Department of Anthropology End of Year Poster Session
May 30th, 2018. 4-6pm, 204 Condon Hall

The Association of Anthropology Graduate Students (AAGS) is pleased to announce the lineup for our End of Year Undergraduate and Graduate Poster Session. This event will provide a friendly venue for students to showcase their current research. The session will take place on Wednesday, May 30th from 4pm – 6pm in Condon 204. Prizes will be awarded for the best undergraduate and best graduate poster. Food will also be provided. Titles and abstracts for the presentations are included below.

Participant Abstracts

Monya Anderson

An assessment of the associated *Paracolobus mutiwa* specimen WT 16827

Paracolobus mutiwa is a large-bodied colobine known from eastern Africa at sites ranging from approximately 2.7-1.9 Ma, and is represented by numerous craniodental specimens. KNM-WT 16827 is an associated partial skeleton from the Lomekwi Member of the Nachukui Formation, West Turkana that has been dated to approximately 2.6Ma (Harris et al., 1988). It is craniodentally similar P. mutiwa from Koobi Fora and Omo and the most complete specimen attributed to this taxon. The only comparably preserved specimen of this genus is KNM-BC-3 the holotype of Paracolobus chemeroni. Postcranially KNM-WT 16827 is distinct from contemporaneous fossil colobines on several features. Its body mass overlaps with Rhinocolobus, but the latter retains more arboreal features of the humerus and ankle. Compared to Cercopithecoides williamsi, KNM-WT 16827 is larger and lacks the former's distinctly terrestrial features. Compared to P. chemeroni, WT 16827 is smaller in its forelimb and ankle, but the proximal femur has more robust muscle attachments. The forelimb and ankle possess several features distinct from P. chemeroni, other large-bodied fossil colobines, and many extant taxa. This is an important specimen not just for its preservation, but for what it may reveal about the diversity of primate taxa during the Late Pliocene.

Andrew Blumm

Oppression by Sprawl

The modern segregation of neighborhoods by economic status is a defining characteristic of the contemporary American city. This phenomenon has developed over the past couple centuries as a result of capitalistic ideologies coupled with racist sentiments. Because of the systemic economic oppression of people of color, our urban fabric has become increasingly segregated racially. The results in a cycle of oppression for lower income people, especially people of color, while simultaneously benefiting the heteropatriarchy and the extremely wealthy by concentrating wealth and consolidating power. This research explores the causes, effects and possible solutions to this problem.

Colin M. Brand and Linda F. Marchant
Social hair plucking in captive bonobos (Pan paniscus) is unrelated to dominance and kinship

Hair plucking is observed in many captive primate species and is often characterized as an abnormal behavior. However, this behavior can be both self-directed and social and may have different etiologies. Earlier research in captive macaques (Macaca mulatta) described the aggressive nature of social hair plucking while more recent observations did not find an association with aggression yet the behavior was directed down the dominance hierarchy. Here, we investigate patterns of social hair plucking in a group of captive bonobos at the Columbus Zoo. As social hair plucking rarely occurs outside of grooming, we tested the hypothesis that plucking is a grooming convention in this social group. We collected 128 hours of grooming data on 16 captive bonobos using all-occurrence sampling. We ran Mantel tests for both symmetrical and asymmetrical grooming and plucking matrices. We also considered how dominance and kinship affected the target of social hair plucking using a two-way ANOVA. Grooming and hair plucking distributions were significantly correlated (asymmetrical $z = 4636$, $p < 0.001$, symmetrical: $z = 6620$, $p < 0.001$) and there was no effect of dominance ($F = 0.14$, ns), kinship ($F = 1.67$, ns), or interaction between dominance and kinship ($F = 0.51$, ns) on social plucking. These results support the hypothesis that social plucking in bonobos is a grooming convention and is unrelated to welfare.

