of Grand Ronde)

*Protecting Places that Matter: A Discussion Exploring Historic Properties of Religious and Cultural Significance to Indian Tribes (Panel Participant)*

Eichelberger, Dr. Justin (he/him; National Park Service)

*Material Expressions of Class, Status and Authority amongst Commissioned Officers at Fort Yamhill and Fort Hoskins, Oregon, 1856-1866.*

During the 19th century the United States Army was a military institution characterized by a hierarchical system of authoritative, social and economic inequality between members of its different military grades. Although necessary for insuring military discipline within the Army this system of inequality also influenced the non-military social lives of commissioned officers and their families and colored much of military life with a non-military consumerist tint. This dissertation examines the material expression of military authority, social status and economic position amongst three grades of commissioned officers who served at two mid-19th century United States Army posts in western Oregon, Fort Yamhill and Fort Hoskins. Using historical and archaeological records associated with 47 company grade officers this dissertation demonstrates that the commissioned officers who served at these posts were highly competitive individuals who used their military rank and military salaries to express their social and economic status through the economic behaviors of conspicuous consumption and conspicuous leisure and to demonstrate their membership as socio-cultural elites within the upper classes of 19th century America.

Ferri, Rose (Yakama Nation Environmental Restoration/Waste Management)

*Partnerships and Cultural Resources at the Hanford Site (Panel Participant)*

Fox, Ron (he/him; WA State Department of Fish and Wildlife)

*From Consultation to #landback: the Continuum of Agency Engagement with Tribal Nations (Moderator)*

Ron Fox is the manager of the WDFW Chelan Wildlife Area. He will be serving as the moderator of panel.

Furlong, Julia (Archaeological and Historical Services, EWU)

*Association for Washington Archaeology Mentorship Program (Session Participant)*

Ghazali, Dr. Marwa (she/her, Central Washington University)

*Engaging Hidden Contexts: New Examinations of Researcher Positionality (Panel Participant)*

Gleason, Eric (Oregon Chinese Diaspora Project), Jacqueline Y. Cheung

*Revisiting the Chinese Store near Chelan Falls, Washington, and the 1875 Massacre of Chinese Miners*

Scattered historical sources tell the story of an early Chinese Store located on the left bank of the Columbia River opposite the mouth of the Chelan River, a site now covered by waters impounded behind the Rocky

Reach Dam. A small rural Chinese community formed around the nucleus of this store that primarily served local miners. A newspaper report from the 1880s tells of an 1875 massacre of numerous Chinese miners at their nearby placer mines by several local bands of Native Americans. In this paper we try to track down and add clarity to the story of the store and the massacre.

Gonzalez, Jazmin (she/her, Central Washington University)

*Engaging Hidden Contexts: New Examinations of Researcher Positionality (Panel Participant)*

Hackenberger, Steve (he/him; Central Washington University)

*Conference Networking 101*

Is this your first conference? Join us to kick off NWAC Day 1! Learn some networking tips and tricks from seasoned conference-goers, ask questions, and start the conference with confidence!

Hamilton, Dale (Northwest Nazarene University), Gabriel Johnson

*Mapping Dirt Roads and Rail Grades from Drone Imagery Using a Mask Region-based Convolutional Neural Network*

Northwest Nazarene University's FireMAP research team is in the process of developing a deep learning approach to finding various archaeological features. This approach is being constructed through the use of a mask region-based convolutional neural network (Mask R-CNN) using Google's TensorFlow. Over the past two summers NNU has been gathering hyperspatial drone imagery containing these archaeological features. This aerial imagery is then fed into the Mask R-CNN in hopes of making a more dynamic approach. In the past the only way to map out these features was through a manual approach. This research project hopes to create a dynamic approach to finding and accurately mapping old roads and rail grades so that these maps can remain historically accurate.

Hamilton, Dale (Northwest Nazarene University), Robert A. White

*Implementation of Deep Learning to Map Dredge Tailings from Hyperspatial Aerial Imagery*

Northwest Nazarene University's FireMAP's research team is developing deep learning to identify archaeological sites including roads, dredge tailings, and hand-stacked tailings in support of a collaborative relationship with the Boise National Forest. Through the implementation of TensorFlow, a software library developed by Google, a mask region-based convolutional neural network (Mask R-CNN) has been trained to identify the desired landmarks. This project focuses on using the trained Mask R-CNN and the collection and labeling of hyperspatial, aerial photos of dredge tailings extracted from a provided orthomosaic in order to provide a georeferenced shape feature. The Mask R-CNN was able to detect numerous dredge tailings from provided testing imagery with high accuracy. Obtaining additional aerial imagery of dredge tailings would likely improve the Mask R-CNN's performance further, allowing for increased accuracy in detection.

Hann, Don (Malheur National Forest)

*Protecting Places that Matter: A Discussion Exploring Historic Properties of Religious and Cultural Significance to Indian Tribes (Panel Participant)*

Hann, Don (Malheur National Forest)

*Finding Missing Voices: Chinese Kongsu Mining Partnerships in 18th Century Borneo and 19th Century Oregon*

Chinese immigrant gold miners in North America are generally portrayed as unskilled laborers eking out a bare subsistence by scouring placer deposits previously worked and abandoned by white miners. Archaeological evidence and historic documentation suggest this is a gross oversimplification. For a century before the discovery of gold in North America Chinese miners organized as kongsu partnerships mined placer gold in Southeast Asia. The kongsu used profit sharing, trade specialization, and travel and trade networks to bypass onerous regulations and taxes. In Borneo they combined and grew in authority to become independent governments credited with being the first democratic republics in Asia. The kongsu mining companies in North America did not reach that level of power but did provide an established mechanism to flourish in an oppressive social and legal environment.

Hanson, Sydney (she/her; WA Dept of Archaeology and Historic Preservation), Sarah Thirtyacre (she/her; WA Recreation and Conservation Office)

*Applying for State Jobs*

State job applications may not be as involved as federal ones, but they can still be tricky to complete. In this presentation, a Washington state employee will offer guidance on the state job application and interview process. Idaho, Montana, Oregon, and other state employees are encouraged to attend and provide additional insight.

Hosken, Kaitlyn (she/her; Portland State University)

*Talking About Plates: Analyzing French Transferprint Ceramics at U.S. Army Fort Vancouver*

Archaeological excavations in 2004 recovered a large concentration of French transferprint plates associated with a ca. 1850-1869 army sutler's store in present-day Vancouver, Washington. Although British ceramics associated with the Hudson's Bay Company's (HBC) occupation of Fort Vancouver (1829-1860) have undergone extensive archaeological and historical study, the import of French ceramics to this location is not well documented. French tablewares represent a significant deviation from the predominantly British wares imported by the HBC prior to the U.S. Army's arrival at Fort Vancouver in 1849. Analysis of the sutler's store ceramic assemblage has additionally revealed stylistic differences that may relate to shifting demographics and consumer tastes during the mid-nineteenth century. Identification of such items continues to shed light on the materiality of British and Euroamerican colonialism in the Pacific Northwest.

Hodgman-Richter, Emily (she/her, University of Idaho, Chemistry Dept.), Ray von Wandruszka

*Some Very Interesting Artifacts I*

Artifacts recovered by historical archaeologists often require chemical analysis to establish their identity. They may, for instance, be bottles or jars showing no markings or typical features to indicate what their contents are. Identifying these materials is a challenging analytical problem, but it is also very interesting. For the chemist working on such samples, there is frequently a "wow"-moment around the corner. It is quite exhilarating to recognize unexpected materials that were used for long forgotten purposes. The problem becomes more complicated, of course, when the container indicates one thing, and the contents quite another. Who would have thought that a milk bottle with apparent curds in it, in fact contained a concoction used to remove fleas from a dog...?

