

Anthropology 471/571: ZOOARCHAEOLOGY
Winter 2019 - Dr. Madonna L. Moss

Time & Place: 12:00-1:20 pm, Mon. & Wed.; labs in 264 Condon, discussions in 330 Condon.

Open Lab: 2:00-4:00 pm, Fridays, starting Week 4 in 264 Condon.

Contact Information: 541 346-6076; 327 Condon Hall, mmoss@uoregon.edu; Office hours: 2-3 pm, Fridays.

Course Description - The main goals of this class are to:

1. provide you with hands-on experience in the practical skills of working with comparative collections and zooarchaeological assemblages.
2. allow you to become informed consumers of archaeological literature involving the study, analysis, and interpretation of zooarchaeological assemblages.

Zooarchaeology is the study of animal remains from archaeological contexts to enhance our understanding of the long-standing and complex relationships between past people and animals. Studies of vertebrate and invertebrate remains can inform a wide variety of archaeological topics. The bone and shell debris in archaeological sites are the remains of animals people used for food, and whose products were used to make clothing, shelter, and other items. Faunal remains are valuable sources of information on past environments and the ways humans participated in their ecosystems. Certain species are sensitive environmental and/or seasonal indicators and are used to draw inferences about past environments near a site during the periods or seasons it was occupied. Faunal studies can reveal significant differences in the distribution and abundance of different species in the past. Such studies may interest fisheries and wildlife biologists and managers working to understand contemporary ecological relationships. Faunal remains from archaeological sites are primary sources of information on the structure of past economies, subsistence practices, and land and resource use. Types and distributions of faunal remains are used to understand the relative economic importance of various animals, the organization of activities at a site, the degree of sedentism or duration of an occupation, or the effects of human use on local animal populations. In comparative studies, archaeologists may discern differences in the composition, taxonomic diversity, and fragmentation of faunal assemblages resulting from both natural and cultural factors. Archaeologists also use faunal remains as a source of information to understand site formation processes. Higher order interpretations based on zooarchaeological studies have been key components of new insights on the nature of human-animal interactions, including new ideas about early hominid lifeways, the timing and evolution of hunting, the peopling of the Americas, Pleistocene extinctions, global climate change, and many other topics.

The two course goals listed above are interrelated; you will understand the zooarchaeological studies you read much better after you have accumulated some experience doing zooarchaeological analysis yourselves. This course will give you hands-on, practical experience as an introduction to zooarchaeology. We study the fundamentals of how archaeologists proceed from recovered bones and shells to inferences about human behavior. We trace the stages from field excavation to laboratory processing, recovery and sampling decisions, identification, and various kinds of analyses, through quantifying, analyzing, and reporting faunal data. Sometimes faunal studies are central to archaeological research topics, and sometimes they are not. However, zooarchaeological studies have significant potential to inform larger research issues, and this potential is not always realized. Sometimes the results of faunal analysis are not integrated into archaeological reports, and other times the results are mis-used or mis-interpreted. A large number of zooarchaeological publications focus on methodological issues; understanding the limitations of various methods allows you to critically evaluate archaeological inferences based on zooarchaeological data.

Proficiency in faunal analysis is a long-term endeavor requiring years of effort, sustained practice, as well as comprehensive comparative material from your area of study. It can be tedious and frustrating work, and requires both patience and perseverance. It can also be fascinating and fun. By the end of the term, you will have worked with the remains of fish, birds and mammals and used comparative collections to make identifications. Most will have analyzed and interpreted numerical data to understand human use of animals as well as non-human factors which structure faunal assemblages. These skills should make it easier to appreciate the methodological literature, help you decipher faunal data in published sources, and allow you to evaluate interpretations of patterning in faunal data. The practical experience will also help you appreciate the many logistical and analytical problems involved in zooarchaeology.