Cheyenne Collins, Jeanne McLaughlin, and Frances White
Preliminary Decomposition Study within the Willamette Valley of Oregon: Multi-Regional Comparison and Sharp Force Trauma Effects

Determining time since death (post-mortem interval or PMI) is an essential part of medico-legal death investigations. PMI can give investigators important information about time of death and may help answer questions about the events leading up to death. The purpose of this study is to collect decompositional data from an understudied region (Oregon), and compare these data to better studied regions such as Tennessee, in order to characterize the effects of regional variation on decomposition and taphonomy. Six pig heads will be exposed to the natural environment in the Willamette Valley of Oregon for sixty days. Three of these pig heads will undergo sharp force trauma infliction (SFT) in order to compare rate of decay with remains that have a singular SFT wound. Stage of decomposition, temperature, precipitation, and preliminary entomological data will be collected throughout the sixty-day observation period. These data will be used to calculate Accumulated Degree Days (ADD); evaluate variation between similar studies involving different North American regions; compare and contrast similar studies within the Willamette Valley of Oregon; and analyze the effects of sharp force trauma (SFT) on decomposition rates and insect activity.

Robert J. DiNapoli, Terry L. Hunt, Carl P. Lipo
Quantifying energy investment in monuments (*ahu*) on Rapa Nui (Easter Island) using structure from motion mapping

Pre-European contact Rapa Nui (Easter Island) society is well-known for its substantial investment in monumental architecture, including over 300 platforms (*ahu*) and almost 1000 statues (*moai*). Recent theoretical and empirical research on the island suggests that ahu and *moai* were focal points for competitive and cooperative signaling by relatively small-scale communities dispersed across on the island. Evaluation of this hypothesis, however, requires the measurement of the amount of energy invested in the construction of these monuments and comparing these values to the relative quality of resources supporting local communities. Despite the significant amount of research directed towards Rapa Nui's monuments, we currently lack accurate, precise, and comprehensive estimates of monument size. To fill this gap, we used UAV-based photography and structure-from-motion photogrammetric tools to create scaled high-resolution, 3D representations of *ahu*. With these 3D models, we calculate volume estimates as relative measures of investment in *ahu*. Using these data, we explore spatial patterns in energetic investment within and between local communities.

Alexana J. Hickmott, Michel T. Waller, Monica Wakefield, Colin M. Brand, Klaree J. Boose, Frances J. White
Temporal and geographic variation in bonobo dietary diversity using different methods

The importance of dietary diversity in understanding a taxon's behavior, morphology, and ecology is fundamental to primatological research. Primate diets are complex and highly variable. Dietary variability includes temporal, seasonal, and geographic variation while the ability to consume generalized (common among frugivores) or specialized diets is often environmentally dependent. Diversity assessment can be complicated by methodology and year-to-year variation. We examined bonobo (*Pan paniscus*) dietary diversity using data collected over several years (1985, 1991, 1995, 2007, 2009, 2014, & 2017), sites (N'dele & Iyema same forest), and methodologies (direct observation & fecal washing). The highest diversity was found for the N'dele 1985 season using direct observation (Shannon-Wiener diversity index H' = 2.60) while the lowest diversity was found from the N'dele 2009 fecal wash data (Shannon-Wiener diversity index H' = 1.15). Significant differences were found between the different sites, N'dele & Iyema [Mann-Whitney, U = 1830, N = 56, p = < 0.001] and methodology, direct observation & fecal washing [Mann-Whitney, U = 2485, N = 56, p = <0.001]. These results indicate that bonobo diets vary greatly from year to year, are site specific, and results are dependent on methodology. In addition, fecal washing does not accurately capture dietary diversity most likely due to the inability to distinguish what plants dietary fiber comes from. Thus, when examining dietary diversity it is important to factor in methodology, geography, and temporal variation.

Haden U. Kingrey, Matthew F. Napolitano, Geoffrey R. Clark, and Scott M. Fitzpatrick
Exploring manufacturing variability in Calcareous Sand Tempered pottery on Yap, Western Caroline Islands

The oldest identified sites on Yap are identified by presence calcareous sand tempered (CST) pottery from deeply stratified deposits. With few exceptions, CST pottery, made from locally

produced clay, has been recovered from Rungluw and Pemrang, two sites in southern Yap, western Micronesia (northwest tropical Pacific). Although poor preservation conditions and small sample sizes make it difficult to reconstruct vessel size, detailed analysis of sherds demonstrates at least two sub-types. Recent excavations at Pemrang have yielded the largest sample of CST pottery ever recovered and allow for inter- and intra-site comparison. Results will help us understand the poorly understood early settlement of Yap.