Hosken, Kaitlyn (she/her, Portland State University)

*Talking About Plates: Analyzing French Transferprint Ceramics at U.S. Army Fort Vancouver*

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Howell, Angelina (PhD candidate; CEO and Principal, Warm Springs GeoVisions)

*Protecting Places that Matter: A Discussion Exploring Historic Properties of Religious and Cultural Significance to Indian Tribes (Panel Participant)*

Hughes, Mackenzie, Steven Spencer, Josh Allen, Steven Hackenberger, Karisa Terry (Central Washington University)

*A Geoarchaeological Investigation at Sentinel Springs (45KT297), southcentral Washington*

The Summer 2019 Central Washington University field school and Central Washington Anthropological Survey excavated four 1x1 m units at lower Sentinel Springs (45KT297) for the US Army Yakima Training Center. The stratigraphy of Units 2 and 4 were documented and bulk sediment samples were taken for each stratum. Unit 2 was excavated in 10 cm levels to 120 cmbd and a bucket auger was used to collect samples to a depth of 386 cmbd in arbitrary levels. A bone from 61 cmbd is dated to circa 2,200 years ago. Data for texture, color, magnetic susceptibility, X-Ray Fluorescence, pH, and debitage are compared for each sediment sample (n=34). The results indicate varying depositional processes working at Sentinel Springs and buried soil horizons associated with three major episodes of climate change.

Hurley, Warren (Department of Energy)

*Partnerships and Cultural Resources at the Hanford Site (Panel Participant)*

Jenkins, Kirsten (she/her; Tacoma Community College), Matt Emerson (Amherst College), Karisa Terry (Central Washington University), Colin Grier (Washington State University), James Brown (he/him; Washington State University)

*Field Schools*

How do you know if a field school is right for you? This presentation will discuss how to choose a safe, appropriate, and ethical field school domestically or abroad. The presenters will also advertise their own field schools. A Q&A session will follow.

Johnson, Paula (she/her; Willamette Cultural Resources Associates, Ltd.)

*Fish Passage Barrier Removal and Cultural Resources, So Far: Some Interim Data and Discussion*

A federal court injunction was issued in 2013 which requires Washington State to significantly increase the effort for removing state-owned culverts that block habitat for salmon and steelhead by 2030—affecting four Washington State agencies including Washington State Department of Transportation (WSDOT). As of 2020, WSDOT has completed over 350 fish passage barrier corrections statewide. Cities and counties, although not subject to the injunction, have also focused on removing fish passage barriers. Cultural resources review has typically been required for culvert replacement projects. As we enter the final 10 years of the injunction, what have agency cultural resource managers have learned while implementing the cultural resources regulatory process for fish passage barrier removal projects? What cultural resources, if any, have been identified and under what circumstances? What challenges have agencies' cultural resources managers faced? What opportunities have arisen? Does this repetitive type of project impact how the regulatory process is completed?

Kohler, Grace (she/her, Boise State University) Karl J. Mertens, Sally Clark, Annemarie Hasnain, Ann Wozniak, John P. Ziker,

*Religious Propositions: An Outgrowth of Social Exchange?*

The manner in which Homo sapiens communicate and cooperate has been a key facet that has helped to enhance human fitness and to define ways of life for millennia. Social exchange involving natural and religious phenomena is a major aspect of this process and has worked to shape both environments and cultures around the globe today. A number of studies in evolutionary psychology have shown that conditional reasoning and corresponding cognitive adaptations are involved in human institutions of social exchange. This study tests whether acceptance of religious and supernatural claims is based on the same cognitive adaptations as non-religious social exchange. Alternatively, the cognitive adaptations underlying supernatural communication could be based on specialized adaptations. The study will sample Amazon MTurk users responding to a priming-and-target task using vignettes analogous to and extending those used to establish cognitive adaptations for social exchange. Rather than relying solely on a forced-choice response as in previous studies, this study will also utilize a Bayesian response to allow for degrees of uncertainty within the priming-and target task.

Korsunsky, Alex (he/him, Vanderbilt University)

*Turning over the land: the uncertain promise of demographic and ecological transformation in Willamette Valley agriculture*

Farmers in Oregon – and across the US – are overwhelmingly old, white, and male, and a majority of Oregon farmland is expected to change hands in the next two decades. This coming transfer provides an opening for a range of organizations seeking to steward agricultural resources, promote conservation, and facilitate greater racial, ethnic, and gender diversity in agriculture. In this paper, I consider the hopes expressed by institutional actors who hope to leverage this asset transfer to transform Oregon's food system – and the serious limitations facing these ambitions. Beyond the major structural challenges, I present findings from ongoing dissertation research with Mexican immigrant farmers showing how nonprofits' social networks and ideological orientations lead them to overemphasize immigrant farmers' propensity for sustainable practices, and to oversimplify the diversity of agricultural approaches existing within that population. If the full promise of farmland transfer is to be realized in environmental as well as demographic terms, actors must resist the impulse to romanticize farmers of color as naturally ecological.

Kramer, Stephenie (she/her; Willamette Cultural Resources Associates)

*Applying for Private Sector Jobs*

This presentation will cover how to apply for jobs in the private sector of cultural resource management. Find out what employers look for in an application, as well as what to expect from the interview process, from an experienced cultural resources professional.

Litzkow, Jamie (Bureau of Land Management)

*Nevertheless, She Persisted: Intersectional and Multivocal Perspectives on the Contributions of Women in Pacific Northwest Anthropology (Panel Participant)*

Macrae, James (he/him, Falcon Cultural Resources, LLC)

*The Stylistic Evolution of Pecos River Style Pictographs and their Relationship with other Archaic Rock Art Styles in the Southwest: A Hypothesis*

Pecos River Style Pictographs, of southwest Texas (and northern Mexico) were produced for around two thousand years, during the Middle and Late Archaic periods, circa 2,000–4,000 years before present. This paper explores the stylistic development of Pecos River Style art and its classification into Classic and Post-classic phases of development. This proposed seriation is based on a combination of archaeological culture history, radiocarbon dates, and logical stylistic development. The relationship of the Pecos River Style with extra-regional styles like Glen Canyon Style 5, Grand Canyon Polychrome, and Barrier Canyon Style is also explored as it pertains to the overall evolution of these related rock image styles during the Middle and Late Archaic.

Marquardt, Will (MS; RPA; North Zone Archaeologist, Umatilla National Forest)

*Protecting Places that Matter: A Discussion Exploring Historic Properties of Religious and Cultural Significance to Indian Tribes (Panel Participant)*

Mathews, Bethany K. (she/her; Antiquity Consulting)

*Western Washington Women Homesteaders: Summary Statistics and Spatial Patterns for Nineteen Counties*

Twenty percent (8.5 million acres) of Washington State lands were patented through the Homestead Act between 1866 and 1969, but little is known about the experience of Washington's women homesteaders. Western historians estimate that nearly a quarter of all homesteaders were women and that most of women's homesteading occurred after 1900, however prior to the Washington Women Homesteader project no quantitative studies have been completed in Washington. This poster presents summary data of women's homesteading history in Western Washington and explores the temporal and spatial patterns of women's homesteading history.

Matt, Ira (FPO NRCS, Former DOE Tribal Affairs Program Manager at Hanford)

*Partnerships and Cultural Resources at the Hanford Site (Panel Participant)*

Maurice Major (he/him)

*From Consultation to #landback: The Continuum of Agency Engagement with Tribal Nations (Discussant)*

Maurice Major (he/him)

*Washington Department of Fish & Wildlife*

Mo Major (some people call him Maurice) has protected what governments call “cultural resources” for state agencies and museums in Washington and Hawai’i since 1990 and currently does so for the Washington Department of Fish & Wildlife. Occasionally, he does so for environmental restoration projects in the South Sound. Frequently, he keeps an eye on threatened cultural places near home. His first land acknowledgement was clinging to the back of an SUV on Moloka’i. He was educated by public schools, punk rock, University of Hawai’i, and Native people.

