



Department of ANTHROPOLOGY

UNIVERSITY OF UTAH | SPRING 2019

MESSAGE FROM THE Department Chair

Dear Friends and Alumni,

Greetings from the faculty, staff and students of the University of Utah Department of Anthropology. We started 2019 (pretty much) settled into our new offices in the Carolyn and Kem Gardner Building (or Gardner Commons (GC), its usually name). Now we are teaching in larger, more modern classrooms and our state of the art laboratories are filling up with undergraduates and new graduate students. If you haven't visited the new department and laboratories, I encourage you to contact me to arrange a tour in the near future. As you review this newsletter, you will see that there is much more news than just our departmental move. We welcomed Dr Timothy Webster, a human evolutionary geneticist (with interests that range from humans to desert tortises), to the Department. We also had an influx of new graduate students and post docs. You will also find out about some of our faculty's recent publications. For example, Dr Tyler Faith recently published a paper in the prestigious journal *Science* reporting that many mass extinctions in the past may not have been due to human hunting but to environmental change. In the past few months, the Department has hosted several external speakers during our Spring 2019 Colloquium Speaker Series, which takes place on the first Thursday of every month. Our annual Leigh Lecture was postponed from March 20th until later this Fall semester. The speaker will be Professor Douglas Kennett, Professor of Environmental Archaeology and Human Behavioral Ecology (University of California, Santa Barbara). Watch for an announcement of the date and location of this popular event.

Finally, I am very sorry to report that Peter Meldrum, the co-founder of Myriad Genetics in Salt Lake City and a benefactor of our Department and the University of Utah, died suddenly over the winter break. A memorial service was held in December. Pete and his wife, Cathy, (Meldrum Foundation) were responsible for supporting the construction of the new state of the art modern and ancient DNA laboratories in the Department. Their generous contribution provides a large space for undergraduates and graduate students to gain hands on experience in molecular anthropology research. We extend my deepest condolences to Pete's family, friends and colleagues.

-Dr. Leslie Knapp, Department Chair, Department of Anthropology



Dr. Leslie Knapp with Faculty and Undergraduate students at the 2019 CSBS Convocation Ceremony.



NEW YEAR, NEW FACES

The Department of Anthropology is pleased to introduce the newest member of the faculty, Dr. Timothy Webster. Dr. Webster is a biological anthropologist whose work primarily focuses on computational genomics. Dr. Webster earned his undergraduate degree at Miami University, Ohio and double majored in Anthropology and Zoology. "I was actually a zoo keeper for a while, and so all of my training was set up for me to continue to be a zoo keeper. But when I started at the Cleveland Metroparks Zoo, the first building I worked in was the primate building. I was always interested in all animals,



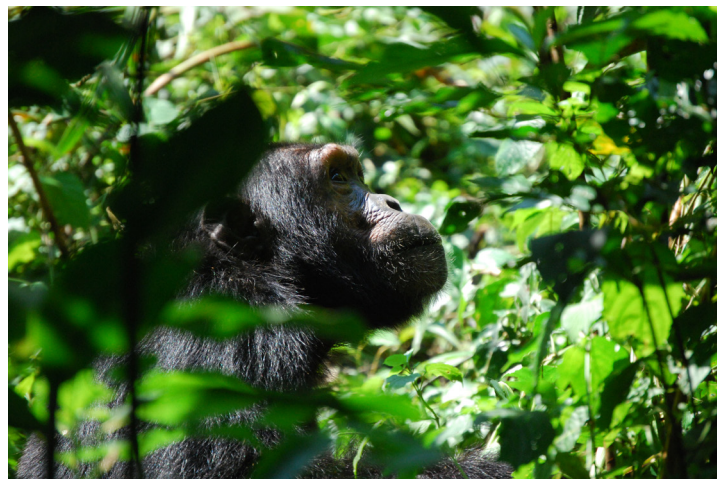
New Biological Anthropology Faculty member, Dr. Timothy H. Webster.
Dr. Webster's research focuses on Population genomics and sex chromosome evolution.

but I became especially interested in primates after that summer. I discovered that Miami had a very strong primatology program over in Anthropology, and about halfway through my undergraduate degree I started taking anthro courses so I could learn more about primates and became hooked." After his undergraduate education, Dr. Webster was accepted as a Junior Visiting Fellow in the Leverhulme Centre for Human Evolutionary Studies at the University of Cambridge. After Cambridge, Dr. Webster had the opportunity to undertake fieldwork studying wild chimpanzees at the Semliki site in Uganda, Africa. "Semliki is an open, drier, habitat. People tend to associate chimpanzees with dense big rain forests, but chimpanzees are very behaviorally and ecologically flexible. So, at the site, the idea was to study chimpanzees in a more marginal habitat that isn't as productive. I was particularly focused on insect eating, but we also studied cultural behaviors. They have a cool behavior there where they dig what we called wells for water." After returning from Cambridge, Dr. Webster began his graduate studies



Desert Tortois with non-invasive Radio Tracking beacon

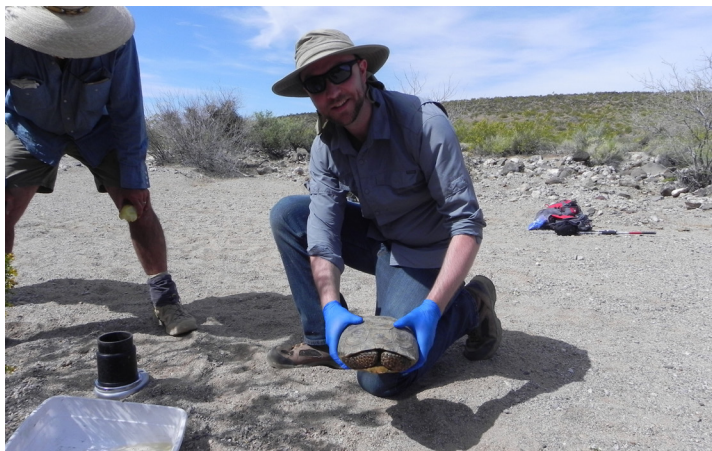
at Yale University under Dr. David Watts. "During my time at Yale, I fell in love with genomics. I viewed it as being able to provide a lot of insight that observation could not. One way to look at the past is through fossils and morphology, another is to use the genome, so I started to incorporate more and more genomics into my understanding of primate evolution and behavioral ecology." Dr. Webster completed his PhD with distinction in 2015, Dissertation Research: "Genomics of a Primate Radiation: Speciation and Diversification in the Macaques." Following this, Dr. Webster worked with Dr. Melissa Wilson as a Postdoctoral Research Associate in the School of Life Sciences at Arizona State University. "As part of my postdoc I continued to do some primate stuff, but also had the chance to dive into quite a few reptile projects. There are many evolutionary and physiological questions in reptiles that we can use genomics to answer. I also became keenly interested in developing bioinformatic and genomic methods." While reptiles are not the first source of data most people consider for answering questions about human evolution,



Chimpanzee at the Semliki field site.

