

Freshman Seminar

THE BEASTS OF ANTIQUITY AND THEIR NATURAL HISTORY

Enrollment: limited to 12

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Half course (spring term). Mondays, 2:00–5:00 p.m.

Offering parallel introductions to the classics and to organismal and evolutionary biology, the seminar entwines two histories and two fields of inquiry that are not ordinarily associated. Animals abound in Greco-Roman culture and literature. They participated in public spectacles in amphitheatres, appeared on coinage, and populated mythology and art. What of centaurs, or horses employed on the battlefield and in the circus? What of the elephant kneeling in supplication at the opening of Pompey's theatre? Each in a long procession—dolphins, turtles, snakes, lizards, crocodiles, birds, giraffes, dogs, rhinos, cattle, antelope, hyenas, hippos, monkeys, cats large and small—raises questions about aspects of Greco-Roman civilization and culture. Yet this bestiary of the ancient Mediterranean basin has another history as well. The natural history of these vertebrate groups will be explored from the perspective of their origin and evolution through geological time, as well as their adaptations, behavior, and ecological significance in modern faunas. Specimens in the Museum of Comparative Zoology, drawn from the Departments of Ichthyology, Herpetology, Ornithology, Mammalogy and Vertebrate Paleontology, will augment discussions of anatomy and systematics, and visits to the Sackler Museum and the Museum of Fine Arts in Boston will enable students to study ancient artifacts at first hand. The combination of the two modes of inquiry is designed to shed light upon the recorded behavior of animals in the ancient Mediterranean world, as observations about them by ancient authors and artists are tested against 21st-century knowledge of their anatomy, physiology, sociobiology and habits.

Projected Expenses

Taxi fares for one trip to and from the Museum of Fine Arts in Boston

The Beasts of Antiquity and Their Natural History (Spring term, 2009)

Draft Syllabus

- Jennison: Jennison, G. 1937. *Animals for Show and Pleasure in Ancient Rome*. Manchester: Manchester University Press; repr. Philadelphia: University of Pennsylvania Press, 2005. xiv + 209 pp.
- Toynbee: Toynbee, J. M. C. 1973. *Animals in Roman Life and Art*. London: Thames and Hudson; repr. Baltimore: Johns Hopkins University Press, 1996. 431 pp.

February 2. Introduction. Chelonia (turtles). From tortoise to lyre: attitudes towards animals in Antiquity. Turtles as a zoological and evolutionary conundrum.

- Read: Jennison, 1–27.
- Read: Toynbee, 15–31.
- Read: Bodson, L. 1983. Attitudes Towards Animals in Greco-Roman Antiquity. *International Journal for the Study of Animal Problems*, 4: 312–320.
- Read: Reippel, O. and R. R. Reisz. 1999. The origin and evolution of turtles. *Annual Review of Ecology & Systematics*, 30: 1–22.

February 9. Aves (birds). Sacred chickens and fighting cocks. The evolutionary origins of birds.

- Read: Jennison, 99–121.
- Read: Toynbee, 237–282.
- Read: Bradley, K. 1998. The Sentimental Education of the Roman Child: The Role of Pet-Keeping. *Latomus*, 57: 523–447.
- Read: Xu, X., Z. Zhou, X. Wang, X. Kuang, X. Du. 2003. Four-winged dinosaurs from China. *Nature*, 421: 335–339.

February 23. Crocodylia (crocodiles, alligators and gavials). Egyptomania in the Roman world. Archosaurs—the ruling reptiles of the Mesozoic—and the evolution and adaptations of modern crocodylian diversity.

- Read: Jennison, 122–126.
- Read: Toynbee, 218–220.
- Read selected essays from: Bricault, L., M. J. Versluys, P. G. P. Meyboom. 2007. *Nile into Tiber: Egypt in the Roman World*. Leiden–Boston: Brill, xxv + 562 pp.
- Read: Brochu, C. A. 2001. Crocodylian Snouts in Space and Time: Phylogenetic Approaches Toward Adaptive Radiation. *American Zoologist*, 41: 564–585.

March 2. Squamata: Lacertilia (lizards) and Serpentes (snakes). Symbols of fertility and fatality. The diversity of habitats, morphologies and behaviors of Recent squamates.

- Read: Jennison, 126–136.
- Read: Toynbee, 220–236.
- Examine: Pianka, E. R. and L. J. Vitt. 2003. *Lizards: Windows to the Evolution of Diversity*, Berkeley: University of California Press, xiii + 333 pp.
- Examine: H. W. Greene. 1997. *Snakes: The Evolution of Mystery in Nature*. Berkeley: University of California Press, xiii + 351 pp.

March 9. Equidae (horses). Between the battlefield and the circus. Horse evolution, dietary and locomotor shifts, and the diversity of modern equids.

- Read: Jennison, 28–41.
- Read: Toynbee, 167–199.
- Read: Walker, R. E. Roman Veterinary Medicine = Toynbee, 303–343.
- Read: MacFadden, B. J. 2005. Fossil Horses—Evidence for Evolution. *Science*, 307: 1728–1730.

Read: Gould, G. C. and B. J. MacFadden. 2004. Gigantism, Dwarfism and Cope's Rule: "Nothing in Evolution Makes Sense without a Phylogeny." *Bulletin of the American Museum of Natural History*, 285: 219–237.

March 16. Felidae (cats). Mousers and man-eaters. Claws, canines and carnassials, the adaptations of Carnivora and their evolution.