May, Nathan (Confederated Tribes of the Umatilla Indian Reservation)

*Gunboats on the Columbia River: The Attack on Long Island, the “Perkins Massacre” (45BN02123), and the Bannock War of 1878*

In February 2020, the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Cultural Resources Protection Program conducted a Section 110 block survey with the U.S.F.W.S. During the block survey a wagon axle, driven vertically into the ground, was recorded (45BN02123). CTUIR oral histories as well as historic and archival research determined that the wagon axle was a memorial marker erected in 1922 to commemorate the location a search party found the remains of Blanche and Lorenzo Perkins, a couple who was killed as a result of the United States Army’s improvised gunboat patrol of the Columbia River during the Bannock War of 1878. The documentation of the Perkins Memorial Marker shows how a robust Section 110 monitoring program provides opportunities not only for capacity building and long-term stewardship at the Hanford Site but also how the identification of sites within existing archaeological districts from Section 110 site surveys can shed light on incidents in the past by adding to our understanding of the significance, and often contested nature, of the landscapes in which we work.

McGraw, Juliet (she/her; Friends of the Ridgefield National Wildlife Refuge)

*Nevertheless, She Persisted: Intersectional and Multivocal Perspectives on the Contributions of Women in Pacific Northwest Anthropology (Panel Participant)*

McGraw, Juliet (she/her; Friends of the Ridgefield National Wildlife Refuge)

*Intergenerational Trauma, Disenfranchisement, and the Impacts of Engagement with Indigenous Communities: A Conversation with Anthropology Colleagues and Allies*

Contemporary anthropological practices fail to address the unique needs of Indigenous populations in the classroom, through research, and in our partnerships. Our discipline actively contributes to the re-traumatization of Native students and the continuation of intergenerational trauma in Indigenous communities, while furthering their disenfranchisement in anthropology and beyond. In this presentation, I will directly address these issues through my involvement with local Adverse Childhood Experiences (ACEs) practice, along with my personal experiences as an Indigenous anthropologist, single mother, and the caretaker of the Cathlapotle Plankhouse (a living entity, spiritual home, and educational center). This presentation will include an open-ended discussion where we will directly address why and how anthropology can and must engage in authentic relationships with local and descendant communities.

Mendez, Keith (he/him; Hanford Mission Integration Solutions)

*Partnerships and Cultural Resources at the Hanford Site (Panel Participant)*



Meyer, Jonathan (USFWS)

*Partnerships and Cultural Resources at the Hanford Site (Panel Participant)*

Miller-Atkins, Galen (he/him, Anderson Perry & Associates, Inc.)

*Using Debitage Analysis to Infer Artifact Transport: A Case Study from Harney Basin, Oregon*

Mobility strategies within the northern Great Basin have been variously described as tied to a seasonal-round, highly mobile foragers, or a combination of both. In the Harney Basin of Oregon, many of the sites have been described "central places", located near perennial water sources and stable food resources, and, from which, logistic forays would be sent. It is uncertain, however, as to how lithic procurement and maintenance figured in to the mobility strategies of precontact hunter-gatherers. As the majority of lithic artifacts present are flake debris, novel strategies are needed to correlate mobility strategies with data from debitage assemblages. Cortex ratios are one such approach to measure artifact transport to and from a site. Here, cortex ratios and various flake indices are used to describe and compare three newly-identified sites near Hines, Oregon. The results suggest that these methods may help bolster descriptions of mobility and site function even where formal tools are uncommon or absent. In addition, the utility of these metrics make them appropriate in cultural resource management contexts.

Moura, Guy (Confederated Tribes of the Colville Reservation)

*Protecting Places that Matter: A Discussion Exploring Historic Properties of Religious and Cultural Significance to Indian Tribes (Panel Participant)*

Neller, Angela (Wanapum Heritage Center)

*Nevertheless, She Persisted: Intersectional and Multivocal Perspectives on the Contributions of Women in Pacific Northwest Anthropology (Panel Participant)*

Neller, Angela (Wanapum Heritage Center)

*I Ka Nana No A 'Ike: By Observing, One Learns*

The Hawaiian proverb, I ka nana no a 'ike, speaks to the conference theme "listen, learn, change". By observing, one learns. I will situate myself, as a Kanaka O'iwi, within the context of my work on the Columbia Plateau. I have had the privilege to work for and with the Wanapum Band of Priest Rapids for nearly twenty years. I bring to that work my identity as a Native Hawaiian woman and as a learned professional with experience in archaeology, curation, and repatriation. Tribal museums honor indigenous rights to place and give voice to spiritual and religious responsibilities. We are but a guest in these places and in the work that we do. And in doing that work we too have responsibilities.

Ng, Tommy Y. (Bison Historical Services Ltd., Calgary, Alberta)

*Diversity in Archaeology (Panel Participant)*

Noll, Chris (Archaeological and Historical Services), Cassandra Manetas (WSDOT), Mark Steinkraus (he/him; Stell Environmental Enterprises)

*Archaeological Monitoring Pro-tips*

Monitoring can be an intimidating experience, particularly for new professionals. Learn some tricks of the trade from our panel of experts.

Oliver, Liz (she/her; U.S. Army Corps of Engineers)

*Protecting Places that Matter: A Discussion Exploring Historic Properties of Religious and Cultural Significance to Indian Tribes (Panelist)*

The purpose of this session is to explore the concept of Historic Properties of Religious and Cultural Significance to Indian Tribes (HPRCSITs). HPRCSITs are a new addition to the types of properties identified as part of the legal mandate established by Section 106 of the National Historic Preservation Act and the National Environmental Policy Act. The format will be a two-hour panel discussion with questions posed to a diverse group of land managers, members of American Indian Nations, and government agency officials. Questions are designed to generate discussion on the nature of HPRCSITs, different approaches to the potential presence of HPRCSITs and to what extent one should be documented. Participants will also be encouraged to share their experiences devising methods to record and appropriate ways to manage HPRCSITs.

Packwood, Kirk

*The New Face of Mass Movements: Internet Collectivization, Radicalization, and Societal Transformation from an Applied Anthropological Perspective*

Recent high profile events have proven in a tangible way that relatively new methods of online anonymous and semi-anonymous collectivization and mobilization can be very effective at causing societal transformation on a significant scale when applied correctly and when specific underlying elements are present or established. Ultramodern computer, cell phone, and networking technologies have created an environment wherein large numbers of relatively anonymous people can and do gather to work toward achieving specific and more abstract goals. As ultramodern computer, cell phone, and networking technologies continue to advance in power and presence, the potency and potential of anonymous and relatively anonymous online collective movements and the ideologies and ideological elements they support and spread should increase. In a manner similar to agitprop (agitation propaganda) campaigns conducted in the Soviet Union, online locations that serve as focal points for collective movements also act as funnels transforming and recruiting a small but steady percentage of new and existing users into active participants and sometimes fanatical supporters of particular social movements. This presentation discusses both the positive and negative elements and potential of online anonymous collective social movements from an applied anthropological perspective.

Pinkham, Josiah (Nez Perce Tribe)

*Partnerships and Cultural Resources at the Hanford Site (Panel Participant)*

Pouley, John (State Archaeologist, Oregon SHPO)

*Protecting Places that Matter: A Discussion Exploring Historic Properties of Religious and Cultural Significance to Indian Tribes (Panel Participant)*

Prentiss, Anna (she/her; University of Montana)

*Nevertheless, She Persisted: Intersectional and Multivocal Perspectives on the Contributions of Women in Pacific Northwest Anthropology (Panel Participant)*

Prentiss, Anna (she/her; University of Montana)

*Problems and Prospects for Transgender People in Pacific Northwest Archaeology*

Transgender people face a multitude of challenges in negotiating their everyday lives. Gender dysphoria can be crushing. Gender transition can offer new freedoms while also bringing threats of rejection and violence. Given its field focus, archaeology offers particularly significant challenges for transgender people. Routine field contingencies (spanning bathrooms to interactions with different publics) can quickly become crises. Many practitioners remain uneducated regarding the realities experienced by transgender people. Yet, archaeology like so many other field disciplines is slowly changing for the better. Gender inclusivity and safety have become prominent issues for our anthropological and archaeological societies and professional organizations. This forum is a good example of such discussions but it is only a first step. During this presentation, I will highlight both problems and prospects for a Pacific Northwest archaeology that has room for transgender people.