Learning Outcomes

1. learn some of the basic skills involved in the processing of bulk samples from a coastal archaeological site.
2. gain experience in identifying bulk sample constituents including shell, bone, charcoal, vegetal remains, non-cultural lithics, etc.
3. learn how to use the UO Department of Anthropology North Pacific Comparative Collection.
4. learn how to identify different classes of vertebrate remains, specifically to develop the skill to distinguish fish, bird, and mammal bones.
5. learn how to identify skeletal elements from fragmentary remains.
6. learn how to identify different taxa of fish, birds, and mammals to family, genus, or species using published guides and the North Pacific Comparative Collection.
7. gain knowledge of the basic quantitative units and analytical approaches of zooarchaeology and learn how to decipher and understand both tabular data and graphical presentations.
8. learn how to read the archaeological literature that addresses zooarchaeological questions, to understand the relationship between research question(s), methods, primary and secondary data, analytical procedures and interpretation. Taking all of these together, learn how to evaluate the clarity, validity, and cogency of zooarchaeological arguments.
9. learn how to record and present primary zooarchaeological data and gain experience in summarizing primary data and generating some types of secondary data.
10. by participating in a problem-oriented research project, better understand the process of generating original data from a specific set of archaeological materials and taking those data through some stages of the research cycle.
11. by participating in a problem-oriented research project, gain experience in conducting background research (in the library and online) relevant to various stages of the zooarchaeological analysis process.

Required Texts and Supplies:

Beisaw, April M. 2013 *Identifying and Interpreting Animal Bones: a Manual*. Texas A&M University Anthropology Series No. 18, College Station, TX.

Reitz, Elizabeth J. and Elizabeth S. Wing (2008) *Zooarchaeology*. 2nd Edition. Cambridge Manuals in Archaeology, Cambridge University Press, New York.

From the UO Bookstore Graphics Department, Basement Floor:

- one forceps (curved or straight tip, your preference), in cutting tools is aisle 8 (bottom shelf)

Readings on Canvas

Bovy, Kristine M., Madonna L. Moss, Jessica E. Watson, Frances J. White, Timothy T. Jones, Heather A. Ulrich, and Julia K. Parrish 2018 Evaluating Native American Bird Use and Bird Assemblage Variability along the Oregon Coast. *Journal of Island and Coastal Archaeology*, online May 22, 2018, <https://doi.org/10.1080/15564894.2018.1457105>.

Butler, Virginia, Sarah K. Campbell, Kristine M. Bovy, and Michael A. Etnier 2019. Exploring Ecodynamics of Coastal Foragers using Integrated Faunal Records from Čixwicōn village (Strait of Juan de Fuca, Washington, U.S.A.) *Journal of Archaeological Science Reports* (in press).

Casperson, Molly R. (2012). The Importance of Birds in Ocean Bay Subsistence: Results from the Mink Island Site, Katmai National Park and Preserve, Alaska. *Arctic Anthropology* 49(1):18-34.

Driver, Jonathan 2011. Twenty years after "Identification, Classification and Zooarchaeology." *Ethnobiology Letters* 2:36-39.

Driver, Jonathan C. 2011 (1992). Identification, Classification and Zooarchaeology. *Ethnobiology Letters* 2:19-29.

Hatch, David R. 2002 Elakha: Sea Otters, Native People, and European Colonization in the North Pacific. In: *Changing Landscapes, Sustaining Traditions*, edited by Donald B. Ivy and R. Scott Byram, pp. 79-88. Coquille Indian Tribe, North Bend, OR.

Kopperl, Robert E. 2012. Chronology of the Ocean Bay Tradition on Kodiak Island, Alaska: Stratigraphic and Radiocarbon Analysis of the Rice Ridge Site (KOD-363). *Alaska Journal of Anthropology* 10(1-2):17-35.

Moss, Madonna L., Rick Minor and Kyla Page-Botelho 2017. Native American Fisheries of the Southern Oregon Coast: Fine Fraction Needed to Find Forage Fish. *Journal of California and Great Basin Anthropology* 37(2):169-182.

Moss, Madonna L., Antonia Rodrigues, Camilla F. Speller, and Dongya Y. Yang 2016 The Historical Ecology of Pacific Herring: Tracing Alaska Native Use of a Forage Fish. *Journal of Archaeological Sciences Reports* 8:504-512.

Moss, Madonna L. and Aubrey Cannon 2011 The Archaeology of North Pacific Fisheries: an Introduction. In *The Archaeology of North Pacific Fisheries*, edited by M. L. Moss and A. Cannon, pp. 1-15. University of Alaska Press, Fairbanks.