Matthew Napolitano
Archaeological Investigation on the Remote Islands of Yap: New Insights into Early Settlement

The early settlement of Yap, a group of four small islands in the northwest tropical Pacific Ocean, remains one of the biggest mysteries in Pacific Island archaeology. Understanding when, how, and by whom Yap was settled is limited by significant gaps in research and conflicting lines of evidence. To address these gaps, and locate the islands' earliest human settlement, recent archaeological investigations began at the site of Pemrang, the oldest known site on Yap. Results of a systematic auger survey, excavation, and newly obtained radiocarbon dates suggest that the site of Pemrang may have formed around 2500-2000 years ago as sea levels in southern Yap were decreasing. These data help shed new light on early settlement, allow for improved models that may help identify where older sites may be located, and through collaboration with Yapese descendent communities, contributes to the preservation and sustainability of Yapese cultural heritage.

Carly Pate, Larry Ulibarri, Stephen Frost, Frances White, and Tilo Nadler
Cranial morphometric analysis on Pygathrix nemaeus and Pygrathrix cinereal

This study analyzes cranial morphometric distinction between *Pygathrix* species. Endangered *Pygathrix nemaeus* and Critically Endangered *Pygathrix cinerea* are endemic to Southeast Asia. While generally understudied, osteological analysis on these species are uncommon due to lack of specimen collections or accessibility. It is possible to distinguish species based on genotypic and phenotypic pelage differences. However, thorough distinctions of skeletal morphology have not been quantified. Using 3D photogrammetric methods and linear measures, cranial data was collected on an osteological collection of confiscated and captive red-shanked doucs, *P. nemaeus*, (n=43) and grey-shanked doucs, *P. cinerea*, (n=23), from the Endangered Primate Rescue Center, Cuc Phuong National Park, Vietnam. Five linear cranial measures indicate no sexual dimorphism between *P. cinerea* males and females, (n=24, n=19) or between *P. nemaeus* males and females, (n=17, n=6). One linear measure, anterior foramen magnum to superior most point on sagittal suture, allowed distinction between species among males, (F 4.37, P<0.05) and among females, (F 10.06, P <0.05). These results indicate a cranial morphometric variation among species. Further 3D shape analysis will further explore this distinguishability. Intra- and interspecies variation analyzed morphometrically by 3D photogrammetry can aid in understanding the impacts of species-specific factors such as social structure and feeding ecology on cranial morphological variation.

Aida Goma Petit, Alicia M. Delouize, Geeta Eick, Elizabeth Thiele, Paul Kowal, Nirmala Naidoo, Somnath Chatterli, and J. Josh Snodgrass
Examining variables associated with the underdiagnoses of depression in Mexico

Depression currently stands as the 3rd leading burden of disease worldwide. Although there are known and effective treatments for depression, fewer than half of those affected by the disease will receive treatment, possibly due to barriers to health care access that contribute to underdiagnoses. Utilizing the World Health Organizations Study on global AGEing and adult health (SAGE), this study examines older adults (50+ years old, N=22,140) in Mexico to explore factors that may lead to having depression as determined by a symptom based algorithm but no depression diagnosis. It was hypothesized that men were more likely to have depression with no clinical depression diagnoses. Hierarchical logistic regression analysis was utilized to examine the effects of sex, age, education, wealth, marital status, relationships with others, and residence location (urban vs. rural) on depression diagnosis. Model 1 showed that sex ($\beta= 0.26$, $p< 0.001$) and age ($\beta = 0.01$, $p < 0.001$) were significant predictors of depression. However, in model 2 these relationships were reduced to insignificance with years of education ($\beta = -0.03$, $p = 0.005$), wealth ($\beta = 0.25$, $p <0.001$), relationships with others ($\beta = 0.45$, $p <0.001$), widowed vs. married ($\beta = 0.33$, $p <0.001$), and residence location (urban vs. rural; $\beta = 0.33$, $p <0.001$) significantly associated with undiagnosed depression. These findings highlight the importance of improving education, health care access, and the resolution of social barriers, in order to provide proper diagnosis and care for people who are suffering from this disease.

