1. Name of Applicant (Please give full legal name: first, middle, and SURNAME in uppercase letters):
   Cessna M. Westra

   Preferred Mailing Address of Applicant:
   1166 7th Street
   Springfield, OR,
   97477

   E-mail: westracm@plu.edu
   Telephone: 541-8xx-xxxx
   Fax:

2. Name of Supervisor, Department, & Institution:
   Dr. Bradford Andrews, Department of Anthropology,
   Pacific Lutheran University

   Mailing Address of Supervisor:
   Department of Anthropology
   Pacific Lutheran University
   Tacoma, WA 98447

   E-mail: andrewbw@plu.edu
   Telephone:
   Fax:

3. Applicant’s Personal Information
   Gender: Female
   Date & Place of Birth: March 10, 1998, Springfield OR
   Citizenship: USA

4. Applicant’s Education History
   Highest Academic Degree: Bachelors
   Year Degree Awarded: 2019
   Institution Awarding Degree: Pacific Lutheran University

5. Applicant’s Current Doctoral Status
   Are you registered for a doctoral degree? No
   Date you expect to receive degree: ___________________________
   Department and Institution that will award the degree:

   What requirements for the degree (other than the dissertation/thesis) have yet to be completed, and what is their expected date of their completion?

6. Title of Project (15 words or less):
   Reassessing Cultural Dynamics: Updating the accuracy of the precontact occupational chronology for the Willamette Valley.

7. Total requested for Dissertation Fieldwork Grant (maximum $20,000): US$ 20000

8. Abstract of research proposal (Provide a general description of your proposal in plain English. If this proposal is successful, this abstract will be posted on the Foundation’s website.)

   In order to study the history, heritage, and development of a past culture, one of the first things that needs to be done, is the construction of a cultural history from the archaeological remains through which the past culture is studied. This chronological ordering of artifact types and cultural developments creates the picture of a long existing culture. The cultural history for the precontact Kalapuya culture of the Willamette Valley, Oregon, however, has not been studied since 1981. Beckham et al. (1981) proposed the current cultural chronology for the area back when the radiocarbon dating methods in use were still in the early stages of development. Since 1981 radiocarbon dating methods have progressed dramatically, and now produce more accurate and precise dates than ever before. Therefore, I propose to assess the accuracy of the currently accepted cultural chronology for the precontact history of the Willamette Valley, as put forth by Beckham et al. (1981). I will use Accelerator Mass Spectrometry radiocarbon dating, and Bayesian statistical analysis to obtain new absolute dates for significant cultural changes and use them to revise the old chronology. I will take into consideration new information about the Willamette Valley Kalapuya culture discovered since 1981, in order to make sure that the cultural characteristics of each period are still accurate as well. This project will help researchers understand more about the Willamette Valley than ever before: its place in the greater prehistoric Pacific Northwest, the peopling of the Americas, and the ways that this culture influenced those around it will all be new topics opened up to future research by my project.

9. Start and end dates of project for which support is requested (start date must fall between January 1 and June 30, 2019): June 2019-February 2020

10. Location where project is to be carried out:
   Oregon Museum of Natural and Cultural History, University of Oregon, Eugene, OR.
11. List research permits and/or ethical approvals required for this project.
Approval from the Ethics Review Board at Pacific Lutheran University.
Research approval from the Oregon Museum of Natural and Cultural History

12. What date do you expect to have all required permits/permissions in hand?
July 2019

13. Will you work with academic personnel (other than your supervisor) while conducting research? (Select)
(If so, please list below. See the Application Information and Procedures for instructions.)
Dr. Jon Erlandson, Executive Director of the Museum of Natural and Cultural History
Dr. Tom Connolly, Director of Archaeological Research at the MNCH
Dr. Pamela Endzwieg, Director of Anthropological Collections at the MNCH
David Harrleson, Cultural Resource Management Department Director and Historic Preservation Officer with the Confederated Tribes of the Grand Ronde

