

Archaeology 4620: **ZOOARCHAEOLOGY**
Fall 2009, ENV 190, Monday 2 – 5 pm

Dr. Steve Wolverton
Office: ESSAT 310H
Phone: (940) 565 – 4987

www.geog.unt.edu/%7Ewolverton/
Office Hours: MW 10:30 am – noon or by appt
wolverton@unt.edu

This class introduces the archaeology of animal remains or “zooarchaeology” (aka “archaeozoology”). This is not a class in “faunal identification” but instead covers relevant literature in the field in order to provide a sound coverage of the kinds of research that zooarchaeologists do. Zooarchaeologists tend to have one of several purposes of their research; a few important general areas include: 1) studying past subsistence adaptations of humans; 2) studying past environmental conditions; 3) the evolution of human hunting, amongst other topics. We will also cover literature in the area of taphonomy (a word that you should look up if it is unfamiliar).

All members of the class are expected to have read, and **be prepared to discuss**, all assigned chapters and articles each week. Class participation counts heavily in my assessment of your performance and your final grade (see below). Copies of articles are available through the UNT library and/or my website, or will be made available in class.

Each student will prepare an **abstract** of each assigned article/chapter (typed, 12 pt TNR font, double spaced, 1 inch margins, hard copy only accepted). *An abstract should contain your summary of the major points of an article/chapter.* Preparation of these abstracts will help you understand the material, and in the future will help refresh your memory as to the contents of an article. Each week’s abstracts are **due at the beginning of class** of the week when articles are assigned. In addition a **short essay quiz** will be given at the beginning of each class. Students will discuss papers in subgroups (**group exercises**) and then will participate in general discussion.

You must select a topic in zooarchaeology (perhaps from the weekly topics on the reading list) and prepare a **term paper** on that topic. The required readings may be a necessary part the research you do on a topic, but they must be supplemented with additional titles. A **first draft** of your paper (double-spaced, typed, 12 pt TNR font, 1 inch margins, with maps, tables, figures, references), following *American Antiquity* format, must be submitted during class **Nov. 9**. The manuscript will be returned to you with my editorial and substantive suggestions as to how to improve it. The **final draft** (along with the edited first draft) is to be submitted during the final exam hour.

Grading:

Abstracts	15 @ 10 pts each =	150 pts
Quizzes	15 @ 10 pts each =	150 pts
Group discussion exercises	15 @ 10 pts each =	150 pts
First draft of paper		100 pts
Final draft of paper		150 pts
Class participation	<u>Subjectively graded</u>	150 pts
Class attendance	15 @ 10 pts each	150 pts

Course grade: 90% + = A, 80 to 89 % = B, 70 to 79% = C, 60 to 69% =D, below 60% = F

Reading Material

TEXTBOOK (required): Lyman, R.L. 2008. *Quantitative Paleozoology*. Cambridge Univ. Press.

WEEK 2: Aug. 31: How to identify bones, teeth, shells, etc.

Olsen, S. J. 1961. The relative value of fragmentary mammalian remains. *American Antiquity* 26:538–540. [ONLINE: JSTOR]

Olsen, S. J. 1961. Problems of mammal skull identification due to age differences in the dentition. *American Antiquity* 27:231–234. [ONLINE: JSTOR]

Driver, J. C. 1992. Identification, classification and zooarchaeology. *Circaea* 9(1):35–47. [website]

Gobalet, K. W. 2001. A critique of faunal analysis: Inconsistency among experts in blind tests. *Journal of Archaeological Science* 28:377–386. [ONLINE: ScienceDirect]

Lyman, R.L. 2008. Chapter 1.

Week 4: Sept. 14: Traditional Approaches and Quantification I

Daly, P. 1969. Approaches to faunal analysis in archaeology. *American Antiquity* 34:146–153. [ONLINE: JSTOR]

Uerpmann, H. P. 1973. Animal bone finds and economic archaeology: a critical study of osteoarchaeological method. *World Archaeology* 4:307–322. [ONLINE: JSTOR]

Payne, S. 1972. On the interpretation of bone samples from archaeological sites. In *Papers in Economic Prehistory*, edited by E. S. Higgs, pp. 65–81. Cambridge Univ. Press. [website]

Lyman, R.L. 2008. Chapter 2.

Week 5: Sept. 21: Quantification II

Giovas, C. M. 2009. The shell game: analytic problems in archaeological mollusk quantification. *Journal of Archaeological Science* 36:1557–1564. [ONLINE: ScienceDirect]

Lyman, R.L. 2008. Chapter 3.