Serjeanston, Dale 2009 *Birds*. Cambridge Manuals in Archaeology. Cambridge University Press. (excerpt)

Wellman, Hannah P. 2018. Applied Zooarchaeology and Oregon Coast Sea Otters (*Enhydra lutris*). *Marine Mammal Science* 34(3):806-822.

Wellman, H.P., T. Rick, A. Rodrigues, and D. Yang 2016. Evaluating Ancient Whale Exploitation on the Northern Oregon Coast through Ancient DNA and Zooarchaeological Analysis. *Journal of Island & Coastal Archaeology* 12(2):255-275.

Plan to do additional outside reading relevant to your lab projects.

Course Format - This class is designed for advanced undergraduates and graduate students, and is both seminar and laboratory. During about half of the class meetings, we'll discuss the readings. I expect everyone to come to class well-prepared for discussion; bring the readings to class so we can refer to them, and come with questions and comments. The other class meetings involve laboratory work. On Fridays starting in Week 6, you will have the opportunity for additional lab time to work with the archaeofaunal assemblages assigned to you. Individuals will work as members of 2-4-person teams on the faunal remains from specific sites in Alaska and Oregon. Work in the lab during additional hours may be necessary to complete your lab projects. If your schedule precludes your ability to work during lab hours, you should arrange another time to work in the lab.

Zooarchaeology involves precision in record keeping and data management as well as quantitative skills. Some of the reading is technical. Since we work with actual specimens, zooarchaeology students must follow instructions closely, handle materials carefully, work with numerical data, and have elementary knowledge of algebra, mathematical problem-solving, and statistics. Those who know me already know that I expect each student to attend every class. If you are sick with a contagious illness or have another legitimate excuse, please notify me as soon as possible. As a rule, missed classes result in lower grades. Do not schedule appointments or make any other commitments during class time.

You must submit six **Reading Response Papers** by **9 pm on Canvas the day BEFORE** we will discuss them in class: 1/9, 1/14, 1/28, 2/6, 2/13, 2/20, 3/4; everyone must submit papers related to the discussions on 1/9 and 2/6. If you would prefer, you can submit all seven Reading Response Papers and I will drop the lowest score.

The **Reading Response Paper** is due before class so I can read them ahead of class. To “jump-start” discussion, alert me as to where your interests lie, and help identify those portions of the text requiring special attention, you are required to write a one-page, single-spaced Reading Response Paper 650-700 words. This can take the form of places in the text where you would like clarification, a discussion of topics worth special attention, questions the text raises for you, or a critical commentary on the assigned readings. Submit these assignments to me on Canvas no later than **9 pm on the day BEFORE** they will be discussed in class. No late assignments can be accepted.

You must submit three **Lab Preparation Papers** on 1/16, 1/23, 1/30, 2/4. Print a hard copy and hand these in to me at the start of class. No late papers can be accepted. These should be a one-page, single-spaced Lab Preparation Paper of 500 words.

Part of the participation grade will be responsible behavior and record-keeping in the lab. Students are required to contribute to the lab notebook for their project. Lab notes document the on-going progress of the laboratory research. These notes are hand-written, but they should be easy to read (in other words, please write neatly and legibly). Laboratory notes should be kept up-to-date on a daily basis (i.e., for each day on which lab work is conducted). Lab notebooks should remain in Condon 264. These notes document the actual work accomplished, problems encountered, and outside sources pursued to address issues related to laboratory projects.

Grading - Grades are based on a percentage of 250 possible earned points.

Attendance & Participation	on-going	100
6 of 7 Reading Response Papers	due on dates listed above	60
3 of 4 Lab Preparation Papers	due on dates listed above	30
Final paper/project report/powerpoint	due 3/20	50
Peer evaluation	due 3/20	10

Laboratory Projects - The lab project involves the actual analysis of some aspect of a faunal assemblage from a specific archaeological site. Each team will be assigned an assemblage. Team members will be collectively responsible for sharing the labor equitably. The lab work will occur in stages, and each team's assemblage will be suited to specific kinds of analyses. Starting in Week 6, I will be available on Friday afternoons in the laboratory, and you may arrange to work in the laboratory at other times. You are expected to do outside reading relevant to topics related to your assemblage. In this course, we emphasize the analysis of the assemblage at hand, as opposed to an extensive literature review of a topic that may be tangentially related to your project. Your final project report will present the data, analyses, and interpretations within the context of the field of zooarchaeology. A number of "milestones" to track your progress on the project are built into the schedule. These include:

Maintaining Lab Notebook	on-going
Submit project bibliography	due 2/25
Submit project status report	due 3/6
project report/powerpoint presentation	due 3/11 and 3/13
final report/powerpoint	due 3/20
Peer evaluation	due 3/20

The project status report due on 3/6 shall include:

- list of research questions
- description of data used to address questions
- assessment of how much has been accomplished to date (numbers of samples or specimens analyzed, etc.)