14. Budget itemization: Provide a detailed budget for the requested funding (maximum $20,000).
(See the Application Information and Instructions for budget guidelines, and include a justification for any piece of equipment that costs over $750, childcare expenses, research and/or transcription assistance, and per diem estimates. Please also include a justification for any budget items not specifically listed as allowable expenses. Press Ctrl key + Tab to utilize pre-set tabs in application form)

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800
Total Budget Requested From Wrenner-Gren: 20,000

1. Driving back and forth each day from the Natural and Cultural History Museum, is a 3.6 mi distance from where I might stay. My vehicle gets around 17 miles/gallon. Average gas prices are at around 2.96$ a gallon of gas, which comes out to about that total of gas expenditure.
2. U.S Government GSA suggests a 115$ per diem in Eugene, but I can work at a much more modest rate of 20$ a day.
3. AMS dating analysis prices based on Direct AMS price estimates.
4. I may have to pay for someone to use OxCal to make the calculations after I receive the dates if I cannot learn the software fast enough.
5. A camera with a good zoom will allow for good pictures of samples and of artifacts associated with samples in order to demonstrate characteristics of the chronology.
15. Have you applied to other agencies for funds covered in this application? (Select) (If so, please list other funding sources you have contacted to aid this project and indicate whether funds have been awarded.)
This grant is offered to those proposing projects that will enhance the protection of natural and cultural resources on Department of Defense land which is one of the main aims of this project.

16. Sources of aid received for other phases of the project:

17. Please help categorize your project by Discipline and Area or Topic:

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<thead>
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<th>Application Discipline</th>
<th>Geographic Research Area</th>
<th>Physical/Biological Projects Only</th>
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18. Key Words (Please provide "key words" and/or phrases that best describe your research project.)
Williamette Valley, Kalapuya. Oregon Archaeology, AMS radiocarbon dating, Cultural Chronology

19. Have you received a Wadsworth Fellowship? No
(If so, Reporting Requirements for the Wadsworth Fellowship must be completed. Contact the Foundation for further information.)
21. Project Description Question 1: Describe your research question/hypothesis or research objective. That is, what will the focus of your investigation be? (Press Ctrl + Tab to use tabs.)

Since American archaeologists realized that there was indeed a great deal of time depth to the indigenous occupation of the New World, they have been creating cultural chronologies to document this occupation. A cultural chronology divides the life-span, or occupational history of a culture into different chronological periods, defined by significant changes in the culture. When archaeological artifacts and features are placed in chronological order, they become descriptors of the history of a culture, rather than just a group of things. Once a culture and its history has been established from the archaeological record, the function, cause, and history of these artifacts, and interaction of artifacts can create a true understanding of past cultures (Willey and Sabloff 1980; Taylor and Meighan 1978). As Taylor and Meighan (1978) put it, “neither studies of cultural change nor comparative analyses can have validity without fixing the archaeological remains in chronological order” (xi). Despite the importance of this area of study to archaeology, in the Willamette Valley of Oregon, it has received insufficient attention until now.

Before Settlers came to North America, this valley was occupied by bands of the Kalapuya language and culture group. Current knowledge about the precontact archaeological record of the Kalapuya group has been constructed through many different means including looting, private excavations, university research, and salvage archaeology (Minor et al. 1980; Aikens 1993; Aikens et al. 2011; Miller 1970; Beckham et al. 1981). One shortcoming of the scattered nature of this work is the production and propagation of an outdated, and noncomprehensive chronology for the prehistoric occupation of the Willamette Valley area. However, as demonstrated above, in order to fully study the past Kalapuya culture in detail, one must have an accurate and comprehensive understanding of its cultural history. My project will investigate the following questions: Is the currently accepted cultural chronology still accurate over time given the state of radiocarbon dating techniques today? If it is not, how will the necessary revisions affect our understanding of past cultural dynamics in the Kalapuya culture area? And, how does this contextualize the area compared with prehistoric developments in the surrounding Pacific Northwest?