Week 6: Sept. 28: Sampling and Sample Size

Schaffer, B. 1992. Quarter inch screening: understanding biases in recovery of vertebrate faunal remains. *American Antiquity* 57:129–136. [ONLINE: JSTOR]

Lyman, R. L. 2008. Chapters 4 & 5.

Week 7: Oct. 5: Seasonality and Demography of Prey Mortality

Monks, G. G. 1981. Seasonality studies. *Advances in Archaeological Method and Theory* 4:177–240. [website]

Grayson, D. K. and D. H. Thomas. 1983. The seasons of Gatecliff. In, *The Archaeology of Monitor Valley 2: Gatecliff Shelter*, by D. H. Thomas, pp. 434–438. Anthro. Paps. Amer. Mus. Natural History 59(1). [website or handout]

Lyman, R. L. 1987. On the analysis of vertebrate mortality profiles: sample size, mortality type, and hunting pressure. *American Antiquity* 52:125–142. [ONLINE: JSTOR]

Steele, T. E. 2005. Comparing methods for analyzing mortality profiles in zooarchaeological and palaeontological samples. *International Journal of Osteoarchaeology* 15:404–420. [ONLINE: Wiley InterScience Journals]

Week 8: Oct. 12: Taphonomy I – Introduction

Lyman, R. L. 2004. The concept of equifinality in taphonomy. *Journal of Taphonomy* 2:15–26. [website]

Lyman, R. L. n.d. What Taphonomy Is, What It Isn't, and Why Taphonomists Should Care about the Difference. *Journal of Taphonomy*, in press. [website]

Morlan, R. E. 1994. Rodent bones in archaeological sites. *Canadian Journal of Archaeology* 18:135–142. [website]

Schmitt, D. N. and K. E. Juell. 1994. Toward the identification of coyote scatological faunal accumulations in archaeological contexts. *Journal of Archaeological Science* 21:249–262. [ScienceDirect]

Lyman, R. L. and G. L. Fox. 1989. A critical evaluation of bone weathering as an indication of bone assemblage formation. *Journal of Archaeological Science* 16:293–318. [ScienceDirect]

Darwent, C., and R. L. Lyman. 2002. Detecting the postburial fragmentation of carpals, tarsals, and phalanges. In *Advances in Forensic Taphonomy*, edited by M. H. Sorg and W. D. Haglund, pp. 355–377. CRC Press, Boca Raton, FL. [website]

Barnosky, A. D. 1985. Taphonomy and herd structure of the extinct Irish elk, *Megaloceros giganteus*. *Science* 228:340–344. [ONLINE: JSTOR]

Week 9: Oct. 19: Taphonomy II – skeletal part frequencies

Lam, Y. M., and O. M. Pearson. 2005. Bone density studies and the interpretation of the faunal record. *Evolutionary Anthropology* 14:99–108. [ONLINE: Wiley InterScience Journals]

Lupo, K. D. 2006. What explains the carcass field processing and transport decisions of contemporary hunter-gatherers? Measures of economic anatomy and zooarchaeological skeletal part representation. *Journal of Archaeological Method and Theory* 13:19–66. [ONLINE: SpringerLink Contemporary]

Faith, J.T., et al. 2009. Long-distance transport at Olduvai Gorge? A quantitative examination of Bed I skeletal element abundances. *Journal of Human Evolution* 56:247–256. [ONLINE: ScienceDirect]

Lyman, R.L. 2008. Chapter 6.

Week 10: Oct. 26: Taphonomy III – bone modification and distribution

Haynes, G. 1983. A guide for differentiating mammalian carnivore taxa responsible for gnaw damage to herbivore limb bones. *Paleobiology* 9:164–172. [ONLINE: JSTOR]

Kreutzer, L. A. 1988. Megafaunal butchering at Lubbock Lake, Texas: a taphonomic re-analysis. *Quaternary Research* 30:221–231. [website or handout]

Hanson, M., and C.R. Cain. 2007. Examining histology to identify burned bone. *Journal of Archaeological Science* 34:1902–1913. [ONLINE: ScienceDirect]

Costamagno, S., et al. 2005. Taphonomic consequences of the use of bones as fuel: experimental data and archaeological applications. In *Biosphere to Lithosphere*, edited by T. O'Connor, pp. 51–62. Oxbow Books, Oxford. [website or handout]

Pickering, T. R., et al. 2005. The contribution of limb bone fracture patterns to reconstructing early hominid behaviour at Swartkrans Cave (South Africa). *International Journal of Osteoarchaeology* 15:247–260. [ONLINE: Wiley InterScience Journals]

Lyman, R.L. 2008. Chapter 7.