Price, Nikaila (she/her; University of Idaho, Chemistry Dept.) Ray von Wandruszka

*Some Very Interesting Artifacts II*

Among the more interesting historical materials that reach our laboratory are man-made mixtures of natural ingredients, prepared for everyday purposes such as gluing, cleaning, dying, or starting a fire. A complete chemical analysis of such substances can be very involved, and is often complicated by chemical changes that take place during long-term environmental exposure. We therefore tend to focus on one, usually the main, ingredient and search for documentary evidence that links it to particular uses and alterations. If relevant information is found, the analytical methodology is directed toward confirmation, rather than a priori identification. There are, for instance, many documented historical uses for pine resin, some with interesting modifications that can be traced chemically.

Putsche, Laura (University of Idaho)

*Your medical opinions aren't welcome though your medicines are: Western and traditional medicine in the Peruvian Amazon.*

Western medicine has had some impact on the use of curative services within a community of Shipibo in the Peruvian Amazon. They welcome western medicines and treatments but also continue to use traditional methods for minor ailments and shamanic treatments for more serious ailments. They see no conflict in the simultaneous use of both western and traditional healing methods to treat proximate causes. However, they are less inclined to accept explanations for ultimate causes grounded in western medical etiology, and suggestions about such causes are often dismissed. Some causes they attribute to supernatural sources, while others they attribute to accidents associated with the impacts of modernization on their community.

Redd Kickham, Elizabeth (she/they; Idaho State University), Laticia Herkshan

*Listening to and Learning from Tribes, Researchers, and Participants—changing research processes to encourage co-equal production and research sovereignty*

When university researchers consider Native Americans in research, they usually frame them as participants, rather than co-equal collaborators. Most research remains extractive (David-Chavez & Gavin, 2018; Latulippe & Klenk 2020). Two concurrent Idaho State University projects address this issue. Under the 2019 Shoshone-Bannock Tribes (SBT)-Idaho State University (ISU) Memorandum of Agreement, in concert with SBT's redefining research review protocols, ISU is refining its research approvals and training processes toward decolonizing research practices and supporting Tribal sovereignty. ISU encourages researchers to a) privilege Tribal needs in research planning and b) engage in fully collaborative research design. Additionally, a team of researchers across three departments are interviewing past and present ISU-SBT researchers and participants to describe degree of co-production and research ideologies. This paper presents the processes, challenges, and lessons learned to date from the perspective of ISU personnel involved in both processes. Preliminary findings suggest most researchers desire a co-equal relationship and revising both ISU and SBT institutional research processes may remove barriers to achieving co-equal collaborative partnership. We argue that, while SBT and ISU have distinct but overlapping goals, developing complementary research review and training processes requires actively listening to and internalizing the needs of our collaborative partners.

Rippee, Cassandra (she/her; Coquille Indian Tribe, Tribal Historic Preservation Officer)

*Protecting Places that Matter: A Discussion Exploring Historic Properties of Religious and Cultural Significance to Indian Tribes (Panel Participant)*

Rippee, Cassandra (she/her, Coquille Indian Tribe), Chelsea Rose, Alex DeGeorgy, Emily Taber, and Michelle Stegner

*Working with Canine Forensic Teams: Collaborative Disaster Archaeology*

Catastrophic fires destroyed thousands of homes in Oregon in 2020, forcing many families to leave their homes and their most important possessions, pets, and cremated remains of loved ones behind. Archaeologists from Oregon lead by the Southern Oregon University of Laboratory Anthropology (SOULA) partnered with Alta Heritage Foundation (AHF) and canine forensic dog teams to provide disaster recovery services. The team visited dozens of homes across in late 2020, reuniting victims of the fires with the ashes of their loved ones in southern and western Oregon.

Rooker, Angela (she/her; Indiana University of Pennsylvania) and Will Marquardt (Umatilla National Forest) – Session Chairs

*Protecting Places that Matter: A Discussion Exploring Historic Properties of Religious and Cultural Significance to Indian Tribes*

The purpose of this session is to explore the concept of Historic Properties of Religious and Cultural Significance to Indian Tribes (HPRCSITs). HPRCSITs are a new addition to the types of properties identified as part of the legal mandate established by Section 106 of the National Historic Preservation Act and the National Environmental Policy Act. The format will be a two-hour panel discussion with questions posed to a diverse group of land managers, members of American Indian Nations, and government agency officials. Questions are designed to generate discussion on the nature of HPRCSITs, different approaches to the potential presence of HPRCSITs and to what extent one should be documented. Participants will also be encouraged to share their experiences devising methods to record and appropriate ways to manage HPRCSITs.

Rorabaugh, Adam (Washington State Department of Fish and Wildlife)

*From Consultation to #landback: The Continuum of Agency Engagement with Tribal Nations (Discussant)*

Rorabaugh, Adam (Washington State Department of Fish and Wildlife), Amanda K. Taylor

*Assessing Settlement Dynamics in the San Juan Islands and Northwestern Washington, a Bayesian Approach*

Recent developments in Bayesian approaches to radiocarbon dating have enabled re-examinations of questions of population dynamism in the Salish Sea. This study expands on Taylor et al. 2011 using Kernel Density Estimation (KDE) and an expanded data set of 538 radiocarbon dates from academic and cultural resource management literature. The expanded sample suggests that the patterns of population growth from 3200-2800 cal BP in coastal Northwestern Washington, with an influx to the islands during 2600-2200 cal BP. A subsequent decrease in radiocarbon frequencies and large sites suggests shifts in use of the Islands, followed by peak large-scale occupation from 650-300 cal BP. We compare marine and terrestrial dates to assess the robustness of these patterns. We consider the impact of erosion and other post-depositional processes on potential dating patterns. We also examine the utility and significance of settlement pattern as a point of inquiry regarding past Native American communities.

Rose, Chelsea (she/her; Southern Oregon University Laboratory of Anthropology)

*Asian American Diaspora Archaeology in the Pacific Northwest (Discussant)*

Rose, Chelsea (she/her; Southern Oregon University Laboratory of Anthropology), Jacqueline Y. Cheung, Eric Gleason

*Merchant Status: Life, Labor, and Politics in the Time of Chinese Exclusion*

From 1875 until 1943 treaties, laws, legal opinions, administrative rules, and regulations circumscribed the free movement of the Chinese immigrants in the U.S. and strictly limited the inflow of new migrants of Chinese descent. These efforts had a profound and lasting impact on the Chinese diaspora in the Pacific Northwest and beyond. Navigating the ever-changing laws, rules, and regulations aimed at their exclusion, shaped the nature of Chinese communities, and influenced their relations and interactions with their white neighbors. The merchandise store served a critical and multifaceted role in the formation, development, and decline of the rural Chinatowns throughout Oregon, as well as to the transnational lives of Chinese Oregonians. In addition, these businesses could be used to facilitate resistance and community persistence in the face of the ever-

evolving U.S. immigration policy, examples of which will be presented by case studies in Ashland and The Dalles.

Rose, Chelsea (she/her, Southern Oregon University Laboratory of Anthropology), Alex DeGeorgy, Emily Taber, Kassandra Rippee, Michelle Stegner

*After the Fire: Disaster Archaeology as Community Service*

Following the catastrophic fires in the fall of 2020, archaeologists from across Oregon partnered with the Alta Heritage Foundation (AHF) to help victims recover human cremains lost in the wildfires. AHF has been using archaeological science and canine forensic dog teams to reunite people with the ashes of their loved ones since 2017. When the September fires hit, the Southern Oregon University Laboratory of Anthropology (SOULA) coordinated with the organization to bring the service to Oregon. This has led to dozens of successful recoveries, and the establishment of regional teams positioned to quickly respond to future fire events across the state. This work allows archaeologists to use their specialized skill sets to help communities rebuild and recover following the catastrophic wildfire events that will become more commonplace due to climate change.

Ross, Douglas (Albion Environmental, Inc.)

*Asian American Diaspora Archaeology in the Pacific Northwest (Discussant)*

Following the papers for this symposium, Dr. Douglas Ross will facilitate a discussion/Q&A session.