The widely accepted occupational chronology written for the precontact Willamette Valley comes from White (1974, 1979). Beckham et al. (1981) critiqued White’s chronology seven years later and rewrote it to incorporate more sites that had been discovered in the intervening years. While the Beckham et al. (1981) model of the chronology was more comprehensive, the radiocarbon dates that defined it were all acquired in the late 1970’s and early 1980’s. At this time the method of radiocarbon dating was still developing, and was not as accurate as it is today (Harris et al. 1987; Bayliss 2009; Olsson 2009; Wood 2015). In fact, great advances in the pretreatment of carbon samples and statistical calibration of resulting dates, as well as the introduction of AMS dating and the invention of Bayesian statistical analysis have all been made since the 1970’s (Harris 1987; Bayliss 2009; Olsson 2009; Wood 2015). With modern dating methods, radiocarbon dates can now be more accurate and more consistent than they were when the cultural history of the Willamette Valley was last seriously studied.

By revisiting the Beckham et al. (1981) chronology my project will make sure that future archaeologists work with the most up-to-date and accurate cultural history for the area available with modern methods. My project will make it possible to accurately study how external factors such as environmental change and contact with other tribes affected the culture of the Kalapuya groups in the Willamette Valley. A new chronology could also reveal new things about how and when the valley was occupied. As this is one of the most studied subjects in the valley, expanding the information available on how these settlement patterns changed over time will have a great effect on the archaeological understanding of the area. This study will also help place the culture of the Willamette Valley in the greater context of the precontact Pacific Northwest cultures.

In order to ensure that my project produces the most accurate dates with which to discern an accurate cultural chronology, I will obtain Accelerator Mass Spectrometry (AMS) radiocarbon dates. The samples for dating will come from museum collections held by the University of Oregon at the Oregon Museum of Natural and Cultural History. I will select samples from both from all eighteen sites used in Beckham et al. (1981) and from six new sites found since 1981. According to the site reports, many of these site collections contain fragments of animal bone, macrobotanical remains, and charcoal which should provide enough material for a sufficient amount of dates (Miller 1970; White 1975; Sanford 1975; Cordell 1975; Olsen 1975; Alley 1975; Minor et al. 1980; Beckham et al. 1981; Cheatham 1988; Aikens 1993; O’Neill et al. 2004; Aikens et al. 2011). Once the new dates are collected, and the accuracy of the Beckham et al. (1981) chronology assessed and revised, if necessary, I will use the predictive power of Bayesian statistical analysis to create a comprehensive and up to date cultural chronology.

The recent developments in radiocarbon dating methods, mentioned earlier, including better pretreatment, calibration, and AMS dating have actually inspired the reexamination of archaeological chronologies around the world. Many of these projects find their chronologies to be either too young or too old by up to thousands of years (Fiedel 1999; Kuzmin 2002; Unkel et al. 2012; Anderson and Freeburg 2013; Humphris and Scheibner 2017; Sanchez et al. 2018). Sanchez et al. (2016) actually found that the Par-Tee site on the Oregon coast was only occupied half as long as originally thought. The results of these studies is a strong indicator that AMS dating, and other modern dating methods are advanced enough to warrant a reexamination of many of the early dates from the Willamette Valley.

With an assuredly accurate cultural chronology, areas of study in the Willamette Valley will greatly expand. This study of how the Kalapuya culture changed over time will give new context to subjects that have been of focus already, such as settlement patterns across the valley, as well as opening up new areas of study such as how the Kalapuya bands interacted with their neighboring cultures. It will help future studies place the Willamette Valley into its rightful context in the precontact history of the Pacific Northwest.
22. Project Description Question 2: How does your research build on existing scholarship in anthropology and closely related disciplines? Give specific examples of this scholarship and its findings. (Press Ctrl + Tab to use tabs.)