- description of how labor is allocated among individual team members
- brief description of any problems encountered

Project status reports will be ~4 pages. I will provide specific feedback on this report as rapidly as I can, so as to insure the execution and completion of a solid final paper. The length of final papers will vary depending on the number of team members and the various components of the project. Final reports will include spreadsheets and tables presenting zooarchaeological data you have generated (paper and electronic copies) or a powerpoint.

Disability - If you have a documented disability and need accommodation, please contact me soon. Please also request that the Counselor for Students with Disabilities send a letter verifying your disability.

Academic Dishonesty - Students caught cheating or plagiarizing will receive a "0" for that particular assignment or exam, and the incident will be reported to campus authorities. Plagiarism includes, but is not limited to: (a) the knowing or negligent use by paraphrase or direct quotation of the published or unpublished work of another person without full and clear acknowledgment; and (b) the knowing or negligent unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.

Classroom / Office Courtesy - Please follow these guidelines to avoid disrupting the class:

- Turn off cell phones before arriving.
- Do not arrive late or leave early (except for a bathroom break or emergency).
- Do not sleep during class, do not eat in the lab.
- Do not work on other assignments during class or lab.
- On most days, you shouldn't need your laptop in the lab.

Missed-Class Policy – I cannot re-teach the course outside of lecture or lab; I am happy to answer questions, clarify content, and provide guidance for those who attend class and come in with informed questions after they have attempted the work themselves. Students who miss class must secure notes and other materials from another student in the class.

More Legalities: Material on Canvas is for your use in this class. It is not for posting or sale. Materials written by your instructor are the instructor's (or in some cases the UO's) intellectual property. It is important that everyone respect each other's rights. For instance, you should not copy and redistribute course materials without my permission. I may also post other copyrighted materials on the course site. It is my responsibility for ensuring that such posting does not violate copyright law, but you should be aware that you do not have the right to make additional copies or redistribute these materials. The course Canvas site contains copyrighted works that are included with permission of the copyright owner, or under exemptions provided by U.S. Copyright Law (Sections 110, and/or 107). Copying of any of these copyrighted works is prohibited.

Email - You may email me, although I'd prefer that we talk in person. If you email, please put ANTH 471 or ANTH 571 in the subject line. Write me a concise message with a specific question or comment. If your question requires more than a single sentence response or an extended exchange, please talk to me in person. In case of emergency, please leave a message on my office phone.

Assemblages from the following sites will be analyzed:

1. Palmrose Site (35-CLT-47), Seaside, Oregon. In the 1960s and 1970s, George Phebus, Jr., and Robert Drucker conducted excavations in Seaside, Oregon, at three archaeological sites: Par-Tee site (35-CLT-20; A.D. 300-1150), Avenue Q site (35-CLT-13; A.D. 400-1000), and Palmrose (35-CLT-47; 800 B.C. to A.D. 300). These were rapid excavations, without much control but some of the material has been curated at the Smithsonian Institution since 1984, and was recently organized by Hannah Wellman. In 1988, Tom Connolly and a crew from the UO Museum of Anthropology did some controlled excavations at Palmrose and Avenue Q in advance of highway reconstruction (Connolly 1992, 1995). Since then, Colten (2002; 2015) looked at a small proportion of the faunal remains and Losey analyzed Par-Tee artifacts <http://www.ualberta.ca/~rlosey/partee/tools.htm>. Losey and Yang (2007) published a paper on evidence for whale hunting at the site, a topic revisited by Wellman et al. (2016). An unknown proportion of materials from these sites, however, had remained in private hands until 2014, when they were acquired by the University of Oregon Museum of Natural and Cultural History. There may be as many as 100,000 bones in the assemblage. For her Master's, Wellman (2016a, 2018) conducted a study of the sea otter bones from Palmrose and Par-Tee to compare to work by Lyman (1988), who found differences between Oregon, Alaska, and California sea

otters. Wellman’s dissertation research will analyze a much larger sample of cetacean and sea otter bones to advance understanding of issues raised in her previous work. Our class will be assisting Ms. Wellman by sorting out sea otter, cetacean, and bird bones from previously unanalyzed materials.