Week 11: Nov. 2: Butchery, Sharing and Refitting

Enloe, J. G. 2004. Hunter-Gatherer Food Sharing: Social and Economic Interactions. In *Hunters and Gatherers in Theory and Archaeology*, edited by G. M. Crothers, pp. 211–240. Center for Archaeological Investigations, Occasional Paper No 31. Southern Illinois University, Carbondale. [website or handout]

Abe, Y., et al. 2002. The analysis of cutmarks on archaeofauna: a review and critique of quantification procedures, and a new image-analysis GIS approach. *American Antiquity* 67:643–663. [ONLINE: JSTOR]

Egeland, C. P. 2003. Carcass processing intensity and cutmark creation: an experimental approach. *Plains Anthropologist* 48:39–51. [ONLINE: Proquest]

Lyman, R. L. 2005. Analyzing Cutmarks: Lessons from Artiodactyl Remains in the Northwestern United States. *Journal of Archaeological Science* 32:1722–1732. [ONLINE: ScienceDirect]

Pickering, T. R. and C. P. Egeland. 2006. Experimental patterns of hammerstone percussion damage on bones: implications for inferences of carcass processing by humans. *Journal of Archaeological Science* 33:459–469. [ONLINE: ScienceDirect]

Week 12: Nov. 9: Recent Approaches to Human Subsistence

Stiner, M. C., et al. 1999. Paleolithic population growth pulses evidenced by small animal exploitation. *Science* 283:190–194. [ONLINE: JSTOR]

Grayson, D. K., and M. D. Cannon. 1999. Human paleoecology and foraging theory in the Great Basin. In *Models for the Millennium: Great Basin Anthropology Today*, edited by C. Beck, pp. 141–151. University of Utah Press, Salt Lake City. [website or handout]

Broughton, J. M., et al. 2008. Did climatic seasonality control late Quaternary artiodactyl densities in western North America? *Quaternary Science Reviews* 27:1916–1937. [ONLINE: ScienceDirect]

Schmitt, D.N., and K.D. Lupo. 2008. Do faunal remains reflect socioeconomic status? An ethnoarchaeological study among Central African farmers in the northern Congo Basin. *Journal of Anthropological Archaeology* 27:315–325. [ONLINE: ScienceDirect]

Lupo, K.D. 2007. Evolutionary foraging models in zooarchaeological analyses: recent applications and future challenges. *Journal of Archaeological Research* 15:143–189. [ONLINE: SpringerLink Contemporary]

Week 13: Nov. 16: Paleoecology I – basics and approaches

Findley, J. S. 1964. Paleoecological reconstruction: vertebrate limitations. *Fort Burgwin Research Center Publication* 3:23–25. [website or handout]

Lundelius, E., Jr. 1964. The use of vertebrates in paleoecological reconstructions. *Fort Burgwin Research Center Publication* 3:26–31. [website or handout]

Grayson, D. K. 1981. A critical view of the use of archaeological vertebrates in paleoenvironmental reconstruction. *Journal of Ethnobiology* 1:28–38. [website]

Lyman, R. L. 2008. Climatic Implications of Latest Pleistocene and Earliest Holocene Mammalian Sympatries in Eastern Washington State, USA. *Quaternary Research* 70:426–432. [ONLINE: ScienceDirect]

Week 14: Nov. 23: Paleoecology II – zoogeography and paleoclimatology

Graham, R. W. 1984. Paleoenvironmental implications of the Quaternary distribution of the eastern chipmunk (*Tamias striatus*) in central Texas. *Quaternary Research* 21:111–114. [website]

FAUNMAP Working Group: Graham, R. W. et al. 1996. Spatial response of mammals to late Quaternary environmental fluctuations. *Science* 272:1601–1606. [ONLINE: JSTOR]

Grayson, D. K. 2006. Holocene Bison in the Great Basin, Western USA. *The Holocene* 16:913–925. [ONLINE: Academic Search Complete]

Grayson, D. K. 1998. Moisture history and small mammal community richness during the latest Pleistocene and Holocene, northern Bonneville Basin, Utah. *Quaternary Research* 49:330–334. [ONLINE: ScienceDirect]

