

W2420 Animal Behavior Spring 2009

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Textbook

Alcock, J. (2005) Animal Behavior: An Evolutionary Approach. (8th edition)
Sinauer Associates Inc. Sunderland, MA.

Schedule

Wed Jan 21 Course introduction

Mon Jan 26 Principles of Ethology

Reading: Snowden, CT (2004) Significance of Animal Behavior Research
The Nobel Prize in Physiology or Medicine 1973 (*translation from Swedish text*)
 Analogy as a Source of Knowledge (1973) Konrad Lorenz
 Decoding the Language of Bees (1973) Karl Von Frisch

Wed Jan 28 Scientific Methods in the Analysis of Behavior

Reading: Michael, RS (2002) Inquiry & Scientific Method
Kroodsmas, DE (1989) Suggested experimental designs for song playbacks. *Anim. Behav.* **37**: 600-609.

Kroodsma, DE, Byers, BE, Goodale, E, Johnston, S and Liu, W (2001) Pseudoreplication in playback experiments, revisited a decade later. *Anim. Behav.* **61**:1029-33.

Wiley, RH (2003) Is there an ideal behavioral experiment? *Anim. Behav.* **66**: 585-8.

Mon Feb 2 Evolution – principles of natural selection

Reading: Alcock, Chapter 1

Keynes, RD (1996) Steps on the Path to the Origin of Species. *J. Theor. Biol.* **187**, 461-71.

Wed Feb 4 Evolution – adaptation, genetic traits, convergence and divergence

Film: Great Transformations (55 min.)

Reading: Grant, PR and Grant, BR (2002) Adaptive Radiation of Darwin's Finches. *American Scientist* **90**: 130.

Podos, J (2001) Correlated evolution of morphology and vocal structure in Darwin's finches. *Nature* **409**:185-187.

Mon Feb 9 Instinct and Learning

Reading: Alcock, Chapter 2

Marler, P (2004) Innateness and the Instinct to Learn. *An. Acad. Cienc.* **76**: 189-200.

Wed Feb 11 Development of Behavior

Reading: Alcock, Chapter 3

Gardner, TJ, Naef, F and Nottebohm, F (2005) Freedom and rules: the acquisition and re-programming of a bird's learned song. *Science* **308**:1046-9.

Mon Feb 16 Review for Exam 1

Wed Feb 18 Exam 1

Mon Feb 23 Neural Control of Behavior - sensory structures, the brain, muscles, motor behavior

Reading: Alcock Chapter 4

Poulet, JF and Hedwig, B (2005) Auditory orientation in crickets: pattern recognition controls reactive steering. *PNAS* **102**: 15665-15669.

Optional review: Robert, D and Gopfert, MC (2002) Novel schemes for hearing and orientation in insects. *Curr Opin Neurobiol* **12**: 715-720.

Wed Feb 25 Neural Organization of Behavior

Reading: Alcock Chapter 5

Sisneros, JA, Forlano, PM, Deitcher, DL and Bass AH (2004) Steroid-dependent Auditory Plasticity Leads to Adaptive Coupling of Sender and Receiver. *Science* **305**: 404-7.

Optional review: Bass, AH and McKibben, JR (2003) Neural mechanisms and behaviors for acoustic communication in teleost fishes. *Prog. Neurobiol.* **69**:1-26.

Mon Mar 2 Specialized Traits for Survival – *anti-predator behavior*

Reading: Alcock, Chapter 6

Film: The Evolutionary Arms Race (55 min.)

Wed Mar 4 Specialized Traits for Survival – *arms races, parasitism*

Reading: Alcock, revisit Chapter 4 section on bats and moths

Robert, D, Amoroso, J and Hoy, RR (1992) The evolutionary convergence of hearing in a parasitoid fly and its cricket host. *Science* **258**: 1135-1137.

Mon Mar 9 Specialized Traits for Survival - *acquiring resources*

Reading: Alcock, Chapter 7

Raby, CR et al. (2007) Planning for the future by western scrub-jays. *Nature* **445**:919-921.

Wed Mar 11 Economics of Behavior

Reading: Moller, AP (1989) Viability costs of male tail ornaments in a swallow. *Nature* **339**: 132-5.

Evans, MR (1998) Selection on swallow tail streamers. *Nature* **394**: 233-34.

Moller, AP (1999) Length of tail streamers in barn swallows. *Nature* **397**: 115.

Evans, MR (1999) Reply: Length of tail streamers in barn swallows. *Nature* **397**: 115-116.

Mon Mar 16 Spring Break

Wed Mar 18 Spring Break

Mon Mar 23 Ecology of Behavior

Reading: Alcock, Chapter 8

Wed Mar 25 Animal Communication - *signal, sender and receiver*

Reading: Alcock, Chapter 9

Bertram, SM, Orozco, SX and Bellani, R (2004) Temporal shifts in conspicuousness: Mate attraction displays of the Texas field cricket, *Gryllus texensis*. *Ethology* **110**: 963-75.

Optional Review: Michelsen, A (1998) The Tuned Cricket. *News Physiol. Sci.* **13**: 32-8.

Mon Mar 30 Evolution of Communication

Reading: Mendelson, TC and Shaw, KL (2005) Rapid speciation in an arthropod. *Nature* **433**: 375-76.

Wed Apr 1 Review for Exam 2

Mon Apr 6 Exam 2

Wed Apr 8 Reproductive Behavior 1

Reading: Alcock, Chapters 10 & 11

Mon Apr 13 Reproductive Behavior 2

Film: Why Sex?

Reading: Pilastro, A, Scagginate, M and Rasotto, MB (2002) Individual adjustment of sperm expenditure accords with sperm competition theory. *PNAS*, **99**: 9913-5.

Wed Apr 15 Parental Behavior

Reading: Alcock, Chapter 12

Packer et al. (2001) Egalitarianism in Female African Lions. *Science*. **293**:690-3.

Roulin, A (2002) Why do lactating females nurse alien offspring? A review of hypotheses and empirical evidence. *Anim. Behav.* **63**:201-8.

Mon Apr 20 Social Behavior 1

Reading: Alcock, Chapter 13

Wed Apr 22 Social Behavior 2

Reading: Wilson, EO and Holldobler, B (2005) Eusociality: Origins and consequences. *PNAS* **102**: 13367-13371.

O'Riain, MJ et al (2000) Morphological castes in a vertebrate. *PNAS* **97**: 13194-7.

Mon Apr 27 Social Behavior 3

Film: Winning Teams (60 min.)

Reading: Bshary, R et al. (2006) Interspecific Communicative and Coordinated Hunting between Groupers and Giant Moray Eels in the Red Sea. *PLoS Biol* **4**:2393-98.

Emlen, ST (1995) An Evolutionary Theory of the Family, *PNAS* **92**:8092-99.

Wed Apr 29 Human Behavior

Reading: Alcock, Chapter 14

Zeifman, DM (2001) An ethological analysis of human infant crying: Answering Tinbergen's four questions. *Dev. Psychobiol.* **39**: 265-85.

Mon May 4 Last day of classes - Review for Final Exam

Mon May 11, 1:10 to 4PM Final Exam (614 Schermerhorn)