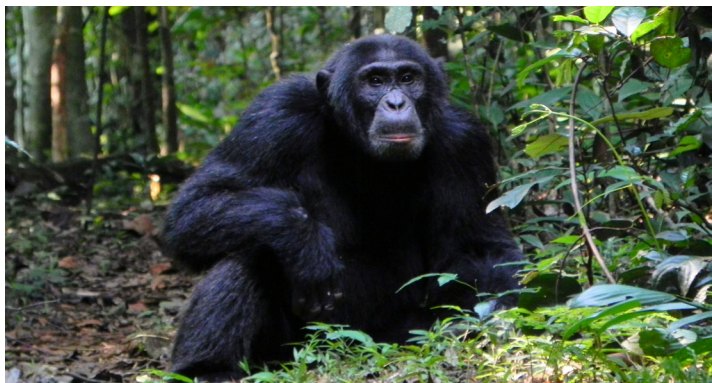


NEW YEAR, NEW FACES



Tortoise field work in Mojave County, Arizona

Dr. Webster is interested in using the adaptive radiation of reptiles to understand the impacts of environmental contexts on evolution, specifically in speciation, adaptation, and the development of sex determination mechanisms. "It was kind of a meandering path, but my roots were in primatology and anthropology, and it's good to be back". With his return to primatological studies, Dr. Webster has big plans for several projects. "I'm excited to be back in an Anthropology department, and to be able to plant my feet firmly back in the world I know so well. With a colleague, I am launching a long term study where we are integrating genomic, microbiome, behavioral and ecological data in ruffed lemurs. We are trying to understand how social structure might shape aspects of the microbiome, and also how we can use the microbiome to understand social structure and ecology. I will continue to work on questions related to primate speciation and adaptation, particularly in macaques, bonobos, and chimps. I am also part of a research project involving a group of free ranging rhesus macaques on an island off Puerto Rico, called Cayo Santiago. This population has been studied for many decades, so there is incredibly detailed behavioral, morphological and health data. My



Morton the Chimpanzee

collaborators and I have a unique opportunity to obtain a broad collection of samples across individuals, including samples from a variety of tissues within individuals. We are trying to use this model to understand somatic variation in the genome across cells, across the body, and over time and development. This is important for understanding things like mutation rate, which is then also critical for understanding timing of evolutionary phenomenon, but it is also important for understanding cancer. Cancer is a form of somatic variation that has run away with itself. Understanding healthy and normal patterns of somatic variation are central to understanding disease and health." Since his arrival at the University of Utah, Dr. Wester has been working to get settled, but has not let that stop him from making valuable contributions. He is updating the curriculum for the introductory "Human Origins: Evolution and Diversity" course and the upper division "Primates" course, and has already proved to be a valuable asset to students. Dr. Webster has jumped at the chance to become involved with undergraduate recruitment, is actively seeking out undergraduate/graduate researchers to support and train in his lab, and has helped to re-establish a series of professional development workshops for graduate students. The Department of Anthropology welcomes Dr. Tim Webster.

POST DOC BEN DAVIS

Ben joins the department as a Post Doctoral Researcher working with Dr. Tyler Faith



PhD Geography and Anthropology, 2018

University of Auckland

Ben grew up in New Hampshire and did his undergraduate in archaeology at University of Hawai'i at Mānoa. While there he did fieldwork in the Marquesas Islands and developed an interest in Polynesian voyaging and exchange. This interest carried him to New Zealand,



NEW YEAR, NEW FACES

where he completed an MA at the University of Auckland, modeling paleoeconomies in the Northwest Hawaiian Islands. He stayed on at Auckland for a PhD split between Anthropology and Geography, where he used computer simulation to answer questions about late Holocene land-use from stone artifact scatters in arid Australia. He joins Asst. Prof. Tyler Faith on an NSF-funded project “Exploring the history of coupled climatic and human influences on ecosystem changes during the last one million years” in the Western Cape region of South Africa. Ben’s research interests lie at the intersection of mobility, population dynamics, and the formation of archaeological landscapes. He is part of several interdisciplinary projects, including building computer games for climate change adaptation in New Zealand’s communities, and using climate modeling to understand ancient seafaring. He is also an active member of the Computer Applications in Archaeology (CAA) group. Ben and his family are new to Utah, and are looking forward to spending lots of time outdoors, teaching their children to ski, and getting their old cat to get along with their new dog.

POST DOC IAN RUGINSKI

**Ian joins the department
as a Post Doctoral
Researcher working with
Dr. Elizabeth Cashdan**



PhD Cognitive Psychology, 2018

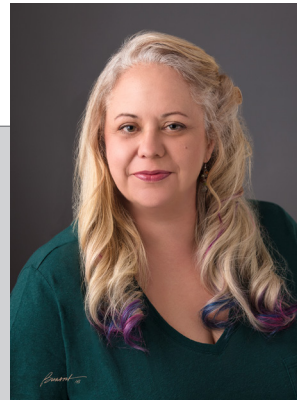
University of Utah

Ian is from Rhode Island (which yes, you can drive across in less than an hour) and did his undergraduate in cognitive science and religious studies at Vassar College in Poughkeepsie, NY. While there he researched navigation and spatial memory, working with Bill Warren at Brown University in an attempt to understand his terrible navigation skills. This interest carried him to Salt Lake, where he completed an MA and PhD in