Russell, Kat (Bureau of Land Management)

*From Consultation to #landback: The Continuum of Agency Engagement with Tribal Nations (Discussant)*

Russell, Kat (Bureau of Land Management)

*Criticism, Compliance, Consent - A Personal View of Government-to-Government Consultation, and the Road Forward*

Federal Agencies are mandated to complete government-to-government (G2G) consultation with the First Nations to identify potential impact on tribal resources resulting from proposed projects, and to make a good-faith effort to achieve consensus on how to move forward. In my 20-year career with the BLM I've seen many variations in Agency approach to consultation, ranging from desultory 'notice and opportunity to comment', to the attempt to formally follow all procedures as directed in the new (2016) BLM-1780 Improving and Sustaining BLM-Tribal Relations Handbook. No single approach has proven to be effective in defining or achieving mutual management goals, but mutual familiarity and respect between consulting parties goes a long way toward facilitating understanding. After a short introduction I would like to discuss G2G consultation at the Field Office level with session participants - approaches, expectations, and the road ahead.

Russell, Kat (Bureau of Land Management)

*Bent but not Broken: Overcoming Barriers to Cooperative Management*

The BLM mission to "sustain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations" is complicated by our mandate to manage for multiple use. We are also expected to do so with consent of the Tribes within whose traditional territory we are operating; consent obtained through the consultation process. In my ideal world, BLM land would be managed in partnership with the Tribes, both parties agreeing upon management goals then acting together to achieve those goals. All

while under the watchful eyes of the "concerned public".

Using examples stemming from attempts to cooperatively manage public land while restoring and/or maintaining land health, and meeting public demands for access and use, and I will discuss some of the barriers to cooperative management we have encountered. Then, in discussion with session participants I will solicit suggestions for overcoming these barriers.

Schroeder, William (they/them/their and/or he/him/his, Arête Cultural Resources Management)

*On the Q.T. or Everything You Ever Wanted to Know About Queer Theory\* (but Were Afraid to Ask)*

The Social Sciences have historically been analyzed and discussed in Western Colonialist androcentric heteronormative terms. Hegemonic paradigms have heretofore labeled all "non-normative" populations, behaviors, identities, and subjectivities as "Other," e.g., the lived and intersectional experiences of LGBTQQIA2S+ people, people of color, women, children, and the elderly, ethnic groups, subaltern classes, persons with disability, genetic and or chromosomal variation, and neurodiverse individuals. Counterintuitive as it may sound, we cannot know exactly what deviance is unless we know exactly what the norm is. So what IS normal? Queer theories explore areas and topics no other formalized discipline would dare and critically question the assumptions. Queer theories have roots in Feminist Theory and Literary Criticism. Recently queer theories have investigated topics in Biology, History, Archaeology, and Ecology as well as Germ Theory, Human-Animal Relations, Magick, the Supernatural, and Artificial Intelligence. Strange fruit indeed.

Schroeder, William (they/them/their and/or he/him/his, Arête Cultural Resources Management)

*A Can of Worms?*

Amsterdam School for Cultural Analysis Ph.D. Fellow, Selçuk Balamir, finds that prior to WWI canned food was "a military tool of European colonialism" and posits that after WWI the tin can became "the symbol of capitalism, serving the interests of the American Empire" (Balamir 2011:5). James T. Rock (1942-2010) "compiled information and provided typologies and dating techniques, including examination of seams, closures, openings, materials composition, etc. that have enabled archaeologists and historians to better interpret historical archaeological sites" (soda.sou.edu.2018). Indeed Rock's, *A Brief Commentary on Cans* (1987), is the most comprehensive monograph on the subject, yet does not discuss corrugated or military ration cans in as much detail. A revised can typology, opening, and opener technology chronology is thus warranted. This paper/poster presents postprocessual posits, new research, diagnostic criteria, and historical+biographical information that promote professional praxis so one does not get canned for not knowing about the potential significance of cans.

Shaw, Randi (she/her; The Nature Conservancy of Washington)

*Buffalo Whispers and Rematriation in the Moses Coulee Region of Central Washington State*

The mere acknowledgement of one's presence within occupied Indigenous homelands does little more than reinforce settler colonial power dynamics when it is not paired with concrete action. The cession of Settler privilege is necessary to the actualization of Indigenous sovereignty. This presentation explores the burgeoning partnership between The Confederated Tribes of the Colville Reservation History/Archaeology (CCT H/A) Program and The Nature Conservancy of Washington (TNC). Together, we seek to develop a shared vision for the protection and culturally-guided management of the myriad cultural resources within TNC's Moses Coulee, McCartney Creek, and Beezley Hills Preserves. Central to this effort is the ideal of the rematriation of these places, along with the teachings they hold and relations they sustain, to the people whose ancestors have cared

for them for countless generations. Discussants will share their perspectives on their partnership, from its genesis in happenstance, to the first steps to co-create and implement culturally informed management practices, articulate policies and guidance that support the reconnection of people with place, and facilitate the fulfillment of ancestral responsibilities.

Shellenberger, Jon

*Tribal Caucus Chair and Tribal Caucus Public Highlights Chair*

Sherwood, Trina (Yakama Nation Environmental Restoration/Waste Management)

*Partnerships and Cultural Resources at the Hanford Site (Panel Participant)*

Simurdak, Nik (they/them; Central Washington University)

*Engaging Hidden Contexts: New Examinations of Researcher Positionality (Panel Participant)*

Simurdak, Nik (they/them; Central Washington University), Patrick T. McCutcheon (he/him; Central Washington University)

*Developing a morphometric protocol for identifying and analyzing morphological variability in stone tools.*

Morphometrics analysis of stone tools emphasizes the use of metric data to capture information about tool attributes, such as shape. These techniques are still under development, with some adapted for less reduced tools and others making use of prohibitively expensive technology. This project developed a morphometric analysis technique that is more accessible and attuned to more reduced tools. The artifacts used come from a teaching collection of 18 projectile points from the mid-Columbia River Valley in Kittitas County, Washington. We compare a novel technique to two pre-existing approaches. Our research objective is to identify morphological attributes whose presence, frequency, and distribution are shaped by natural selection in contrast to those traits influenced by cultural transmission. The comparative methods fell short of identifying shape trends but some data suggested there are greater differences in variation around the haft elements than those of the blade and point. The novel method indicated blade shape was a functional element influenced by natural selection and hafting was a stylistic trait influenced by cultural selection.

Simurdak, Nik (they/them; Central Washington University), Patrick T. McCutcheon (he/him; Central Washington University)

*Chemical Sourcing and Technical Analysis of Volcanic Glass Lithics from the Grissom Site (45KT301)*

The Grissom site (45KT301) is a large archaeological site with artifacts spanning pre-contact to historic periods. Past research by Central Washington University students sought to understand stone tool type variation, distribution, and diversity across space and time in the site. This has included an effort to chemically source lithics made from volcanic glass using x-ray fluorescence. Combined with technological analysis, chemical sourcing reveals patterns of trade and exchange by showing which sources are most represented and how much processing of different source materials occurred. This project built on previous research by completing the sourcing analysis across 59 of 114 newly identified volcanic glass artifacts. Our results were combined with past results permitting us to look at source representation across the entire site excavation area. The results show that two local sources represent 49% of the sourced pieces and demonstrate the greatest diversity of object type and reduction sequences. Two more distant sources, though having far fewer cores and bifaces, represent the greatest proportion of flakes (n=32) than the two local sources (n=30). A total of 13 sources, some



over 250 miles away, are represented in the site. Areas of intensive tool production were also identified through total lithic artifact counts.

Somogyi-Csizmazia, John (North Island College, Campbell River, B.C.)

*Diversity in Archaeology (Panel Participant)*

Stcherbinine, Sean (he/him, Archaeological and Historical Services - Eastern Washington University)

*Are We Digging Deep Enough? Deeply Buried Holocene and Pleistocene Surfaces in the Moses Lake Dune Field, Grant County, Washington*

The Moses Lake Dune Field formed from sands deposited by Pleistocene outburst floods, and consists of two well understood strata denoting distinct lithologies of the flood path. However, landform development and the potential for deeply buried occupation surfaces in the dune field remain unclear. Deep archaeological testing using backhoe trenches, and column sampling were undertaken to investigate the potential for deeply buried cultural materials and occupation surfaces. Grain size and shape, color, acidity, and organic and calcium carbonate content were measured at 20-centimeter intervals within two three-meter tall columns. Deep testing within parabolic and linear dunes indicates Pleistocene sediments are at depths difficult to access using normal archaeological survey techniques. However, interdune surfaces contain Pleistocene sediments at shallow depths that can be reached by shovel excavation. Results were used to create a landform development model that posits dune activation and stabilization were likely controlled by arid/wet climatic swings during the Holocene. This study will aid archaeologists when investigating potential impacts to cultural resources inside the Moses Lake Dune Field, as well as eolian environments of central Washington.