Archaeological research in the Willamette Valley in the past has had two main foci: settlement patterns, and salvage archaeology (Miller 1970; White 1975; Sanford 1975; Cordell 1975; Olsen 1975; Allely 1975; Minor et al. 1980; Beckham et al. 1981; Cheatham 1988; O’Neill et al. 2004). The archaeological record displays the Kalapuya-speaking bands as mobile foragers who used and tended to the valley’s resources, living in small summer camps and winter plank house villages (Beckham et al. 1981; Aikens 1993, Aikens et al. 2011). The oldest evidence of the occupation of the Willamette Valley is the presence of fluted Clovis spear points in the region (Allely 1975). The absolute date associated with these points at the in 1981 was 8,000 B.C. Now, however, it is agreed that they come from around 10,000 B.C. (Beckham 1981; Aikens 1993, Aikens et al. 2011). Despite such standing disputes, very little research in the Willamette Valley has focused on change in the precontact Kalapuya culture over time. Without studying the cultural history of the area, and a comprehensive and accurate cultural chronology, a large part of our understanding of the area’s past, and its context is missing.

White (1974, 1979), the earliest complete occupational chronology for the Willamette Valley. Beckham et al. (1981) voiced concerns about White’s (1974) chronology, including whether there was adequate evidence in the archaeological record for the dates and the characteristics of White’s cultural periods (Beckham et al. 1981, 158-160). Out of these concerns Beckham et. al (1981) defined a new cultural sequence that was divided into five time periods and further divided into seven different phases based on how the five periods present in different areas of the Willamette Valley (162).

The first period of this chronology is the Paleoindian Period which extended from about 9,000 B.C to 6,000 BC. The dates for this period were arbitrarily assigned to the period, with the beginning being the date associated with the appearance of Clovis points at the time. The period encompassed all known interactions between humans and megafauna across the whole valley.

The Early, Middle, and Late Archaic periods, were then divided into individual regional phases. The introduction of the leaf-shaped cascade points mark the start of the Early Archaic period around 6000 B.C. This period was characterized as initial adaptation to the landscape and resources. Subsistence consisted mostly of hunting and the archaeological record associated with this period came mostly from Cascadia Cave and Baby Rocks in the cascade foothills. The introduction of the thick-stemmed, broad-necked projectile points marks the Middle Archaic at approximately 4000 B.C. The Middle Archaic began fuller occupation and exploitation of the valley’s entire resources both faunal and floral. Then, the appearance of small, thin-necked arrow points signals the beginning of the Late Archaic around 200 A.D. This final precontact period saw the full occupation of the Willamette Valley, the beginning of trade with surrounding regions, and the development of a distinct culture within the valley and between the different Kalapuya bands. Finally, the introduction of European artifacts marks the Historic Period.

While these periods and their respective phases are much more specific than those of White (1979), since 1981 methods of acquiring radiocarbon dates have improved drastically, and new excavations have been done within the Willamette Valley revealing new aspects of the culture. Aikens et al. (2011) summarizes most of the archaeological discoveries in the Willamette Valley. Since this summary includes newer sites, there is already discrepancy with Beckham et al. (1981) on the timing of some cultural characteristics for each period. An example of this is that Beckham et al. (1981) claims that the first use of camas was dated to 1280 B.C (169). Aikens et al. (2011) however, cites radiocarbon dates from charred camas bulbs that place them as far back as 8,500 years old, which places the use of camas around 6,000 B.C (291). In addition to this discrepancy, there is also the disagreement on the date associated with the Clovis points in the valley which throws into question how long the valley was occupied. My study will help to reconcile these inconsistencies and to create an accurately and fully comprehensive cultural history for the Willamette Valley.

Beyond just rectifying the chronological situation of the Willamette Valley, my project will also contribute to standing knowledge about popular subjects in the area such settlement patterns. The Beckham et al. (1981) chronology is based on changes in settlement patterns as the characteristics for its cultural periods. Assuring that we understand these shifts in their proper chronological context will help place individual studies about the settlement of different areas such as Miller 1970, and Newman 1966, into the greater picture of the valley in its entirety. Having greater chronological and spatially comprehensive context for each site in the Willamette Valley will help archaeologists understand when the whole valley became occupied, how people came into the valley, when and how people came to live in certain areas, when sedentism became the norm, and so much more.