Cognitive Psychology, right here at the U. He joins Prof. Elizabeth Cashdan on an NSF-funded project “Age and Sex Differences in Spatial Cognition”, which implements converging measures of spatial cognitive abilities across several fieldsites in Bolivia (Tsimane), Ecuador (Shuar), Mexico (Maya), Namibia & Angola (Twe), and Tanzania (Hadza). Ian’s research interests lie at the intersection of navigation, spatial cognitive abilities, and emerging technologies. He also collaborates with computer scientists to assess the design and usability of data visualizations, and his dissertation found that GPS devices have adverse affects on spatial transformation and environmental learning abilities. When he’s not in the office, Ian and his wife Monica can be found rock climbing, hiking, or running around with their black lab Thor

MASTERS STUDENT APRIL KEENE

**April joins the department
as a Masters student in the
Evolutionary Ecology Track**



BA History, 2016 BS Anthropology, 2018

University of Utah

April earned a Bachelor of Arts in History in 2016. In 2018 she graduated with an Honors Bachelor of Science in Anthropology with a minor in Integrative Human Biology. Both degrees were taken from the University of Utah. For her Honors Thesis she completed a taphonomic project with the mentorship of Dr. Jack Broughton. Under the supervision of Dr. Kristen Hawkes, April is pursuing a Master of Science in the Evolutionary Ecology track. Her primary interests include the evolution of social behavior and disease in African mammals, with a focus on behavioral differences between local populations. She is especially fond of big cats. April aspires to join the circle of engaging presenters, writers, and teachers who impart scientific knowledge to broad audiences in digestible but intelligent ways, seeding curiosity in others. She



NEW YEAR, NEW FACES

supports higher education for incarcerated and formerly incarcerated individuals and to this end interned with the University of Utah Prison Education Project. Her summer plans include donating time to support refugees at the U.S. border. More distant goals are to develop a dental care donation system in Salt Lake City and prepare her first novel for submission. Hobbies include putting color on things (in more capable hands referred to as "painting,") refurbishing wood things, trolling second-hand shops for small treasures, applying her knowledge of behavioral ecology to garden and lawn, and making her daughter laugh until she snorts. April is quite certain the world would be better, not worse, if she ruled it.

MASTERS STUDENT KAEDAN O'BRIEN

Kaedan joins the department as a Masters student in the Biological Anthropology Track



BS Zoology and Anthropology, 2018

University of Wisconsin-Madison

My background is in mammalian ecology and evolution, and I came to the University of Utah to continue my studies under the direction of Dr. Tyler Faith. I focus on eastern African paleontology and have been working on several projects in Kenya since 2017. My current research spans the period from 2.0-1.4 million years ago, when our ancestors started to use more complex stone tools, incorporate high amounts of meat into their diets, and spread from Africa through most of the Eastern Hemisphere. However, we cannot truly understand these evolutionary milestones until we know the environmental context in which they occurred. With this in mind, I concentrate little on hominins themselves, but rather on their ecological surroundings. This includes reconstructing landscapes through time based on large hooved mammals living alongside hominins, including a diverse array of buffalo, antelope, horses, pigs, and giraffes.

These animals are abundant in the fossil record, and their relative abundances can be used to estimate things like ancient climate, tree cover, and water availability. We can then see where hominins may have fit into the landscape.

WORK STUDY JULIET REYNOLDS

Juliet joins the department as a work study student, working closely with the office staff.



BS Gender Studies and Anthropology, 2020

University of Utah

Hello everyone! I am a non-traditional student double majoring in Anthropology and Gender Studies and am SO excited to be a part of this Department as your work study. I recently transferred from SLCC with my Associates Degree, and completed my first semester here this Fall as a Junior. Going back to school after 25 years out of the loop has been one of the hardest things I have ever done in my life, I didn't think this was a goal that I would ever be able to accomplish and am so grateful for the opportunity I have to actually make it happen now! Being a mother of two LGBT teens, I am earning my degree to study how gender is interpreted in cultures across the globe from an Anthropologic perspective in hopes of finding ways to broaden the spectrum of gender in the United States and more importantly in our local community. I am here three days a week and will be working mostly at the Front desk. I will be assisting with travel and whatever projects Kyla and Brock need assistance with. Fun fact: I love road tripping and have traveled to 49 states, most of them with my kids! We are planning to finally get to my last one this summer... I bet you can't guess which one it is! So, stop by the front desk to say hi, I'd love to meet you and I will tell you which state has eluded me.



WELCOME TO GARDNER COMMONS



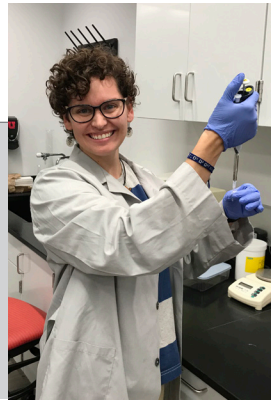
The move to the New Carolyn and Ken Gardner Commons is finally over, and the students, faculty and staff are getting settled. This change has had a profound impact on the Department culture, particularly the ways that the Anthropology department interacts with the rest of the University. No longer relegated to a small building far from the busy campus center, The Anthropology Department is more visible and accessible to undergraduate students who wouldn't otherwise have any idea that Anthropology is a major that can springboard them to success. In addition to close physical proximity to many more students, the facilities available in the Gardner commons are doing much of the work for us. While the classrooms, project rooms, and laboratories in the Stewart Building were sufficient for the undertakings of the Department, form was firmly supplanted by function. In the Gardner Commons, the aesthetic appeal of the building took a central role, leading to the creation of a visually interesting space with a modern feel. The building design, which emphasizes "openness" through the preferential use of glass interior walls and large shared work areas, is seen by some as a step closer to form than function. However, the overall feel of the space is significantly more impressive to guests and incoming students. While adjusting to the close quarters of the offices and workstations has

been a challenge, the laboratory spaces are incredible. The wet labs run by the Anthropology Department including the: Ancient DNA Lab, Archaeological Center, Modern Molecular Ecology and Evolutionary Genetics Lab, Stable Isotope Lab, Human Osteology Lab, and Zooarchaeology Lab are housed in a suite of lab spaces shared with the Geography Department. The shared lab space is intended to allow for increased collaboration between environmental researchers in both departments. The Cultural Anthropology students and faculty have an Ethnography Lab space in the College's new research hub, NEXUS. There, they will have space dedicated to their work, as well as have opportunities for interdisciplinary collaborations with researchers from departments such as: Environment and Sustainability Studies, Ethnic Studies, Gender Studies, Psychology, Economics, and more. With the addition of Dr. Timothy Webster to the genetics faculty, development is underway for the Population Genetics and new computational genomics labs. More than just visual appeal, these cutting edge laboratory spaces have already allowed for increased student participation in research, and have served as an incredible recruiting tool. Continue reading into the next section to be introduced to some of the undergraduates who are conducting research both in and out of the labs.

