This is a provisional syllabus, subject to modification.

Hunter College and City College - The City University of New York

Spring 2003

ANIMAL BEHAVIOR II (PSY U718 and BIO U724.03)

Professor Christopher B. Braun

Classes will be held at The Graduate Center (GC room 6493) from 9:10 till 12:00.

Session	*Date*	*Topic*	*Lecturer*
1	1/30/03	Introduction: Comparative Biology	Braun
2	2/6/03	Evolution and Behavioral Homology	Braun
3	2/13/03	Fitness, Selection and Adaptation	Braun
4	2/20/03	Habitat Selection and Dispersal	Veit
5	2/27/03	Foraging Strategies	Veit
6	3/6/03	Predator Avoidance	Braun
7	3/13/03	Communication and Sensory Ecology	Braun
Midterm Exam Given: 3/20. Due: 3/27			
8	3/20/03	Benefits and Costs of Social Behavior	Moller
9	3/27/03	Behavioral Ecology of Social Spacing	Moller
10	4/3/03	Evolution of Reproductive Behavior	Moller
11	4/10/03	Behavior and Evolution: Speciation	Braun
	4/17/03	SPRING BREAK	
	4/24/03	SPRING BREAK	
12	5/1/03	Cognitive Ethology	Basil
13	5/8/03	Primate Cognition	Swartz
14	5/15/03	Comparative Vertebrate Neurobiology	Braun

Course Webpage:

This course will be supported by a "blackboard" website. This site will contain the latest syllabus information, PDF files of all assigned readings, and handouts or lecture notes. The blackboard site is also ideal for discussion amongst class members. Please use the message board to raise questions or attempt to answer your classmate's queries. Many students have found that this forum provides a good, low-pressure, arena to discuss the topics of the course.

Course requirements:

Grades will be based on (a) your performance on mid-term and final exams ($2/3^{rd}$ of final grade) and (b) class presentations ($1/3^{rd}$ of final grade). Each student will sign up for 2-3 papers (listed as **Papers**), and present the paper to the class in a 10-minute professional presentation. Both the midterm and final exam will be take-home, short essay exams. The questions will be given in class or posted on the website one week before they are due. Late exams will not be accepted. The completed exams must be typed and written individually. Of course, students are expected to abide by the university's policies on academic honesty,

and plagiarism will be punished severely, possibly resulting in removal from the course (and an F).

Students are responsible for all reading assignments. Starting 2/6, there will be a 15-min quiz at the beginning of each session covering the reading material assigned for that session. During each meeting members of the class may also be called upon to summarize the assigned readings. Ph.D. students are expected to demonstrate a high level of engagement with the subject matter of this course. Quiz performance will be used to calibrate presentation evaluations and will be taken into account in final grading. *If you miss more than 2 quizzes (class meetings), please see the instructor, or these absences will result in a grade reduction. 3 or more un-explained absences may result in withdrawal from the class.*

Instructors:

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Jennifer Basil Dept. of Biology Brooklyn College (718) 951-5722 JBasil@brooklyn.cuny.edu	Karyl Swartz Dept. of Psychology Lehman College 718-960-8478 kswartz@lehman.cuny.edu	

Readings:

Week 1: Introduction. Functional and Historical questions in biology.

Dobzhansky, T. (1973). Nothing in biology makes sense except in light of evolution. American Biology Teacher 35: 125-129.

Hodos, W. and C.B.G. Campbell (1969). *Scalae Naturae*: Why there is no theory in Comparative Psychology. Psychological Review **76**(4): 337-350.

Lauder, G. V. (1986). Homology, analogy and the evolution of behavior. In Evolution of Animal Behavior: Paleontological and field approaches. M. T. Nitecki. and. J. A. Kitchell (eds.). New York, Oxford University Press, pp. 9-40.

Week 2: Evolutionary Theory: The explanandum and the explanans.

Audesirk, T. and Audesirk, G. Biology: Life on Earth. Chapter 16: Principles of evolution, pp. 303-320.
and Chapter 17: How organisms evolve, pp. 323-343.