Projects like this have discovered similar new information about different sites around the world. (Fiedel 1999; Kuzmin 2002; Unkel et al. 2012; Anderson and Freeburg 2013; Humphris and Scheibner 2017; Sanchez et al. 2018). Using AMS radiocarbon dates, Sanchez et al. (2018) found that the Par-Tee site on the Oregon Coast had only been occupied half as long as originally thought. Anderson and Freeburg (2013) found that the Cape Krusenstern beach ridge site was occupied much longer and more continuously than previously hypothesized. Though this project will analyze the occupation of an entire region rather than just one site, my approach will be very similar to the approach taken by these studies; using modern radiocarbon dating methods to improve upon old data.

Advances in conventional radiocarbon dating methods since the 1980’s have allowed carbon samples to be smaller, contain fewer contaminants, and for the results to be calibrated more accurately from radiocarbon years into calendar years. Accelerator Mass Spectrometry dating allows for samples to be even smaller, and for a faster and more accurate measurement of the radiocarbon age (Harris et al. 1987; Bayliss 2009; Olsson 2009; Wood 2015). Another method that is widely used when constructing, or updating chronologies is Bayesian statistical analysis, which narrows down the probability of a radiocarbon date by taking into account prior information (Bayliss 2009; Steel 2001). Using these new methods, my project will further test their ability to create accurate chronologies.
23. Project Description Question 3: What evidence will you need to collect to answer your research question? How will you go about collecting and analyzing this evidence? (Press Ctrl + Tab to use tabs.)

My project will use Accelerator Mass Spectrometry (AMS) radiocarbon dating to assess the accuracy of the current occupational chronology for the Willamette Valley, Oregon. The Oregon Museum of Natural and Cultural History holds the artifact collections from most of the excavations in the Willamette Valley. From August 2019 until the end of October 2019, I will examine the collections from all 18 sites referenced in Beckham et al. (1981) as well as from 6 sites that have been excavated since 1981. From these collections I will choose samples of organic, carbon based material, found in association with indicators of chronologically definitive cultural change, and I will send them to the National Oceanic Sciences Accelerator Mass Spectrometry Lab (NOSAMS) for analysis. This lab has a maximum 6 week turn around rate. So, by December 2019 I should be able to have all of the dates returned. Finally I will statistically analyze, and calibrate these dates using Bayesian analysis in the OxCal program. By January 2020 I should have a fully updated and accurate cultural chronology for the Willamette Valley built upon Beckham et al. (1981). After January 2020 I will be able to use the information gained in my project to draw new conclusions about the relationship between change in the culture of the Willamette Valley, and that of surrounding regions, ending the project by February 2020.

In the collections from the Willamette Valley sites there are many pieces of fragmentary animal bone, charcoal, and charred macrobotanical remains such as acorns, seeds, hazelnuts, and a local plant called camas, to choose from as samples to date. I will begin the project by looking through the collections for samples such as these, found in association with the characteristic cultural changes of the periods in the old chronology; as well as any other significant changes I identify. I will first look through whatever collections exist in association with the isolated finds of Clovis Points in the valley. Though it is well known that the Clovis point style has been consistently dated to around ca. 12,000 B.P (Aikens et al. 2011), it would be interesting if I could find datable material, in association with the points, to get a date for existence of these points in the Willamette Valley. There have been three new Clovis point finds in the valley since 1981: one in the Cottage Grove Area (Minor 1985), one near the Blue River Reservoir (Ozbun and Stueber 2001) and one near the Fern Ridge Reservoir (Connolly 1994). None of these points have been dated (Aikens et al. 2011), and no datable material may exist in association with them, but it would be worth checking.