A TRADITION OF RESEARCH EXCELLENCE

UNDERGRADUATE
SALLY MATTHEWS

Sally is a research assistant working in the Meldrum Foundation Molecular Genetics Laboratory



BS Anthropology, Health Emphasis

I am working on DNA extraction from Chimpanzees for microsatellites. I am interested in genetics, with genetic counseling as a possible career path.

UNDERGRADUATE
MOLLY WABEL

Molly is an undergraduate researcher working with Post-Doctoral Researcher Kate Magargal



BS Environmental & Sustainability Studies & Geography

My academic/career goals are: Graduation in May 2019, then Environmental Engineering graduate program at Missouri S&T

UNDERGRADUATE
NICOLE ZAMORA-WILSON

Nicole is a Forest Service Intern working in the University of Utah Archaeological Center



BS Anthropology, Archaeological Science Emphasis

I'm graduating this semester, but after that I'm hoping to take a few years off to work before I return to grad school. Ultimately I would like to work in a museum. I'm a new University of Utah Archaeological Center/Uinta-Wasatch-Cache National Forest intern. Right now I'm only working with the UUAC and I'm doing data entry.

I'm very excited to start doing more work and learn a lot while working in the lab.

UNDERGRADUATE
CAITLYNN T SMITH

Caitlynn is a research assistant working in the University of Utah Archaeological Center

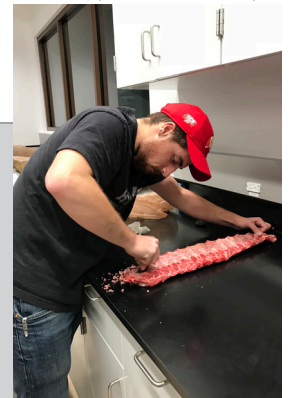


BA/BS History & Anthropology, Archaeological Science Emphasis

I am an Anthropology major with an emphasis in Archaeological Science. I want to graduate in the year 2022 with a double major in History Education and Anthropology and continue my education with a graduate program focused on the Classical Mayan or Historical Archaeology. I am currently working on cataloging and organizing the Archaeology Lab's library

UNDERGRADUATE
CHRIS OCONNOR-COATES

Chris is an undergraduate researcher working in the University of Utah Archaeological Center



BS Anthropology, Archaeological Science Emphasis & Integrative Human Biology Minor

I am in my last year at the U, graduating in Anthropology with an emphasis in Archaeology and a minor in Integrative Human Biology. I have conducted research multiple times over the course of the last four years, with my most recent research being in the Archaeology Lab. For this project I worked with in-coming graduate student Brock James to create a set of experimental stone tools to test the accuracy of identifications we made for similar tools during fieldwork on an earlier project. My other project this year has been conducted in the Anthropology Lab at the Natural History Museum of Utah utilizing their collection of faunal remains from

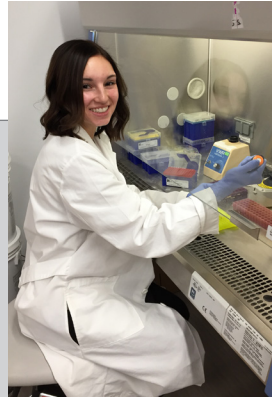


A TRADITION OF RESEARCH EXCELLENCE

Homestead Cave. For this project I have been measuring faunal remains in order to run statistical models to evaluate the climatic change that has occurred in the Great Basin.

UNDERGRADUATE JOURNEY BLY

Journey is a research assistant working in the Meldrum Foundation Molecular Genetics

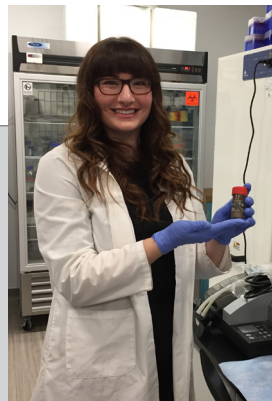


BA Anthropology, Integrative Human Biology Minor

I plan to pursue a Master's degree in Human Genetics, Genetic Counseling, or a related subject. In the Modern Molecular Genetics Lab at the U, I am working with Michael Zaccheo on his research on gene DRD4, a dopamine receptor that has been found to be related to reward, addiction, and impulsivity. I am using blood samples from Cambridge macaques to extract DNA, run PCRs on it, put it through gel electrophoresis, prepare and submit it to be sequenced, then analyze the sequences to identify repeats that may correlate with behavior.

UNDERGRADUATE ALI BAGLEY

Ali is a research assistant working in the Meldrum Foundation Molecular Genetics Laboratory



BS Anthropology, Integrative Human Biology Minor

I've focused the majority of my course work in primatology and paleoanthropology. I'm an intern in the modern molecular DNA primate lab and am currently studying primate mtDNA, specifically in chimpanzees. We are trying to develop new methods in identifying individuals at sites as a means to mitigate damage to habitat ranges. I'm also participating in UROP and am in my second semester of the program. I'm studying East

and South African Ungulate ecometrics in the hopes of generating paleo-reconstructive climate models for both regional and continental scales. I've also done some primate neuroscience studies in the lab for the dopamine subset gene DRD4 in rhesus macaques and hope to study this gene in new world primates, such as marmosets and tamarins. I'm hoping to get a masters in biological anthropology and carry on my current primate studies at the U of U into my master's program. I'd like to do more field work and gain experience in collecting non-human primate samples for future lab work. I'd also like to teach and inspire new students to get involved in anthropology, especially in primatology. My dream job is being a researcher or a conservation advocate at the Duke Lemur Center.