Papers:

Johnson, K.P., F. McKinney, R. Wilson, and M.D. Sorenson (2000). The evolution of postcopulatory displays in dabbling ducks (Anatini): A phylogenetic perspective. Animal Behaviour **59**: 953-963.

Kennedy, M., H.G. Spencer, and R.D. Gray (1996). Hop, step and gape: Do the social displays of the Pelecaniformes reflect phylogeny? Animal Behaviour **51:** 273-291.

Seehausen, O., P.J. Mayhew, and J.M. Van Alphen (1999). Evolution of colour patterns in East African cichlid fish. J. Evol. Biol. **12**: 514-534.

Week 3: Evolution of Behavior: Selection, Fitness and Adaptation.

Ridley, M. (1993) Evolution. Chapter 12: Units of Selection, pp. 303-322.

Mesterton-Gibbons, M. and Adams, E.S. (1998). Animal contests as evolutionary games. American Scientist 86: 334-341

Olsen, S. (2002). "Seeking the signs of selection." Science (News and Views) **298:** 1324-1325.

Papers:

Greenfield, M.D., and I. Roizen (1993). Katydid synchronous chorusing is an evolutionarily stable outcome of female choice. Nature **364:** 618-620.

Blumstein, D.T., J. Steinmetz, K.B. Armitage, and J.C. Daniel (1997). Alarm calling in yellow-bellied marmots II. The importance of direct fitness. Animal Behaviour **53:** 173-184.

Johnson, K.P. (2000). The evolution of courtship display repertoire size in the dabbling ducks (Anatini). J. Evol. Biol. **13:** 634-644.

Week 4: Habitat Selection and Dispersal. Richard Veit.

Chapter 11 (The ecology and evolution of spatial distribution) in Goodenough, J., B. McGuire, and R.A. Wallace, eds. Perspectives on Animal Behavior, second edition. John Wiley and Sons: 2001.

Measurement of dispersal by seabirds and seals: Implications for understanding their ecology. In J.M. Bullock, R.E. Kenward and R.S. Hails, eds. Dispersal Ecology. Blackwell: 2002.

Papers:

Spinks, A.C., Jarvis, J.U.M., and Bennett, N.C. (2000). Comparative patterns of philopatry and dispersal in two common mole-rat populations: Implications for the evolution of mole-rat sociality. Journal of Animal Ecology **69**: 224-234.

Gompper, M.E., Gittleman, J.L., and Wayne, R.K. (1998). Dispersal, philopatry, and genetic relatedness in a social carnivore: Comparing males and females. Molecular Ecology **7**: 157-163.

Escorza-Trevino, S. and Dizon, A.E. (2000). Phylogeography, intraspecific structure and sex-biased dispersal of Dall's porpoise, Phocoenoides dalli, revealed by mitochondrial and microsatellite DNA analysis. Molecular Ecology **9**: 1049-1060.

Week 5: Foraging Strategies. Richard Veit

Chapter 12 (Foraging Behavior) in Goodenough, J., B. McGuire, and R.A. Wallace, eds. Perspectives on Animal Behavior, second edition. John Wiley and Sons: 2001.

Shealer, D. (2002). Foraging behavior and food of seabirds. In…..,eds. Biology of Marine Birds. CRC press:2002.

Papers:

Graham, C. (2001) Habitat selection and activity budgets of keel-billed toucans at the landscape level. The Condor **103**: 776-784.

Veit, R. (1999) Behavioral responses by foraging petrels to swarms of Antarctic krill: *Euphausia superba*. Ardea **87**: 41-50.

Buckley, N. J. (1996) Food finding and the influence of information, local enhancement, and communal roosting on foraging success of North American vultures. The Auk 113: 473-488.

Week 6: Predator Avoidance.

Goodenough, J., B. McGuire, and R.A. Wallace (2001). Perspectives on Animal Behavior, Chapter 13: Antipredator Behavior, pp. 289-316.