Week 15: Nov. 23: Paleoecology III – clines

Blackburn, T. M., et al. 1999. Geographic gradients in body size: a clarification of Bergmann's rule. *Diversity and Distributions* 5:165–174. [ONLINE: JSTOR]

Arnold, J. E. and B. N. Tissot. 1993. Measurement of significant marine paleotemperature variation using black abalone shells from prehistoric middens. *Quaternary Research* 39:390–394. [website]

Hill, M.E., Jr., et al. 2008. Late Quaternary *Bison* diminution on the Great Plains of North America: evaluating the role of human hunting versus climate change. *Quaternary Science Reviews* 27:1752–1771. [ONLINE: ScienceDirect]

Lyman, R. L., and M. J. O'Brien. 2005. Within-taxon morphological diversity as a paleoenvironmental indicator: late-Quaternary *Neotoma* in the Bonneville Basin, northwestern Utah. *Quaternary Research* 63:274–282. [ONLINE: ScienceDirect]

Week 16: Nov. 30: Paleoecology IV: Extinctions, and Human Impacts I

Simenstad, C. A., J. A. Estes, and K. W. Kenyon. 1978. Aleuts, sea otters, and alternate stable-state communities. *Science* 200:403–411. [ONLINE: JSTOR]

Grayson, D. K. 2001. The archaeological record of human impacts on animal populations. *Journal of World Prehistory* 15:1–68. [ONLINE: SpringerLink Contemporary]

Steadman, D. W., and P.S. Martin. 2003. The late Quaternary extinction and future resurrection of birds on Pacific Islands. *Earth-Science Reviews* 61:133–147. [ONLINE: ScienceDirect]

Barnosky, A. D., et al. 2004. Assessing the causes of late Pleistocene extinctions on the continents. *Science* 306:70–75. [ONLINE: JSTOR]

Week 17: Dec. 7: Human Impacts II, and Applied Zooarchaeology

Lyman, R. L. 2006. Paleozoology in the Service of Conservation Biology. *Evolutionary Anthropology* 15:11–19. [ONLINE: Wiley InterScience Journals]

Wolverton, S. et al. 2007. A paleozoological perspective on white-tailed deer (*Odocoileus virginianus texana*) population density and body size in central Texas. *Environmental Management* 39:545–552. [website]

Newsome, S.D., et al. 2007. The shifting baseline of northern fur seal ecology in the northeast Pacific Ocean. *Proceedings of the National Academy of Sciences (USA)* 104:9709–9714. [ONLINE: PubMed Central]

Final exam (final paper due): Monday Dec. 14, 1:30 pm

DISABILITY ACCOMODATION

The Department of Geography, in cooperation with the Office of Disability Accommodations, complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request by the second lab.

EXTRA CREDIT

The Department of Geography does not allow extra credit assignments (work not specified on a course syllabus).

ACADEMIC DISHONESTY

Students caught cheating or plagiarizing will receive a "0" for that particular assignment or exam. Additionally, the incident will be reported to the Office of Student Rights and Responsibilities for further penalty. According to the UNT catalog, the term "cheating" includes, but is not limited to: (a) use of any unauthorized assistance in taking quizzes, tests, or examinations; (b) dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments; (c) the acquisition, without permission, of tests or other academic material belonging to a faculty or staff member of the university; (d) dual submission of a paper or project, or resubmission of a paper or project to a different class without express permission from the instructor(s); or (e) any other act designed to give a student an unfair advantage. Altering a returned test and claiming a grader or scanning machine made an error is also considered cheating. The term "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:

- (1) Turn off cell phones before arriving.
- (2) Do not arrive late or leave early (except for a bathroom break or emergency).
- (3) Do not sleep or eat during class.
- (4) Do not work on other assignments during class.
- (5) Do not talk when the instructor is lecturing, unless prompted for feedback by the instructor.

ATTENDANCE/TARDINESS POLICY

After missing (unexcused) 2 class periods a student will receive a WF (F if after the WF deadline) for the course. After missing (excused) 3 class periods a student will receive a WF (F if after the WF deadline) for the course. Students who are greater than 5 minutes late should come to class so as not to miss the material, but they will be counted absent for the period. Perfect ('perfect' means 'entirely without any flaws, defects, or shortcomings' [dictionary.com]) on-time attendance (lecture and labs) will result in a 3% course grade reward in the final course grade (e.g., an 88% [B] would become a 91% [A]). Those who miss (or are tardy for) only one class period (lecture/lab) will receive a 1.5% final grade reward.

MISSED-CLASS POLICY

The professor does not 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; notes will not be provided by the instructor.