Steinkraus, Mark (he/him; Stell Environmental Enterprises)

*Fieldwork Pro-tips*

Lightning round! In this session, various archaeologists will give you their best advice about fieldwork...in 5 minutes or less!

Steinkraus, Sarah (she/her; Stell Environmental Enterprises)

*Workers Rights and COVID-19 Safety*

Did you know that you have certain rights as an employee? This presentation will cover general worker's rights, as well as how to advocate for yourself during (and after!) the COVID-19 era.

Steinkraus, Sarah (she/her; Stell Environmental Enterprises), Jennifer Ferris (she/her; HDR)

*Resume and CV Workshop*

How do you make your resume stand out? This workshop will cover how to put together a Curriculum Vitae (CV), common mistakes to avoid, and how to tailor a CV/resume for specific jobs.

Stevenson, Alex (Sound Transit)

*Deep impacts working group: A conceptual outline*

Large infrastructure and development projects pose unique challenges to addressing concerns about archaeology. This is especially true in the Puget Sound region where near surface conditions and environmental

uncertainty create the need for engineering solutions that reach deep into the ground. Traditional archaeological methods are generally not appropriate for identifying deeply buried archaeological potential let alone delineating sites and traditional data recovery for mitigation. Large transportation projects in the Puget Sound region have been on the forefront of dealing with these issues. As the region grows and we see the need for more transportation infrastructure the need for better approaches to the issues of site identification, effects assessment, and mitigation is growing as well. In this session I outline the need for and concept of a "Deep Impacts Working Group" to develop guidance on these topics which includes the need for input from Tribes, archaeologists, geoarchaeologists, regulatory agencies, and project proponents.

Tasa, Guy (he/him; WA Dept. of Archaeology and Historic Preservation), Juliette Vogel (she/her; WA Dept. of Archaeology and Historic Preservation), Alyson Rollins, Nichole Fournier (she/her; California Polytechnic State University and University of Virginia), Chris Casserino (Spokane Tribe of Indians)

*Physical Anthropology Jobs: Options and Advice*

Join us for a panel discussion on job opportunities in Physical Anthropology! Moderated by the Washington State Physical Anthropologist, Dr. Guy Tasa, this panel includes a number of professionals that represent varying job types available to Physical Anthropology specialists.

Tavel, January (she/her; ICF), Tait Elder (he/him; ICF), Cassandra Manetas (WSDOT)

*Same Places, New Eyes: Applying the Cultural Landscape Evaluation Approach to Transportation Infrastructure Projects*

Transportation agencies are responsible for building, maintaining, and repairing complex infrastructure networks. Portions of these networks can be historic properties and, because of their size and scale, often intersect with other historic properties. In some instances, accurately characterizing impacts to these complex resources may require use of the cultural landscape evaluation approach. As cultural landscapes can convey evolving development trends and relationships between resources, this approach allows for consideration of a broad array of dynamic and inter-related components. While it is not a panacea, the cultural landscape evaluation approach is particularly effective at defining the nature and scale of project impacts to large and complex historic properties in a way that cannot be as easily accomplished through the more traditional approach to resource and impact evaluation. In this presentation, we explore two examples of the application of the cultural landscape evaluation approach on complex transportation projects. These projects include the Better Market Street project in San Francisco and the State Route 520 Replacement Project in Seattle. Through these examples, we describe how the cultural landscape evaluation approach was applied, lessons learned, and the strengths and weaknesses of applying this approach to a range of resource and project types.

Thirtyacre, Sarah (she/her; WA State Recreation and Conservation Office)

*From Consultation to #landback: The Continuum of Agency Engagement with Tribal Nations (Discussant)*

Thirtyacre, Sarah (she/her; WA State Recreation and Conservation Office)

*From Consultation to #landback: The Continuum of Agency Engagement with Tribal Nations (Panelist)*

Sarah Thirtyacre is the Cultural Resources Program Manager for the Washington State Recreation and Conservation Office (RCO). The RCO is a small state agency that manages grant programs to create outdoor recreation opportunities, protect the best of the state's wildlife habitat and farmland, and help return salmon from near extinction. Sarah graduated from The Evergreen State College with a degree in environmental

science and has spent the past 20 years working in the natural resources field. Sarah enjoys facilitating efforts that help bring together natural resources restoration efforts and cultural preservation. When not working, she is most often spending time outdoors with her family and friends.

Tiede, Kristen (she/her, Confederated Tribes of the Umatilla Indian Reservation)

*The History of the Tutuilla Presbyterian Church on the Umatilla Indian Reservation, Umatilla County, Oregon*

In 1882, students of Marcus and Narcissa Whitman founded the Tutuilla Presbyterian Church on the Umatilla Indian Reservation. Early church services were held in founding member Walter Lowrie's home. Church buildings were constructed later in 1882 and then replaced in 1900. Historic maps can be used to follow the journey from the original buildings to the current location of the church. In 1898, the congregation requested a young missionary from the Presbytery of East Oregon and in 1900 recent graduate James M. Cornelison arrived in Pendleton. Cornelison learned to speak and preach in the Nez Perce language, Nimipuutimt, and was highly regarded by the tribal community. Cornelison served as the minister for the Tutuilla Presbyterian congregation for over 40 years. The Tutuilla Church was, and continues to be, an important social gathering place for members of the Cayuse, Umatilla, and Walla Walla people, as evidenced by oral history and historic documents.

Tveskov, Mark Axel (he/him; Southern Oregon University)

*Segregation and Hierarchy Under Duress: Social and Physical Space at Miner's Fort, a Rogue River War Settler Fortification on the Oregon Coast*

Miner's Fort was a settler fortification located at the mouth of the Rogue River on the southern Oregon Coast. In February and March 1856, some 100 settlers were besieged by Indigenous forces as part of the Rogue River War. Those trapped inside included white men and women, Indigenous women partnered to white men, and at least one African American settler. Miner's Fort was extensively excavated in 2016 and this paper examines the social and physical use of the space inside the fort, use that, even under extreme duress, reinforced racial and social hierarchies of the day.

von Wandruszka, Ray (he/him, University of Idaho, Chemistry Dept.)

*Stone Drugs in Traditional Chinese Medicine*

Archaeological excavations of historical Chinese sites in North America often turn up remnants of stone drugs – mineral materials that have (more-or-less) established therapeutic properties. Recognizing stone drugs is not always easy. They usually come in Chinese single-dose medicine vials, which identifies them as drugs. Discarded vials that lay buried for extended periods, however, may be penetrated by mineral soil components that are difficult to distinguish from stone drugs. While materials like cinnabar (HgS) and red lead oxide (Pb<sub>3</sub>O<sub>4</sub>) may be easy to recognize as drugs, others like opicalcite (CaCO<sub>3</sub>/M<sub>2</sub>SiO<sub>4</sub>) and calamine (ZnO/Fe<sub>2</sub>O<sub>3</sub>) look much like soil.

What all stone drugs have in common, is that they are very persistent. From an identification standpoint this is a plus, since the analyst does not have to worry about chemical transformations that changed the original materials.