Papers:

Enstam, K.L. and L.A. Isbell (2002). Comparison of Responses to Alarm Calls by Patas (*Erythrocebus patas*) and Vervet (*Cercopithecus aethiops*) Monkeys in Relation to Habitat Structure. American Journal of Physical Anthropology **119**: 3-14.

McCarthy, T. and W. Fisher (2000). Multiple predator-avoidance behaviors in the freshwater snail (*Physella heterostropha*): Responses vary with risk. Freshwater Biology **44**: 387-397.

Watt, P.J., Nottingham, S.F., and S. Young (1997). Toad tadpole aggregation behavior: Evidence for a predator avoidance function. Animal Behavior 54: 865-872.

Week 7: Sensory Ecology. Communication Biophysics and Evolution

Johnstone, R. A. (1997). The evolution of animal signals. In J.R. Krebs and N.B. Davies (eds.) Behavioral Ecology (fourth edition), pp. 155-178.

Ryan, M.J. (1998). Sexual selection, receiver biases and the evolution of sex differences. Science 281: 1999-2003.

Papers:

Aubin, T. and P. Jouventin (2002). Localisation of an acoustic signal in a noisy environment: The display call of the King Penguin *Aptenodytes patogonicus*. J. Exp. Biol. **205:** 3793-3798.

Marshall, N.J. (2000). Communication and camouflage with the same 'bright' colours in reef fishes. Phil. Trans. Roy. Soc. Lond. B. **355**: 1243-1248.

Mathevon, N., T. Aubin, and J.C. Bremond (1997). Propagation of bird acoustic signals: Comparative study of starling and blackbird distress calls. Comptes. Revue Acad. Sci. Paris, Science de la Vie/Life Sciences. 320: 869-876.

Week 8: Behavioral ecology of social spacing. Peter Moller

Chapter 11 in Goodenough et al., Perspectives in Animal Behavior 2nd ed., Wiley, New York

Chapter 16 in Goodenough et al., Perspectives in Animal Behavior 2nd ed.: Wiley, New York

Papers:

Mougeot, F., Redpath, S.M., Leckie, F. & Hudson, P.J. (2003). The effect of aggressiveness on the population dynamics of a territorial bird. Nature, 421: 737-739.

Johnson, D.D.P., Kays, R., Blackwell, P.G. & Macdonald, D.W. (2002). Does the resource dispersion hypothesis explain group living? TRENDS Ecol Evol., 17: 563-570.

Tobias, J. & Seddon, N. (2000). Territoriality as a paternity guard in the European robin, *Erithacus rubecula*. Anim. Behav., 60: 165-173.

Week 9: Reproductive Behavior. Peter Moller

Chapter 14 in Goodenough et al., Perspectives in Animal Behavior 2nd ed.: Wiley, New York

Papers:

Friedl, T.W.P. & Klump, G.M. (2002). Extra pair paternity in the red bishop (*Euplectes orix*): Is there evidence for the good-genes hypothesis? Behaviour 139: 777-800.

Moreau, J., Seguin, S., Caubet, Y. & Rigaud, T. (2002). Female remating and sperm competition patterns in a terrestrial crustacean. Anim. Behav. 64: 569-577.

Radespiel U., Secco, V.D. et al. (2002). Sexual selection. Multiple mating and paternity in grey mouse lemurs, *Microcebus murinus*. Anim. Behav. 63: 259-268.

Week 10: Mating Systems and Strategies. Peter Moller

Chapter 15 in Goodenough et al., Perspectives in Animal Behavior 2nd ed.: Wiley, New York

Emlen, S.T. & Oring, L.W. (1977). Ecology, sexual selection and the evolution of mating systems. Science 197: 215-223.

Papers:

Gagneux, P., Boesch, C. & Woodruff, D.S. (1999). Female reproductive strategies, paternity and community structure in wild West African chimpanzees. Anim. Behav. 57: 19-32.

Wolf, L.L., Waltz, E.C. (1993). Alternative mating tactics in male white-faced dragonflies: Experimental evidence for a behavioural assessment EES. Anim. Behav. 46: 325-334.