UNDERGRADUATE ANDREW NIELSON

Andrew is an undergraduate researcher working with the Shoshoni Language Projects



BA Anthropology, Economics Minor

I am working with the Shoshone Language Project, setting up the talking dictionary and selecting ethnographic accounts for more thorough translation. My academic and career goals include graduate education and eventually a professorship, with luck.

UNDERGRADUATE SERENA AESCHILMAN

Serena is a research assistant working in the University of Utah Archaeological Center



BS Computer Science

I am studying computer science. I am hoping to work at SpaceX. However, I am fascinated by everything! So, I am hoping that I can learn everything I can about pretty

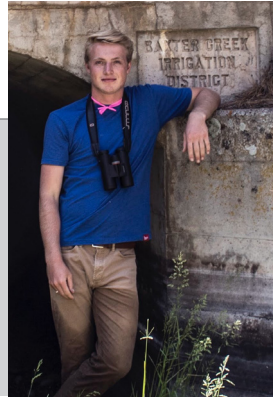


A TRADITION OF RESEARCH EXCELLENCE

much anything. I am currently assisting in developing a database for the University of Utah Archaeological Center to store information regarding diagnostic artifacts found at sites throughout the state.

UNDERGRADUATE MICHAEL BROUGHTON

Michael is a Rio Mesa Undergraduate Research Fellow working in the Zooarchaeology Laboratory



BS Biology & Anthropology, focus: Zooarchaeology

The project I am working on is: Analyzing Prehistoric Resource Depression of California Tule Elk: A Test With the King Brown Fauna My academic goals include graduating next year with a Bachelor degree in anthropology. I am also working on Bachelor degree biology. My career goals include applying to graduate schools soon. I want to continue school to get a PhD in anthropology with emphasis in zooarchaeology.

UNDERGRADUATE ROXANNE-LOIS LAMBSON

Roxanne is a research assistant working in the University of Utah Archaeological Center



BS Anthropology & Criminology

I aim to complete higher education in Anthropology. At the moment, I'm unsure if I will pursue a more archeological or forensic science driven course. This semester I am assisting Professor Coddling and Blake Vernon with the BENM project as well as working on my UROP. My UROP, "Using the Gini in the Bottle: Can the Gini Coefficient detect Social Inequality in Prehistoric Basin-Plateau Populations?", aims to contribute to the understanding of the emergence of inequality by

validating an approach to quantify social inequality in the archaeological record.

UNDERGRADUATE FALLON AKERSON

Fallon is a research assistant working in the University of Utah Archaeological Center



BS Anthropology, Archaeological Science Emphasis

My career goal is to record, interpret and preserve archaeological remains from the Great Basin area for future generations. My UROP project seeks to refine our understanding of temporal patterning of ceramic types and/or styles, specifically those occurring within the contested Bears Ears National Monument. My contribution of a refined ceramic chronology will support cultural resource preservation and provide greater temporal resolution when investigating past human behavior.

UNDERGRADUATE BRIAN S GORREBEECK

Brian is a Forest Service Intern working in the University of Utah Archaeological Center



BS Anthropology, Geography Minor

I am hopefully graduating in May with my Bachelors in Science, and within 1-2 years I hope to be working towards getting my master's degree. After that I would love to work for the Forest Services as an Archaeologist. As for what I am doing in the lab, I'll be working in the library in the center. I will also be working on data entry, cataloging, and once the government reopens, I'll have the honor working with the Forest Service.



AWARDS AND ACCOLADES



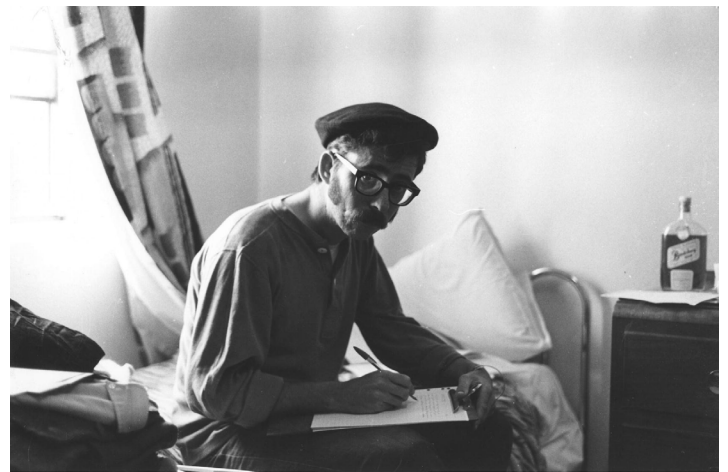
Jim O'Connell receiving his award from Bob Elston, 2016 recipient of the same award. Photo Credit: Nicole Herzog

Distinguished Professor Emeritus, and member of the National Academy of Sciences, James F. O'Connell, was awarded The 2028 Founders Lifetime Achievement Award by the Great Basin Anthropological Association. The Founders Lifetime Achievement Awards recognize the exceptional contributions of members that have participated for more than 20 years in the development of Great Basin Anthropology. Contributions can be through research and publications and through distinguished service that improves education, communication, and interaction between individuals, groups, and various state, federal, and local agencies. Nominees must have a publication record of major contributions and/or a record of distinguished service.



The Surprise Valley crew in 1967. O'Connell is seated on the top of the cab. In front (left to right) Starr Killian, Richard Ambro, Joe Mosbrugger, and Christopher Raven (on the front of the hood).

The service and research contributions of a nominee may be in the fields of archaeology, biological anthropology, cultural anthropology, and/or linguistics: or in ancillary disciplines of the earth, biological, or social sciences, so long as these have contributed the anthropological study of the peoples and cultures of the Great Basin. "Jim O'Connell began his professional career in anthropology as a Berkeley graduate student under Robert Heizer, conducting his dissertation (1971) research on the prehistory of Surprise Valley in NE California. A teaching position at UC Riverside (1970-72) was soon supplanted by a research fellowship (1973-78) in Prehistory at



O'Connell in 1973 compiling notes at the Old Stuart Arms Hotel in Alice Springs on his first fieldtrip to Central Australia. Photo Credit: Laura Major.