Walls, Robert (University of Notre Dame)

*Resilience Through Writing: Early Indigenous Publishing and Anthropology in the Pacific Northwest*

Indigenous people and communities in the Pacific Northwest have employed a variety of means to protect and preserve language, culture, lands, and resources. However, little has been written on Northwest Indigenous people and their engagement with alphabetic literacy, and how they adopted writing as a crucial tool to resist settler-colonial domination in the region. This paper will outline ongoing research that documents the emergence of print culture in Northwest Native communities, especially its use, before 1960, in public forums to express Indigenous interests to an audience of Native and settler readers. I will present examples to illustrate how Native authors employed narrative genres—poetry, story collections, and letters to newspapers—to establish an oppositional discourse in the public sphere. This discourse challenged the modernist projects of dispossession, forced assimilation, and even anthropological research. Writing was used to complement oral tradition, not replace it, or replace other traditional forms of non-alphabetic communication. Using the privileged technology of print as modern communication, Native authors mobilized written texts and dispersed their carefully worded claims to rights and territory, and thereby expanded their networks of contacts and potential allies within and outside of Indian Country. Publishing did not erase Indigeneity; it enhanced its resilience.

Watkins, Tatiana (she/her; University of Idaho)

*Pacific Northwest Collaboration: A look into the modification and repurposing of artifacts in Chinese-occupied sites*

This project I'm conducting in collaboration with the Asian American Comparative Collection (AACC) looks at the methods in which material culture has been modified and repurposed in Chinese-occupied archaeological sites. The AACC hopes to standardize these terms and create a comprehensive list of artifacts that show signs of these developments to aid in better understanding the ways Chinese communities lived and worked in the American West. The AACC houses many objects fitting these descriptions, however, to create a fuller, more inclusive view into these artifacts more data is needed. This project contacted archaeologists, archaeology enthusiasts, and historians from around the Pacific Northwest to create a collaborative dataset and to utilize research on the Chinese diaspora previously and currently being conducted.

Weiss, Aaron (College of Idaho)

*Pant Leg Pedagogy: Subtle and Diverse Hermeneutic Messages at a U.S. Islamic School*

In popular Western culture and media Islam is widely reified, flattened, and treated as a static, monolithic entity. Monochromatically negative depictions of Islamic education betray a lack of understanding of the diverse personalities, pedagogies and purposes found in Muslim schools. Even those presenting Muslim schools in positive light often fail to communicate Islam's socially constructed and contested dimensions, minimize the significance of interpretive disparities among believers, and diminish the associated conflicts potentially experienced by members of Islamic school communities. This paper, based on 18 months of ethnographic research, considers a diversity of religious interpretation in a U.S. Islamic school, and a few of the ways these interpretations are communicated to students. I focus here on two specific examples: 1) men's clothing, and 2) an individual teacher's reflections of her own attempts to enforce religious observance onto one of her students. I argue that Muslim teachers' and administrators' interpretations of Islamic religious tradition often manifest themselves in subtle ways, and yet may have powerful effects on both the moral and hermeneutic

messages communicated to their students. Increasing awareness of this phenomenon can help teachers and administrators to more effectively address interpretive diversity within their school communities.

Werhan, Gunnar (University of Aberdeen)

*Association for Washington Archaeology Mentorship Program (Session Participant)*

William A. White, III, PhD

*Keynote Address: Building an Anti-Racist Anthropology*

The 2020 Race Uprisings and ongoing anti-Asian American and Pacific Islander violence has pushed many anthropologists to take a stand against racism. We all want to do something to help but are finding ourselves stymied by the sheer size of the problem. At its core, racism is rooted in inequity and is perpetuated through trauma. None of us in the United States are immune of its effects. This talk addresses how taking a trauma-informed approach to our work and careers has the potential to address anthropology's role in structural racism. It also shows us a pathway toward helping us become anti-racism advocates in our own lives, workplaces, and communities. I draw upon examples of archaeology organizations in the United States who are working to realizing the anti-racist institutions BIPOC communities need. An anti-racism archaeology can be one of the tools this country uses to heal from the intergenerational trauma we have all suffered.

Whitlam, Rob (he/him; WA Department of Archaeology and Historic Preservation)

*Partnerships and Cultural Resources at the Hanford Site (Panel Participant)*

Wijnen, Jobbe (he/him, International Centre for Pull Tab Archaeology)

*Pull Tab Archaeology: participatory archaeology without borders.*

Public engagement is an important objective for archaeologists in The Netherlands and other European countries. However, conservationist doctrine, commercial efficiency and a focus on scientific contribution make public involvement in modern cultural resource management almost negligible. The Pull Tab Archaeology project aims to turn this tide. The PTA project, defined as the archaeology of beverage can pull tabs and other devices with a tear strip opener, effectively uses crowd-sourcing as its main strategy to create a global knowledge base. Via social-media such as Facebook and Instagram, people world wide are asked to send in ring pulls. In doing so, they contribute to a international reference collection. Since its start in 2018, the PTA project has collected over 3700 pull tabs. Close to a hundred participants sent shipments of ring pulls from 32 countries, including the USA, Australia, Japan, Syria and Nigeria, gathering 92 different types. In 2020 this resulted in the publication of a global typology of zip top tabs and pull tabs that would not have existed without non-archaeologist citizen participation. The project shows the potential of citizen science in creating a public archaeology without borders.

Williams, Scott (he/him; WSDOT), Dennis Wardlaw (WA Department of Archaeology and Historic Preservation)

*The State of the State's Transportation Cultural Resources Management: the View from WSDOT and DAHP.*

WSDOT and DAHP will discuss the state of the state's transportation cultural resources management efforts over the past year, including successes, challenges, and expectations for the upcoming year.

Wilson, Chris (Advisory Council on Historic Preservation)

*Partnerships and Cultural Resources at the Hanford Site (Panel Participant)*

Wilson, Maia (she/her; University of Idaho)

*Nevertheless, She Persisted: Intersectional and Multivocal Perspectives on the Contributions of Women in Pacific Northwest Anthropology (Panel Participant)*

Wilson, Douglas (he/him; Portland State University)

*Sacred Places, History, and Archaeology at the Hudson's Bay Company Cemetery at Fort Vancouver*

The preservation and interpretation of a historical cemetery within Fort Vancouver National Historic Site, Vancouver, Washington, is challenging due to its multifaceted, multiethnic history tied to a Hudson's Bay Company fur trade fort (1825-1860) and the establishment of a U.S. Army post (1849-2012). There are many intertwined social connections that address the lengthy and contested history of this Pacific Northwest place. Historical archaeology is a key practice to exploring the nature sacred places and the materiality of the indigenous and settler peoples of the fur trade. Historical archaeology bridges the history, memories, and materiality of fur trade and indigenous peoples with sacred spaces tied to the American Colonial Old City Cemetery and the military landscape of the Vancouver Barracks. This work aims to build a framework for greater dialog with the diverse publics interested in the site, including indigenous, fur trade, and military groups, and attempts to expose and reconcile fractured and biased narratives to better address the colonial significance of the site.

Withee, Katee (she/her; US Forest Service, Malheur National Forest)

*Successful Partnerships: The Oregon Chinese Diaspora Project*

The Oregon Chinese Diaspora Project (OCDP) is a multi-agency partnership engaged in studying and sharing the history of Oregon's immigrant Chinese communities. Partners include the Southern Oregon University Laboratory of Anthropology, the Malheur National Forest, and the Kam Wah Chung State Heritage Site. The OCDP is currently investigating sites associated with Chinese gold miners in the Blue Mountains of Eastern Oregon. Archaeological testing and research includes metal detector assisted survey, which has led to successful subsurface discoveries. Partners, such as university students and Forest Service - Passport in Time volunteers, have assisted with testing and fieldwork and have increased the value of our research. Additionally, these partnerships and collaborations have heightened public interest in and the visibility of historically underrepresented communities.

Wyatt, Noella (Central Washington University)

*Projectile Points - Point Type Distribution: Tryon Creek House 2 (35WA288)*

The Tryon Creek assemblage (Hells Canyon) (Figure 1) is curated and studied under an agreement with the USFS. A re-examination of the type and distribution of point types confirm the diversity present in dart and arrow size points. Stratigraphic and activity area analysis of House 2 (500-1500 B.P.) illustrate the correspondence of types, which may reflect behavioral mutualism. Metric analysis of four forms represented in an overall sample of 126 points indicate an expected spread of sizes in arrow points. Twenty-six points were selected for completeness for metric analysis. Corner-Notched points (n=100) dominate in all levels of the house, although Basal-Notched points are common (n=16). Side-Notched points (n=8) also occur in all occupation zones/levels. Nine lithic sources are represented, and both Chalcedony and Chert/Jasper are heat-

treated. Red-Glassy Basalt is locally available and common. Obsidian is surprisingly rare given the presence of Timber Butte source in the assemblage.