Next, I will examine the artifacts from the lower levels of the Cascadia Cave and Baby Rockshelter collections, as well as the Hannavan Creek, looking for material to date in association with the first concentrations of leaf-shaped cascade points which are the markers for the beginning of the Early Archaic Period in the Beckham et al. (1981) chronology. The Hannavan Creek Site is a newer site that may contain more charred camas bulbs that date back to this period (Aikens et al. 2011). Then I will examine the collections from Baby Rock Shelter, the top levels of Cascadia Cave, Lingo, Benjamin, Hud, Flannigan, Hagars Grove, Rigdon's Horse Pasture Cave, and Davidson Sites for organic material in association with the markers of the beginning and end of the Middle Archaic Period in both the Baby Rock Phase, and the Lingo Phase (Beckham et al. 1981). The Late Archaic Period is split into three phases according to different areas of the valley, and I will look through all of the previously mentioned site collections, as well as Fuller, Fanning, Spuriland, and Kirk Park Mound collections, and Lynch, Mill Creek, and Chalker site collections (spanning almost the whole valley) for datable material in association with the traits of these phases. The specific traits that I will be associating with dates are all laid out in Beckham et al. (1981) and in question 2 of this proposal.

Since changing stone tool types mark most of the transitions between the chronological periods in Beckham et al. (1981), one secondary product of this study is that I may be able to update the stone tool typology for the Willamette Valley. It was determined by Bettiger et al. (1991), in a debate with Flanniken and Wike (1989), that projectile point types were indeed discreet developments over time because as styles changed, they remained the same size. This meant that the points were not just reworked versions of old types, and that projectile points truly did mark cultural change. Using this hypothesis, I would be able to take the dates associated with changes in prominent projectile point forms in the Willamette Valley and use them to create a projectile point typology that would further help to document and recognize periods of the Willamette Valley's cultural history in the archaeological record.

Once I have selected all of the samples to be dated, I will prepare them for the AMS laboratory. As the University of Oregon has no radiocarbon dating laboratory I am not sure to what extent I will be able to pretreat the samples chosen, and will most likely have to rely on the NOAMS lab to do that for me. The fragments of bone available in the collections means that bone collegization may have to be part of the pretreatment of some samples at NOSAMS (Beckham et al. 1981; Aikens 1993; Aikens et al. 2011; Olsson 2009; Harris et al. 1987; Ramsey 2008). Once I have chosen the samples I will preserve them in aluminum foil, to avoid as much contamination as possible, and send them off to the National Oceanic Sciences AMS lab.

Non-processed (or pretreated) charcoal costs around $332 USD per sample to pretreat and AMS date. Charcoal appears from the reports to be the most common datable material in these collections. At this estimate I have enough money to date about 37 samples. Once I have received the results of the dates within about six weeks, I will download the latest version of OxCal to calibrate and analyze the new dates using Bayesian statistical analysis. This model for analyzing dates takes into account the prior information about the dates, such as relative stratigraphic positions and prior hypotheses as to the chronology, and uses them to narrow down the probability range of the date (Steel 2001; Bayliss 2009). This way of analyzing the dates will help me make them more accurate and will help me construct a more solid chronology than just trying to position the dates chronologically myself. Finally, once the chronology is constructed with the new dates, and refined through statistical analysis, I will be able to realize if and how this changes our understanding of the cultural history of the Willamette Valley.
24. Project Description Question 4: What is your training; how are you prepared to do this research? List examples of your language competence, technical skills, previous research, and any other relevant experience. Describe any work you have already done on this project, and/or how it relates to your prior research. If you are collaborating with other academic personnel describe their role/s in the project and the nature of the collaboration. (Press Ctrl + Tab to use tabs.)

