

ANTHROPOLOGY 4820, 7820: ZOOARCHAEOLOGY

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Fall 2009

205 Swallow Hall (882-9850)

Office Hours: 7:15 – 7:45 AM, M–F, or appointment

This class introduces archaeological faunal analysis or “zooarchaeology” (also known as “archaeozoology”). By the end of the semester you will be familiar with various approaches to the analysis of faunal remains recovered from archaeological (and paleontological) sites. My goal is to teach you (1) how to deal with faunal remains you might recover during excavation, and (2) how to evaluate analyses of faunal remains performed by others such that you can determine the significance of those analyses with respect to your own research.

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 available in JSTOR or in journals for which MU has an electronic subscription (online) are indicated. Others are on electronic reserve [ERES]; hard copies of many (but not all) items are in Ellis Library. To access electronic reserve materials (eres), go to: <http://eres.missouri.edu/> Click on “Electronic Reserves and Course Materials”. Search for the course page using the course number (Anthro 4820). Once you get to the appropriate course, you will need the password, which is “Scapula#1”, to access articles.

Each student will prepare an **abstract** of each assigned article. An abstract should contain your summary of the major points of an article. 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 on the Thursday** of the week when articles are assigned.

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, with maps, tables, figures, references), following *American Antiquity* format, must be submitted during class **Nov. 12**. 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.

Grades for undergraduates will be based on: 1. quality of first draft (30%); 2. quality of second draft (40%); class participation (20%); 4. abstracts (10%). Grades for graduate students will be based on: 1. quality of first draft (30%); 2. quality of second draft (30%); class participation (30%); 4. abstracts (10%).

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

WEEK 1: Aug. 24 – 28: 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. [ERES]

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

Lyman, R.L. 2008. Chapter 1.

Week 2: Aug. 31 – Sept. 4: 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. [ERES]

Lyman, R.L. 2008. Chapter 2.

Week 3: Sept. 8 – 11: Quantification II

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

Lyman, R.L. 2008. Chapter 3.

Week 4: Sept. 14 – 18: 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 5: Sept. 21 – 25: Seasonality and Demography of Prey Mortality

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

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). [ERES]

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: Journal]

Week 6: Sept. 28 – Oct. 2: Taphonomy I – Introduction

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

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. [ERES]

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

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. [ERES]

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. [ERES]

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. [ERES]

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

Week 7: Oct. 5 – 9: 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: Journal]

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: Journal]

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: Journal]

Lyman, R.L. 2008. Chapter 6.

Week 8: Oct. 12 – 16: 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. [ERES]

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

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. [ERES]

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: Journal]

Lyman, R.L. 2008. Chapter 7.

Week 9: Oct. 19 – 23: 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. [ERES]

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. [ERES]

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

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: Journal]

Week 10: Oct. 26 – 30: 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. [ERES]

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: Journal]

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: Journal]

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

Week 11: Nov. 2 – 6: Paleoecology I – basics and approaches

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

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

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

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: Journal]

Week 12: Nov. 9 – 13: 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. [ERES]

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: Journal]

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. [ERES]

Week 13: Nov. 16 – 20: 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. [ERES]

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: Journal]

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: Journal]

Thanksgiving holiday: Nov. 23 – 27

Week 14: Nov. 30 – Dec. 4: 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: Journal]

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: Journal]

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

Week 15: Dec. 7 – 9: Human Impacts II, and Applied Zooarchaeology

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

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. [ONLINE: Journal]

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: Journal]

Final exam: Wednesday Dec. 15, 8:00 — 10:00 am

Instances of academic dishonesty (e.g., cheating, copying from another student, plagiarism) will be reported to the Provost's office.

Students having disabilities which might affect their work (in or out of class) should check with me as soon as possible. MU can make a variety of arrangements that help insure equal opportunity. It is your right and I am glad to work with you on this. Also, keep in touch with MU's Office of Disability Services, A038 Brady Commons, 882-4696. For information on resources for students with disabilities, click on "Disability Resources" on MU's homepage. If you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please inform me immediately. You may talk with me privately after class, or at my office—205 Swallow Hall.