Samantha Queeno, Matthew C. O'Neill, Daniel Richard, Terence D. Capellini, and Kirstin N. Sterner
Characterizing the Regulatory Landscape of Fetal Skeletal Muscle Tissue

Recent research suggests that selection for more efficient bipedal locomotion has decreased relative fiber length and increased the expression of slow twitch fibers in human skeletal muscle over the past 7-8 million years. These traits differentiate humans from many other primates, including African apes. To better understand the tempo and mode of skeletal muscle trait evolution in hominins a genomic approach is required. Here, we begin by characterizing the regulatory landscape of human fetal skeletal muscle tissue to define genomic regions that shape limb muscle development. To do this we first analyzed human epigenomic data for fetal skeletal muscle tissues available from the Roadmap Epigenomics Project. Using DESeq we identified 90 genes showing differential expression (e.g., mRNA) between fetal arm and leg muscle. We then used peak calling algorithms to identify thousands of regulatory regions (e.g. DNase I HSS) that are conserved across biological replicates for a specific time-point and tissue. We then were able to identify regulatory sequences unique to fetal muscle function, and specific to individual anatomical regions (i.e., fetal arm versus fetal leg). These constitute loci of potential importance to the evolution of human muscle function.

Julien Royer, Win N.F. McLaughlin, Samantha S.B. Hopkins
A juvenile badger, _Meles leucurus_, from the Pleistocene-Holocene of Kyrgyzstan

We describe a partial skeleton of a juvenile badger, the first described Pleistocene-Holocene carnivoran from the Tien Shan mountains. This specimen differs from the much older previously

collected fossil record of Kyrgyzstan, with most previous and ongoing work concentrated on the Miocene-Pliocene, dominated by large ungulates. Russian geologists discovered this specimen while mapping regional faults and reconstructing uplift rates in the QIII terrace (the regional convention for naming uplifted terraces) of the Pleistocene sediments of Kochkor Basin in the Kyrgyzstan Tien Shan mountains. The carnivoran fossil was recovered from the QIII terrace, with a calibrated estimated age of 20,000-5,000 years B.P through carbon dating of other QIII terraces. A vertebra, rib, and tibia, as well as an associated snail shell from the specimen were used for radiocarbon dating of the material. A CT scan of the fully formed adult encapsulated m1 in the lower right jaw is used for a positive morphological diagnosis. The morphology of the preserved bones and the incomplete formation of the epiphyses as well as a single deciduous tooth and the encapsulated m1 suggest the specimen is a juvenile. Bones and p4 tooth structure compared with a modern dog skeleton demonstrates an assignment to the Carnivora. Nevertheless, the robust proportions of the femur, humerus, and ankle bones are grounds for diagnosis as genus *Meles*. Evidence of evolutionary pattern distributions, ecological niche, and chronology indicates an assignment as *Meles leucurus*. As Kyrgyzstan is extremely seismically active, dating the fossils recovered from recent uplifts can give us information about future earthquake risks. My findings contribute to comparing modern species from the same area on the account of observing morphological and biogeographic changes happening through time.

Hannah Wellman
Avifaunal Remains from the Palmrose Site
Avifaunal remains have great potential to improve archaeological understanding of the economy and subsistence of peoples who lived in the past, as well as to yield information about local ecology, environmental change, and past bird species distribution. The large assemblage of faunal remains from the three archaeological sites comprising the Seaside Collection from Seaside, OR, contains significant quantities of bird bone. Previous analyses of vertebrate remains (including birds) by Greenspan and Crockford (1992) and Colten (2015) suggested occupation occurred at the site year round. While these studies provide baselines for interpreting seasonality and species representation, approximately half the Palmrose faunal remains from the initial 1970s excavation are unanalyzed. Consequently, zooarchaeological analysis has been performed on a previously unanalyzed subsample (NISP=200) as part of a larger avifaunal project. This project seeks to understand not only patterns of site occupation, but to also gain greater insight on strategic hunting practices (i.e., seasonal and geographic targeting/acquisition of specific avian species). Such information is critical for understanding human subsistence behavior and landscape use. This investigation also seeks to provide data on the local historical ecology of two currently endangered bird species in Oregon: the marbled murrelet (*Brachyramphus marmoratus*) and the short-tailed albatross (*Phoebastria albatrus*).