Wynia, Katie (she/her; Portland State University)

*Smudge Pit Features at the Hudson's Bay Company's Fort Vancouver Village as Signs of Hide Processing and Disease Prevention*

Small fire pits are commonly found in the archaeological record of the Hudson's Bay Company's Fort Vancouver, dating to the mid-19th century. Some of these pits were filled with dense charcoal and burned plant materials, suggesting they were smudge pits designed to produce smoke. Researchers at other sites in North America infer smudge pits potentially had a variety of uses, including animal hide processing, ceramic smudging, and controlling insects. Archaeologists at Fort Vancouver have interpreted smudge pit features as representing hide smoking, a task sometimes performed by Native American women married to fur trade employees. Another interpretation of the smudge pits, especially those found near the hospital and dispensary, proposes they were used for disease prevention during epidemics in the 1830s. The most recent excavations in Fort Vancouver's employee Village site, 2010-2014, identified numerous fire features near employee houses and yards, including 8 fire pits. This paper assesses these features for their use as smudge pits, as well as their potential as signs of Native American women's hide processing activities and inhabitants' reactions to epidemics in the Fort Vancouver Village.



## *Transformations: Ourselves, Our Culture, Our Calling*

The 2021 Cultural Resource Protection Summit marks our 14th gathering, and as many of us still eagerly await vaccination, it will be our 2nd Virtual Summit, as well! The Summit family is still hard at work fulfilling the mission we have had since the Summit's inception: *The primary goal in organizing the annual Summit has been to facilitate amongst all affected parties an open, frank discussion about the intersection between cultural resources and land use. The Summit is designed to promote collaborative cultural resource planning as an effective means of finding resolution to issues before they escalate into emotionally-charged, divisive, and expensive stalemates or law suits.*

This year, the Summit agenda includes an engaging array of cutting-edge topics that will encourage attendees to examine some of the Transformations underway, both in ourselves and in our collective groups, and how these might shape innovative solutions for today's most pressing challenges to effective cultural resource protection. Panel discussions, *lightning talks*, and small group discussions will highlight useful examples of the links between transformative CRM and responsible land use. We will also reserve time for Q&A, general socializing, and even the inaugural Summit Book Club! We are working hard to ensure the 14th Annual Summit will be another much-needed boost for our community, even if we must gather virtually again.

Please join us online for two days of invigorating conversation that will help you improve your technical skills while deepening your connection to why we do this work. Then, with renewed commitment, move forward with helpful tools for protecting cultural resources and transforming the way we care for them.

### **SUMMIT HIGHLIGHTS:**

Continuation of several important conversations begun at the 13th Annual Summit:

- **Decolonizing Anthropology**
- **Diversity, Equity, and Inclusion Issues and Goals**
- **Disposition of Archaeological Collections**
- **Federal, State, and Local legislative and regulatory news**

Implementation of several new ways of communicating and socializing:

- **Inaugural Summit Book Club (Braiding Sweetgrass by Robin Wall Kimmerer)**
- **"Lunch Tables" for casual topical discussions (self-select; visit one or all!)**
- **Additional socializing between sessions (Main Room or Breakouts)**
- **Online Discussion Board before/during/after the Summit (registrants only)**

-Registration is now Open! Visit [www.theleadershipseries.info](http://www.theleadershipseries.info) for adjusted rates and to register online

-Student Rates available! Email Mary Rossi ([mary@eppardvision.org](mailto:mary@eppardvision.org)) for information. Be sure to submit a contest form, too (see next item)

-Free Registration opportunity! Go to the Summit website and enter to win a free registration! One award will be made in each of these categories: Tribes, agencies, consultants, and students

### **THANK YOU TO OUR 2021 SPONSORS TO DATE!**





Student Paper Awards  
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## NWAC 2021 Logo

The 2020/2021 NWAC logo was designed by Jon Shellenberger (NativeAnthro.com).

"The inspiration behind the logo is drawn from the concept of our Yakama understanding of "home". Since Ellensburg was home to many tribes who gathered there for trade and food harvest, it seemed fitting to have a longhouse below the mountains which is where most of the large villages were located. The Kittitas Valley drew tribes from eastern and western Washington annually for root, salmon, and berry harvest. It is a place known for its value in foods and medicines. According to our tribal elders, it didn't matter where people came from. All were welcome into our home."

To purchase t-shirts, sweatshirts, or mugs with the 2020/2021 logo, please go to <https://www.bonfire.com/store/northwest-anthropological-conference-2021/>  
This campaign supports NWAC 2021 and future NWAA events and programs.



### ABOUT

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# HOW DO WE REACH MORE?

SHARING CULTURAL AND ARCHAEOLOGICAL RESEARCH WITH OTHERS



## HOW DO WE REACH MORE?

Sharing Cultural and Archaeological  
Research with Others

Edited by Darby C. Stapp and Julia G. Longenecker  
Design and Production by Victoria M. Boozer

A Conversation Continued From  
The Journal of Northwest  
Anthropology's  
"Why Don't We Write More?  
Essays on Writing and  
Publishing Anthropological  
Research"

Anthropologists, archaeologists, and others working with cultural groups have a long—if inadequate—history of sharing their results with the public, the cultural groups they work with, and others. In this collection of essays from the Pacific Northwest, researchers describe public oriented projects they have been involved with and their perspectives on sharing information with others. Readers will find within a plethora of examples they can draw upon to design their own approaches for working with external audiences.

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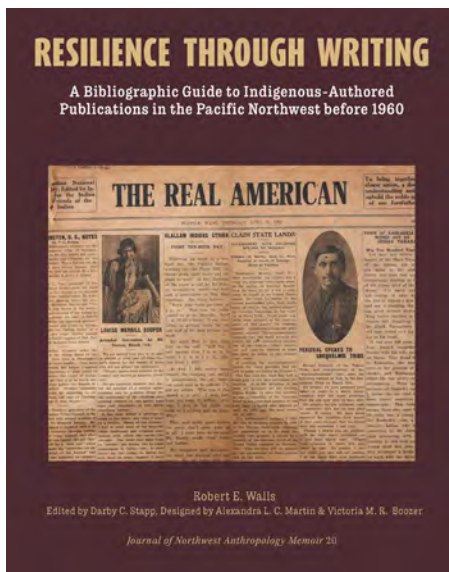
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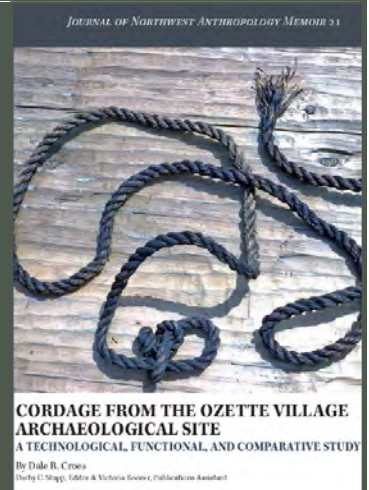
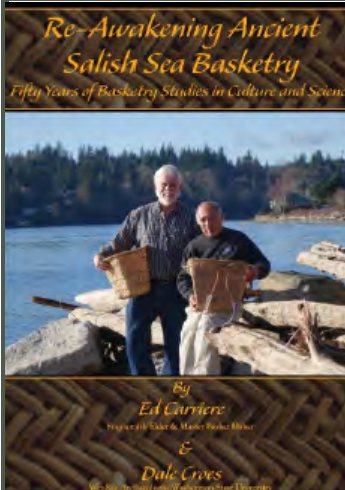
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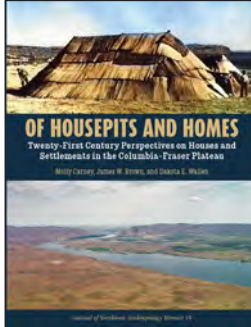
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