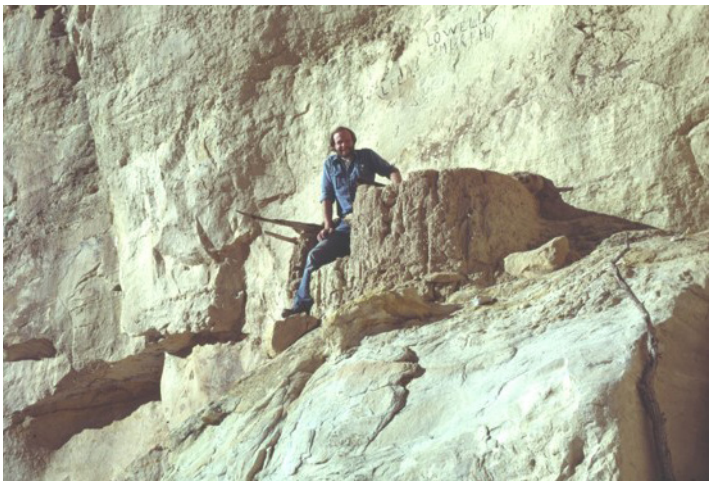
In 1978, he joined the Anthropology Department at the University of Utah, where he soon began the long collaboration with Kristin Hawkes in human behavioral ecology (HBE) that continues to the present. Although working with Hawkes and others mostly in Africa among the Hadza, and no longer a practicing field archaeologist, O'Connell has continued to publish archaeological work based on his dissertation, as well as critiques, insights and applications to Great Basin archaeology derived from his ethnoarchaeological and HBE research. O'Connell and his graduate students have played a key role in the wide adoption of HBE theory and application of HBE models (diet breadth, patch choice, central based foraging) in Great Basin archaeological research." - James F. O'Connell and Great Basin Archaeology. Robert Elston. Presented at The 80th Annual Meeting of the Society for American Archaeology, San Francisco, California. 2015

AWARDS AND ACCOLADES



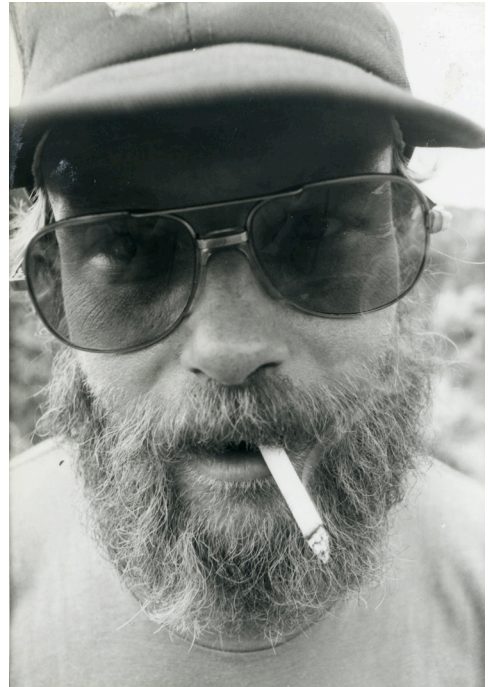
Duncan Metcalfe in the Archaeology Displays at the Natural History Museum of Utah

Duncan Metcalfe served as curator of archaeology at the Natural History Museum of Utah and as an associate professor in the Department of Anthropology at the University of Utah. He came to Utah in 1977 to attend the summer archaeological field school (on a bit of a lark) and never left. Duncan earned his Bachelor of Science degree from the University of Oregon, and earned his Master of Arts degree in Anthropology from the University of Utah in 1982, and completed his PhD in 1987. His dissertation was titled: "Mate Choice and Sick Cell Hemoglobin". Duncan was the first joint appointment between the Museum and the Anthropology Department, a practice that based on his success has become common, resulting in three additional joint appointment hires. Since 2009, Duncan has been the Director of the Range Creek Field Station and has worked in Range Creek Canyon since



Duncan Metcalfe standing in a Grainary in Range Creek Canyon.

2002. His specialties include the prehistory of western North American with an emphasis on the Great Basin and Colorado Plateau, archaeological method and theory, and behavioral ecology. While the department wishes him the best of luck in his retirement, there is hope that he won't be completely absent. Duncan has requested and been awarded Emeritus status, and will hopefully remain an active source of wisdom. "It's fair to say that Duncan has always been a very good field man, something that isn't true of a surprising number of archaeologists. He has an aptitude for research design and execution and an excellent eye for stratigraphy... Range Creek will get serious play as the first permanent field station established by the University of Utah. Most of the credit for that goes to Duncan... As all who have



worked with him will know, Duncan's analytical skills and attention to scientific detail are outstanding... As he's matured Duncan has become the kind of person every academic department needs and far too often lacks – a thoughtful keeper of institutional memory and in many ways a conscience. He reminds us of how and why things can, have been and should be done, regardless of how difficult, troublesome or even unpleasant that right way may sometimes seem to be. All of us are grateful for his good counsel so generously shared. Thanks, Dunc." – Selected remarks from Jim O'Connell.

LESSONS FROM THE PAST

In a socio-political context where the degree to which human behavior affects the environment is contested, some paleoecologists are examining some of the fundamental assumptions of their fields of study to ensure that they are accurately addressing the impact that humans had on past environments. One such assumption is that a shift by early hominins to increasingly rely on hunting



Dr. Tyler Faith, Lead author of "Plio-Pleistocene decline of African megaherbivores: No evidence for ancient hominin impacts"

based subsistence strategies led to the extinction of the majority of the large-bodied mammals (megafauna). The assumption commonly held in most quaternary research is the with the advent of lithic technology approximately 2-3 million years ago (mya), humans began to fill a predator niche, hunting and killing prey in addition to gathering other food types. In addition to the rough temporal correlation of African megafauna extinctions and the evidence of increased hominin hunting behavior, prey choice models derived from optimal foraging theory also support the selection of megaherbivores as hunting targets. However, this assumption was not systematically tested. In a paper recently published in *Science*, Dr. Tyler Faith of the University Of Utah Department Of Anthropology and colleagues studied the relationship between evidence of extinctions in the fossil record and corresponding archaeological, and climate data. After compiling a large database of fossils with taxonomic identification and associated dates, a new picture began to emerge. According to the fossil data, African megafauna extinctions began ~4.6 mya,

long before the 2 mya timestamp typically given to the extinction events. While hominin species were living in Africa at this time, they were similarly sized to modern chimpanzees and the earliest evidence of stone tool use occurs more than 1 million years after the megafauna extinctions begin to show up in the fossil record. These two factors combined make it unlikely that hominins were the driving force behind these extinctions. Rather than population depression due to hunting, Dr. Faith and colleagues propose that environmental change was driving megafauna extinction. The expansive grasslands associated with modern African ecology are significantly different than they were a few million years ago. At that time the habitat was more woodland, dominated by trees and shrubs. However, declining atmospheric carbon dioxide led to a dramatic shift to grasslands. The paleoclimatic data suggests that many species of megafauna were unable to adapt to the less productive grassland habitat, resulting in their extinction. However, the story becomes more complicated when looking at the patterns in the prehistory of North America.