2. Bulk Sample from 35-CLT-060, Clatsop Plains, Oregon. This bulk shell midden sample was taken by geologist Curt Peterson in 2016. We will be screening it over fine mesh to investigate whether it contains any small fish remains. In our study of bulk samples from Tcetxo (35-CU-42) in southern Oregon, we found that surf smelt and northern anchovies were very abundant, but only in materials recovered using 1 mm mesh screens (Moss et al. 2017). Tcetxo is located in southern Oregon, with groups who have a long tradition of mass harvest of small forage fish. We want to investigate if small forage fish were also used by the Chinook and Clatsop and others who occupied/ occupy the northern Oregon coast.

3. Rice Ridge (49-KOD-363), Kodiak Island, Alaska. Rice Ridge is a deeply stratified archaeological deposit on Kodiak Island. It has a well-preserved faunal assemblage associated with the Ocean Bay tradition, dating from 7600 to 4200 years ago. The site contains an extensive bird bone assemblage than has never been analyzed. Dr. Molly Casperson (2012) studied the Ocean Bay tradition birds from the Mink Island (49-XMK-030) site, located off the nearby Alaska Peninsula. Casperson found that birds played an important role in the lifeways of Ocean Bay groups, although these people have been conventionally portrayed as primarily dependent on marine mammals. With this contemporary assemblage, we can investigate whether birds were also important on Kodiak Island. We suspect that they provided a key food resource, but that their skins were also highly valued to make clothing. Dr. Casperson has started to analyze these materials, but more work is needed. Some of bones need to be washed, and we can begin an inventory of taxonomic identifications and cut marks.

Schedule of Topics and Readings

Date	Topic	Readings
1/7 - M	Introduction & requirements, working with comparative collections, introduction to lab projects	Initial orientation to course & lab, Zooarchaeology Laboratory Protocols
1/9 - W	Zooarcheology History & Theory	Reitz & Wing, Appendix 3 (pp. 377-395); Ch. 1-2 (pp. 1-30)
1/14 - M	Basic Taxonomy, Systematics, Anatomy	Reitz & Wing, Ch. 3 (pp. 31-87)
1/16 - W	Lab #1 - Mammals	Driver 2011a, 2011b
1/21 - M	Martin Luther King Day - no class	Peruse Beisaw 2013, read all photos, illustrations, captions
1/23 - W	Lab #2 - Birds	Serjeanston 2009:8-34
1/28 - M	Ecology; Disposal and Recovery	Reitz & Wing Chs. 4 & 5 (pp. 88-152)
1/30 - W	Lab #3 – Fish	Moss & Cannon 2011
2/4 - M	Lab #4 – Bulk Samples	Moss et al. 2017
2/6 - W	Project Overviews	Casperson 2012; Hatch 2002; Wellman 2018; Wellman et al. 2017
2/11 - M	Lab #5 – Project Work	Beisaw, pp. 1-98
2/13 - W	Gathering Primary Data	Reitz & Wing, Ch. 6 (pp. 153-181); Beisaw, pp. 98-127
2/18 - M	Lab #6 – Project Work	Project Background Reading
2/20 - W	Gathering Secondary Data	Reitz & Wing, Ch. 7 (pp. 182-250) U-grads: pp. 182-224, 233-250); Beisaw, pp. 129-140.
2/25 - M	Lab #7 - Project Work	groups submit project bibliography
2/27 - W	Lab #8 - Project Work	
3/4 - M	Conclusion to textbook; review project status	Reitz & Wing, Ch. 11 (pp. 335-351)
3/6 - W	Lab #9 - Project Work	groups submit written 5-page project status report
3/11 - M	Lab #10 - Project Work – share results in lab	
3/13 - W	Course Wrap-up – Student Progress Reports	groups present powerpoint presentations (including graphical data)
3/20 - W	Final Papers, Peer Evaluations Due 10:00 am	