Oliveira, R.F. & Almada, V.C. (1998). Mating tactics and male-male courtship in the lek-breeding cichlid *Oreochromis mossambicus*. J. Fish Biol. 52: 1115-1129.

Week 11: Behavior in Evolution: Speciation

Excerpts from Dobzhansky, T., Ayala, F.J., Stebbins, G.L., Valentine, J.W. (1977). Evolution. pp. 165-188; 195-202.

Boughman, J.W. (2002). How sensory drive can promote speciation. Trends in Ecology and Evolution. **17**(12): 571-577.

Papers:

Gray, D.A. and Cade, W.H. (2000). Sexual selection and speciation in field crickets. PNAS **97**: 14449-14454.

Tauber, E., Roe H., Costa, R., Hennessy, J.M., and Kyriacou, C.P. (2003). Temporal mating isolation driven by a behavioral gene in Drosophila. Current Biology **13**: 140-145.

Week 12: Cognitive Ethology. Jennifer Basil

Shettleworth (1998). Cognition, Evolution, and the Study of Behavior. from Cognition Evolution and Behavior, edited by Sara J. Shettlerworth (Oxford University Press, 1998).

Papers:

Kamil, A. and Jones, J. (1997) The seed-storing corvid Clark's nutcracker learns geometric relationships among landmarks. Nature 390: 276-279.

Hunt, GR Corballis, MC ; Gray, RD (2001) Laterality in tool manufacture by crows. Nature. Vol. 414, no. 6865, p. 707.

Switzer, PV; Cristol, DA(1999) Avian prey-dropping behavior. II. American crows and walnuts. Behavioral Ecology [Behav. Ecol.]. Vol. 10, no. 3, pp. 220-226.

Week 13: Primate Behavior. Karyl Schwarz

Chapter 6 (Comparing primate cognition across domains) in

Parker, S. T., & McKinney, M. L. (1999). *Origins of Intelligence: The Evolution of Cognitive Development in Monkeys, Apes, and Humans*. Baltimore, Maryland: The Johns Hopkins University Press.

Thompson, R. K. R. T. (1995). Natural and relational concepts in animals. In Roitblat, H. L., & Meyer, J. (Eds.), *Comparative Approaches to Cognitive Science*. Cambridge, Massachusetts: The MIT Press.

Swartz, K. B., Sarauw, D., & Evans, S. (1999). Comparative aspects of mirror self-recognition in great apes. In S. T. Parker, R. W. Mitchell, & H. L. Miles (Eds.), *The mentalities of gorillas and orangutans in comparative perspective.* Pp. 283-294. Cambridge, England: Cambridge University Press.

Papers:

Gallup, G. (1970). Chimpanzees: Self-recognition. *Science, 167*, 86-87.

Oden, D. L., Thompson, R. K. R. T., & Premack, D. (1990). Infant chimpanzees spontaneously perceive both concrete and abstract same/different relations. *Child Development, 61*, 621-631.

Chen, S., Swartz, K. B., & Terrace, H. S. (1997). Knowledge of ordinal position of list items in rhesus monkeys. *Psychological Science, 8*, 80-86.

Week 14: Comparative Vertebrate Neurobiology

Braun, C.B. and R.G. Northcutt (1999). Chordate and Vertebrate Body Structure: Brain and Cranial Nerves. In R. Singer (ed.), Encylcopedia of paleontology. Chicago, IL: Fitzroy Dearborn publishing.

Van Dongen, P.A.M. (1998). Brain Size in Vertebrates. From R. Nieuwenhuys, H.J. Ten Donkelaar, and C. Nicholson (eds.) The Central Nervous System of Vertebrates, Volume 3. pp. 2099-2134.

Finlay, B.L., and R.B. Darlington (1995). Linked regularities in the development and evolution of mammalian brains. Science 268: 1578-158.

There are no paper presentations in week 14. Please come prepared to discuss Finlay and Darlington ('95).