Early Paleo-Indian artifacts, including Clovis style spear points

The Clovis industry is the earliest cultural group represented in the North American Archaeological record and dates to 13,150-12,850 years ago. Clovis is easily identifiable by the use of large, lancelet shaped spear points with fluted bases. The size of these spear points and their common association with extinct species, primarily mammoth, has led to the long held belief that Clovis peoples were big-game hunters, and that their hunting activity led to the extinction of North American megafauna, referred to as the overkill hypothesis. Similar to the debate in the African paleo context, some North American researchers believe that environmental changes rather than human hunting behavior were primarily responsible for the extinction events. The record of human activity in North America is significantly younger than that of Africa, which

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allows for the application of different tools to compare human activities and the extinction of megafauna more directly, and at a finer resolution. In an article recently published in *Nature communications*, Anthropology faculty member Dr. Jack Broughton and former University of Utah Anthropology graduate student, Elic Weitzel, do exactly that. To test this, Broughton and Weitzel



Dr. Jack Broughton, Lead author of: "Population reconstructions for humans and megafauna suggest mixed causes for North American Pleistocene extinctions", displaying the first California Condor bones identified in the Abrigo de los Escorpiones collection. compared changes in the human and faunal populations through time. They predicted that if human hunting was the cause of extinctions, then megafauna populations represented in zooarchaeological assemblages should decrease when human populations increase. If the environment was the primary cause of extinctions, then human and megafauna populations should rise and fall together, be uncorrelated, or fall outside of the window of human occupation. Ultimately, Of the nine taxa, three extinctions appear to have been driven by hunting, five by climate, and one last case is a mix of both. Taken together, these studies shift primary responsibility for the majority of mass extinctions onto the environment, rather than human hunting. While at first glance this could be taken as exoneration for human impacts on extinction events, a more careful look highlights the importance of limiting the degree to which humans drive climate change.

Kate Magargal, postdoctoral research associate in the department of Anthropology, continues to conduct fieldwork in the four-corners region of the US with Native communities reliant on firewood. Firewood, the majority of which is harvested from federal public lands, is an important resource for people living on the Navajo and Ute Mountain Ute reservations in Utah, Arizona, Colorado, and New Mexico. Many households in these communities rely primarily on firewood for cooking, heating, and ceremonial purposes. As part of an interdisciplinary NSF-funded project, Kate gathers information from firewood collectors and consumers in an effort to understand the relationship between socio-economic status, distance to woodland resources, cooperation, and other factors that contribute to how firewood use varies by household. Numerous partners



Firewood harvesters use sledgehammers, axes, chainsaws, and trucks to collect wood throughout the fall and winter. Preliminary data analysis suggests the amount of field processing is related to the level of access to tools at home. Here, whole tree trunks of pinyon and juniper trees were loaded into the truck.

assist with the collection and processing of field data for this collaborative project. Shaniah Chee (Anthropology Undergraduate) and Molly Wabel (Environmental Studies Undergraduate) assisted in the collection and digitization of hundreds of surveys from well-attended fairs on Navajo Nation in Fall 2018. Project partners Utah Diné Bikéyah and Amos Zerah (Masters in Conservation and Restoration Science, U. of California, Irvine) and assistants from within the Native communities helped capture information about firewood collection through paper surveys, in-person interviews, and by participating in firewood collection trips (see image). Undergraduate

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students participating in a Community Engaged Learning program through the Environmental Studies department volunteer as field assistants and join Kate in southern Utah in areas frequented by firewood collectors and measure the density and characteristics of tree stumps and other evidence of firewood harvest (see image). This work is part of the NSF-CNH project, “Dynamic Impacts of Environmental Change and Biomass Harvesting on Woodland Ecosystems and Traditional Livelihoods” (Award #1714972). An interdisciplinary team, including principle investigators from Anthropology (Brian Coddington), Biology (William Anderegg), Geography (Philip Dennison), and Atmospheric Sciences (Courtenay Strong), are examining the combined effects of environmental variation and firewood harvesting on woodland ecosystems to determine the conditions that promote healthy forests capable of sustaining wood fuel use into the future.



Environmental Studies undergraduate Vy Ho examines a freshly cut stump as part of a weekend of fieldwork. Students walked transects and gathered metrics about stumps and other evidence of firewood harvest, such as piles of cut branches. This data will inform how firewood harvest varies across woodland areas.

Data is currently under analysis and will become part of an effort to articulate the economic and cultural importance of firewood to Native people in the four-corners region, as well as the relationship between firewood harvest and woodland health. Predictions for how this natural-human system is affected by climate change are also under development. Part of the project goals entail delivering information to communities and federal land managers about firewood resources and practices. This information will inform upcoming planning for managing forests where firewood collection is an integral element of the human ecology of the area.



Undergraduate, Shaniah Chee, in traditional clothing. Shaniah works with Kate Magargal on the “Dynamic Impacts of Environmental Change and Biomass Harvesting on Woodland Ecosystems and Traditional Livelihoods” project, and has shared her experience both on this project, and more generally as a Dine Student at the University of Utah.