- Read: Jennison, 42–59.

- Read: Toynbee, 61–90.

- Examine and read selected chapters: Engels, D. 1999. *Classical Cats*. London–New York: Routledge, 227 pp.

- Examine and read selected chapters: Turner, A. and M. Antón. 1997. *The Big Cats and Their Fossil Relatives*. New York: Columbia University Press, 234 pp.

March 23. No meeting (Spring Recess).

March 30. Rhinocerotidae (rhinoceroses). The armor-plated engine of the amphitheatre. The diversity of Perissodactyla through time: rhinos, horses, tapirs and chalicotheres. The natural history and behavior of African rhinoceroses. Bovidae (cows and African antelopes). How to keep the army catching bison for the games, and how to turn a dead ox into a swarm of bees. The spectacular radiation of Africa bovids, ranging over two orders of magnitude (10 – 1,000 kg) and across almost every biome.

- Read: Jennison, 60–98.

- Read: Toynbee, 125–127, 143–162.

- Read: Gowers, W. 1950. The Classical Rhinoceros. *Antiquity*, 24: 61–71.

- Read: Baskin, Y. 1991. Rhino Biology: Keeping Tabs on an Endangered Species: Bursting Bottlenecks. *Science*, 252: 1256–1257.

- Examine: Penny, M. 1988. *Rhinos: Endangered Species*. New York: Facts on File Publications, ix + 116 pp.

- Assignment: seminar participants will have drawn by lot (during the preceding meeting) one species of African antelope, and should be prepared, on the basis of library and web resources, to make a brief (5 min.) presentation on the species' social behavior, habitat, reproduction and predators.

April 6. Hippopotamidae (hippos) and Giraffidae (giraffe). The extremes of anatomy and social behavior. Cetacea (whales and dolphins) return to the sea: the unexpected ancestry of whales. Marvels of the natural world.

- Read: Jennison, 137–153.

- Read: Toynbee, 128–130, 141–142, 206–208.

- Read: Higham, T. F. (1960), "Nature Note: Dolphin Riders," *Greece & Rome*², 7: 82–6

- Read: Miller, C. L. (1966), "The Younger Pliny's Dolphin Story," *Classical World*, 60: 6–8

- Examine: Eltringham, S. K. and P. Barrett. 1999. *The Hippos: Natural History and Conservation*. Princeton: Princeton University Press.

- Read: Simmons, R. E. and L. Scheepers. 1996. Winning by a Neck: Sexual Selection in the Evolution of the Giraffe. *The American Naturalist*, 148: 771–786.

- Examine for the main points: Gingerich, P. D. *et al.* 2001. Origin of Whales from Early Artiodactyla: Hands and Feet of Eocene Protocetidae from Pakistan. *Science*, 293: 2239–2242.

April 13. Ursidae (bears) and Hyenidae (hyenas). Bears as generalist carnivores. Hyenas, the most divergent of carnivores in terms of social structure, behavior, anatomy, gastrointestinal and reproductive systems. Canidae (dogs). Yappers and killers. The evolution of dogs and their adaptations for a range of prey: solitary hunters, canine couples, families and killer packs.

- Read: Jennison, 154–173.

- Read: Toynbee, 91–124.

- Examine: Bauer, E. A. and P. Bauer. 1996. *Bears: Behavior, Ecology, Conservation*. Stillwater MN: Voyageur Press, 160 pp.
- Read: Drea, C. M., E. M. Coscia, and S. E. Glickman. 1999. Hyenas. *Encyclopedia of Reproduction*, vol. 2: 718–725.
- Review: Fox, M. W. 1975. *The Wild Canids: Their Systematics, Behavioral Ecology and Evolution*. New York: Van Nostrand Reinhold.

April 20. Proboscidea (elephants). The tank of the battle field and the clown of the circus. The long evolutionary history of elephants; communication, social structure, diet, and specialized anatomical adaptations.

- Read: Jennison, 174–181.
- Read: Toynbee, 32–54.
- Read selected chapters from: Scullard, H. H. 1974. *The Elephant in the Greek and Roman World*. London: Thames and Hudson.
- Read: McComb, K. *et al.* 2001. Matriarchs as Repositories of Social Knowledge in African Elephants. *Science*, 292: 491–494.

April 27. Primates (monkeys and apes). Pets and performers. Primate diversity and human evolution. *Sahelanthropus*, the chimp-like hominine from the Miocene of Chad. Australopithecines: the bewildering array of primitive humans, walkers, runners, climbers.

- Read the following reviews of Jennison: Coleman, K. M. 2006. *New England Classical Journal*, 33: 159–161; Quillin, J. M. 2006. *Bryn Mawr Classical Review* 2006.07.42; Scarborough, J. 2006. *Scholia Reviews*, 15: 41.
- Read: Toynbee, 55–60.
- Read: Brunet, M. *et al.* 2002. A new hominid from the Upper Miocene of Chad, Central Africa. *Nature*, 418: 145–151.

TBA: Visit to the Museum of Fine Arts; each student will be responsible for introducing one object illustrating the theme of animals in Antiquity.

Evaluation: In addition to the reports and presentations listed above, each student will (a) compose a short catalogue entry within the first six weeks of term for a display combining an object or coin from the Harvard collection and a related fossil or natural history specimen from the Museum of Comparative Zoology, and (b) submit a research paper at the end of reading-period that combines both aspects of the course.