In May 2019 I will complete my Bachelor of Arts Degree in Anthropology from Pacific Lutheran University. Among the courses in PLU’s four field Anthropology program I have taken as many classes on archaeology as possible. I have taken classes in archaeological methods and theory as well as conducting my capstone research on the archaeology of the Willamette Valley. In addition to learning about the history of the discipline and basic excavation methods, I have also acquired basic knowledge of both relative and absolute dating methods. Understanding the basic process by which artifacts are excavated, and relatively dated, will help me in this project, to work with the collections and pull out samples for radiocarbon dating. Knowing how to recognize the level and stratigraphic position of the artifact, will help me determine what a sample’s age is relative to the rest of the artifacts from that site, as well as what artifacts are associated with each carbon sample. Furthermore, a basic understanding of the process of radiocarbon dating will allow me to know what type of organic material can be dated, how much material is needed to return an accurate date, and how to preserve the material during handling and shipping. With this knowledge I will be able to select the best possible candidates for samples from which to receive new radiocarbon dates.

During my studies I also conducted research on the Willamette Valley. For my People of Native North America class last year I wrote a research paper on the contact-era history of the Kalapuya in the Willamette Valley, and this year I am conducting my senior capstone research on the precontact history of the same people. Through these two projects I have become familiar with the archaeological record typical of the Willamette Valley that I will be working with in this project. This prior knowledge will help me speed along this project because I already understand what waits for me in the collections I am studying. Between my familiarity with the archaeology of the Willamette Valley, and my education in archaeology in general, I feel I am very prepared to execute this project efficiently and accurately.

I have also physically worked with archaeological collections at the Makah Culture and Research Center, in Neah Bay, Washington. I was able to work with this institution through a study away opportunity provided by the Makah Nation’s relationship with PLU. I went on this trip twice, and both times I worked in the tribe’s archaeological collections facility both times. Though these collections are not exactly like those I will be working with in this project, the experience did teach me about museum preservation techniques and how to work within a museum system and staff. With this experience I am confident I could work safely, effectively and respectfully at the Oregon Museum of Natural and Cultural History.

Furthermore, I have worked in two archaeological internships over the past two years. One position was with the Army Corps of Engineers in the Willamette Valley as a Cultural Resource Intern; the other with the Mt. Rainier National Park as an archaeological intern. In my position with the Army Corps I did historic research concerning the archaeology surrounding the reservoir areas in the Willamette Valley. I also did some pedestrian survey in the Long Tom Watershed area near the Fern Ridge Reservoir. I was able to become very familiar with the area’s environment, and the types of artifacts found there. Through my internship with the National Park Service I was able to participate in a full season of pit testing excavation. I documented and wrote reports for the sites we worked on. This first hand experience with the process of salvage archaeology, will be very helpful because a lot of the archaeology in the Willamette Valley is government salvage archaeology, and this experience will help me to understand how to gain information from these very specific types of reports.

Finally, this summer I will be attending the University of Washington Field Methods in Indigenous Archaeology Field school with the Confederated Tribes of the Grand Ronde in Grand Ronde Oregon. This field school will give me even more experience doing academic archaeology in the Willamette Valley, and will also help me build a relationship with the Native American community of the Confederacy. A relationship with this group of people before conducting research in their native land, and on their ancestors, will help me to fully understand the weight of what I am doing. And, if I am able to gain their trust and approval for the project, though it is not technically necessary, it will help me make my project more ethical and considerate of its full impact. Beyond the ethical considerations, it will also give me a whole other level of guidance as to how to do this project; mainly advice on what items within the museum collection are too valuable to date and more information about culturally significant change that should be documented in the chronology.

Though it may not seem like it, this project may be a very sensitive topic to the Confederated Tribes of the Grande Ronde and their Kalapuyan members. Any project that questions the longevity of a tribe’s existence on their land can be used as a case against native title to their land. If the sensitivity of this project is ignored, and the project is done for the wrong reasons, it could have a very detrimental effect on the native community of the Willamette Valley, which is exactly the opposite of what I am trying to do with this project. I am trying to bring more understanding to the area; make it easier to recognize significant areas and protect them. To open new areas of interest and collaboration between the academic, majority non-native community, and the native people of the Willamette Valley. Were anyone else to carry out this project I worry that the sensitivity and ethical concern of this project may be lost, and the potential for harm opened up.