Ya’at’eeh shi ei Shaniah Morningstar Chee yinishye, Tlilizani nishli, Kin’yaa’aanii bashchichiin, Hashk’aahadzohi dahshichei, aadoo Tachiinii ei dashshinali. As a Dine woman, it is a must to always introduce myself with my clans, it lets people who I am and where I come from. I am from Tse’bii’nidzizgai, otherwise known as Monument Valley, which is located on the Navajo Nation reservation on the Utah/Arizona borderline. I have two younger siblings and two amazing parents who love and support me. Through their teachings I was able to shape into the person I am today. I am a Junior at the University of Utah, double majoring in Anthropology and Ethnic Studies, as well as minoring in Native American Studies, I have a lot to handle with this year. I am also busy managing the Inter-Tribal Student Association’s monthly socials as

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Monument Valley, Utah. Located on the Navajo reservation.

the social chair. I work alongside a few Anthropologists as a research assistant, collecting data on local firewood usage across my Navajo reservation and interviewing the process of what it takes and how far it takes to get firewood. There is different usage of firewood, some people use it for ceremonies, building, medicine, jewelry, and most importantly for warmth during the cold months. Many residents on the Navajo Nation and neighboring tribes, depend on firewood because we all don't have the propane burning stoves to heat our homes. It is too expensive. Wood hauling is not an easy process, it takes usually all day to travel and find a good spot to get wood, saw/chop the wood, then load it all up into the trucks or flatbeds and again unload it. My family and I go out during the summer months to collect firewood so that way we are prepared for winter. While being able to travel back home and working out on Bears Ears National Monument, I feel blessed to know that I am working with my people to get a better understanding of what can be improved so that in the future, the younger generation will continue to sustain our usage of wood and other resources associated with it. Right now we are trying to figure out what is the cause of the discoloration in the juniper trees in the area and if gathering wood is the cause of it or if it is just the drought season we've had for two years straight. We are also collaborating with the Utah Dine Bikeyah as a source of information about Bears Ears and Cedar Mesa. I know graduation is just around the corner and I am not sure where I want to go, but I do know that I want to be able to contribute back to my people

with my knowledge, whether it be working for my tribe on cultural preservation or focusing on governmental issues of environmental sustainability as a lawyer on my reservation. I would also love to work with the younger generation as well, because they are the start and dream of my people, they are the ones who will pass down our teachings. When I have my degrees I hope to give back to my community by starting up an immersion program, somewhat like a summer school for kids to be fully interactive with our heritage and language. This program will only allow the kids to speak Navajo, which will be my main goal to have each and everyone of those kids speak fluently, but also continuing on the importance of our traditions; the teachings of ceremonies, traditionally learning to plant, to learn how to weave baskets and rugs, and learn how to silversmith. It may be rocky in the beginning but that is usually how it goes to get to something great. We use to have a similar program when I was in elementary and I would love to get it back in action. Right now I am in the process of bettering myself in academia so that I can continue to be a role model for my siblings, cousins, friends, and my community. I want to be able to give back in that way, it is all about T'aa Hwo Ajiteego, to do whatever it takes to get the job done.



PREDICTING THE PAST?



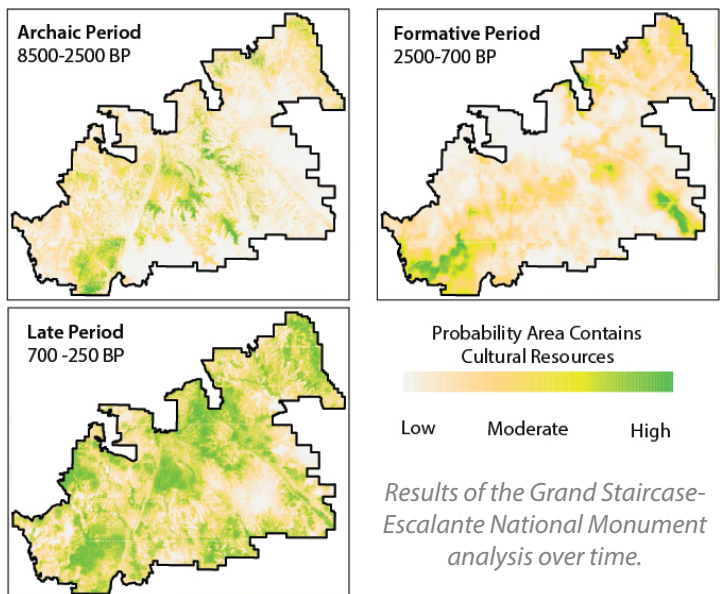
PhD student Blake Vernon presenting their predictive model at the 2018 College of Social Behavioral Science Research Day.

Archaeologists play a significant role in public lands management. Archaeological resources are finite, and easily destroyed by many recreational and industrial practices. As such, these resources are protected on public lands. However, then can only be protected if they are found and recorded. Traditionally, this is achieved by pedestrian survey, a costly undertaking that requires teams of trained archaeologists to walk over large areas of land to search for surface deposits of artifacts. While this is still the gold standard for cultural resource inventory, the efficiency of this process can be significantly improved through the use of predictive models. With increased efficiency, more archaeological resources can be found and protected. This is particularly important when lawmakers are making decisions about what public lands should be protected, and what land can be developed without significant damage to the



PhD student Peter Yaworsky presenting their analysis of impacts on the Grand Staircase-Escalante National Monument at the 2018 College of Social Behavioral Science Research Day.

archaeological record. PhD student researchers with the University of Utah Archaeological Center (UUAC) recently completed a comprehensive analysis examining the distribution of prehistoric archaeological sites in the contested Grand Staircase-Escalante National Monument (GSENM). Using new machine learning methods to predict where yet undiscovered sites may be located, Peter Yaworsky and Kenneth Blake Vernon revealed many areas now excluded from the GSENM are likely rich with cultural resources. Their results also provide new insights on how past populations used the landscape differently through time. They are now using these methods to evaluate how past population adapted to climate change in the contested Bears Ears National Monument.



Results of the Grand Staircase-Escalante National Monument analysis over time.

To create this model, machine learning was used to compare the known locations of archaeological sites against a number of predictor variables, including: Elevation, Slope, Moisture Index, Primary Productivity, Soil Age, and Cost Distance to permanent water. Once the model learned what conditions were most likely to result in a site being present in the areas with known site locations, it was then able to extrapolate where additional sites were likely to be located in un-surveyed areas. In terms of land management, when applied to the GSENM, the model predicts that in addition to the 2,000 previously known sites executive proclamation 9682, the executive order that significantly decreased the size of the GSENM also removed protections for more than 20,000 unknown sites.