However, with my experience both in archaeology and in the Willamette Valley, as well as the relationships I hope to build with the Confederated Tribes of the Grand Ronde, I believe that I will be able to conduct this research in the most effective, clear, and precise way possible. And, to make the project ethically sound, and relevant to a variety of fields and readers.
25. Project Description Question 5: What contribution does your project make to anthropological theory and to the discipline? Please note that the Foundation’s mission is to support original and innovative research in anthropology. A successful application will emphasize the contribution its proposed research will make, not only to the specific area of research being addressed, but also to the broader field of anthropology. (Press Ctrl + Tab to use tabs.)

With an assuredly accurate cultural chronology archaeologists in the Willamette Valley will be able to settle disputes between conflicting theories, and reconcile inconsistent data. For example, the disagreement of about 5000 years between the dates offered for the first use of camas in the Willamette Valley between Aikens et al. (2011) and Beckham et al. (1981). Or the debate between Cole (1968) and Grayson (1975) about when the Cascade foothills and the Willamette floodplain became separate sub-culture areas. Aspects of the culture such as when people first came into the Willamette Valley from surrounding areas, and when trade and networks were first established with surrounding areas are just barely touched on in Beckham et al. (1981). Whether this under representation is a product of the lack of radiocarbon dates, or a lack of excavations that found evidence related to these topics, a reexamination of the chronology address these issues.

Cultural history is the first thing archaeologists seek to understand about the region, for this reason. Aspects of culture like the ones mentioned above that are still under debate between Beckham et al. (1981) and modern information, are those that distinguish culture groups. Creating a complete cultural history out of the artifacts found in the ground create the context for the image of a culture rather than just a pile of things (Willey and Sabloff 1980; Taylor and Meighan 1978). Within the Willamette Valley, making as sure as possible that we accurately understand how the precontact Kalapuyan culture changed and evolved over time will help us find its place within the wider cultural history of the Pacific Northwest, and beyond that to how the area was involved in the peopling of the Americas. These aspects of the precontact history of the Willamette Valley have never been explored before.

Beyond the region of the Willamette Valley, this study will contribute to the commentary on modern radiocarbon dating and its utility, its accuracy, and its improvements since 1981. It will contribute to the same body of literature as Sanchez et al. (2018), commenting on modern radiocarbon dating’s abilities to expand archaeological knowledge around the world. It may even inspire new projects to be taken up to update chronologies elsewhere in Oregon, other parts of the Americas, and elsewhere.

Finally, the revision of the cultural chronology for the region will have a great effect on efforts to protect cultural resources in the region. A newly concise chronology, and, given enough correlation between organic materials and projectile points, a new projectile point typology, will help in the quick identification and typological dating of precontact sites within the valley. This will make it easier for archaeologists at every level to quickly and confidently recognize and protect important cultural sites.
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Relevant Courses:
- *Peoples of Native North America.* Jen Brown. Spring 2018
- *Archaeology of Ancient Empires* Dr. Bradford Andrews. Spring 2018
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Relevant Work Experience:

Field and Research Experience:
- Pit testing in Ohanapecosh Campground, and Mowich Lake Mt. Rainier National Park. Supervisor: Ben Diaz, Park Archaeologist
- Pit testing at Cottage Grove Lake, Oregon. Supervisor Naomi Brandenfels.
- Pedestrian Survey, Fern Ridge Reservoir Area, and Dorena Reservoir area, Oregon. Supervisor: Naomi Brandenfels

Relevant Volunteer/Unpaid Field Experience:
- Volunteer at the collection facility of the Makah Cultural and Research Center, Neah Bay, Washington.
- Volunteer field tech with the US Army Corps of Engineers, Fern Ridge Oregon.
• President of the Anthropology Club, Pacific Lutheran University 2018-2019 year.

Professional Presentation:
• Pacific Lutheran University Undergraduate Research Symposium,
  Genetically Modified Organisms to Provide Food Security in India. In Tacoma
  WA.

Relevant Skills:
• Pedestrian Survey
• Pit testing
• Wet and Dry Screening
• Artifact Documentation
• Archaeological Report Writing
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