

University of Lethbridge
Biol 4850a: Seminar on Insect Mating Behaviour
Spring 2003

Instructors: Dr. Bill Cade & Dr. Sean Walker

Dr. Bill Cade

Dr. Sean Walker

Office: A762

C450 (Cricket Lab)

Phone: 329-2201

380-1879

Email: bill.cade@uleth.ca

sean.walker@uleth.ca

Office Hours:

M 13:00-14:00, T 15:00-1700

Meeting Time: Mondays from 17:00-19:50

Meeting Place: E519

Course Web Page: <http://home.uleth.ca/~sean.walker/COURSES/BIOL4850A.htm>

Prerequisites

Biol 3620 (Sociobiology) and completion of eight courses (24.0 credit hours) offered by the Department of Biological Sciences

Course Description

This course will be an in depth look at recent primary literature which examines insect mating behaviour from an evolutionary perspective.

Course Requirements

Student Participation (15%)

Since this is a seminar class, participation is critical and will be 15% of your final grade. Two articles will be required reading for each class meeting and students are expected to have read this material and be prepared to discuss it. In addition, students are encouraged to make use of the class email list (200203biol4850a@uleth.ca). This list will be used by the instructors to send announcements to the class and **should be used** by the students to post additional comments or questions before or after discussions.

Presentation (40%)

Each student is required to give an oral presentation and lead class discussion during one of the class meeting times. The subject of this talk should be a topic that you are interested in since you will spend a great deal of time researching the subject and will write a review paper on the topic. We have listed a number of topics below. Although

you are not limited to these topics, choice of another topic will have to be approved by the instructors.

Students will be responsible for running their assigned seminar. Students are expected to provide a basic review of the topic, summarize the required readings, and provide a critical and in depth analysis of the readings. Presenters should provide additional information on the topic by making use of the primary literature. You might want to start by examining the contents of journals such as: *Animal Behaviour*, *Behavioral Ecology*, *Behavioral Ecology and Sociobiology*, and *Journal of Insect Behavior*. In addition, you should also make use of the electronic databases found in the library (e.g., Web of Science or Biological and Agricultural Index). Students are encouraged to use visual aids (hand-outs, chalkboard, overheads, power-point presentations etc.) and following their presentation **will** maintain an active discussion for the rest of class time. Presentations should be between 40-50 minutes in length.

Review Paper (Percentage of Grade:45% Outline 5% + Paper 40%)

Students are responsible for preparing a comprehensive review paper on the literature related to their topic. This paper will critically evaluate the literature related to your topic and should propose new ideas and future research in the area. To begin, you will prepare an outline and conduct a literature review on the topic. In this outline you will briefly summarize (1 page) the topic and will provide a list of relevant articles (at least 15 refereed journal articles) by **February 24, 2003**. The final paper is due on **April 7 2003. Start this early!** It will require a great deal of time to **thoroughly** review the literature and to read the relevant papers.

This paper should be written in the format of a scientific journal. Specifically, follow the guidelines for formatting (i.e., line spacing, literature citations etc.) from the Instructions to Authors in *Animal Behaviour*. These guidelines are available in the printed journal and online (Go to <http://authors.elsevier.com> and find *Animal Behaviour*). All written assignments will be evaluated for content, grammar, originality and style. Please note that it is your responsibility to read and understand the definition of plagiarism and the penalties attached (see the Academic Regulations in the University Calendar).

Grading Scale

<u>Score</u>	<u>Grade</u>
90-100	A+
85-89	A
80-84	A-
77-79	B+
73-76	B
70-72	B-
67-69	C+
63-66	C
60-62	C-
57-59	D+
50-56	D
0-49	F

Late Assignments

Late assignments can be handed in but will lose 10% per day (24h) that they are late.

Missed assignments and presentations

If you cannot complete your assignment or give your presentation at the scheduled time, you should contact the instructor as soon as possible with appropriate documentation verifying the circumstances. □ Medical reasons must be supported by a statement that performance would be seriously affected, with the physician's name, address and telephone number. □ *A simple note that you had visited the doctor's office is not sufficient.* □ Non-medical reasons must also be supported (i.e., obituary notice, accident report, etc.). □ It is your responsibility to arrange a make-up time for presentations or new deadline for assignments.

Tentative Schedule

- 1) January 6 – Introduction
- 2) January 13– How to Give a Presentation
- 3) January 20– Sexual Selection and Mate Choice
- 4) January 27– Dr. Cade-Crickets and Flies
- 5) February 3- Discussion- Sensory Exploitation and the Evolution of Elaborate Male Traits
- 6) February 10-Library Work Day/ No meeting
- 7) February 17-22 –No Class, Reading Week**
- 8) February 24- Outline and Literature Survey Due, Student Presentation #1
- 9) March 3- Student Presentation #2
- 10) March 10- Student Presentation #3
- 11) March 17- Student Presentation #4
- 12) March 24- Student Presentation #5
- 13) March 31- Student Presentation #6
- 14) April 7-**Review Papers DUE**

Readings for Insect Mating Behavior

Papers can be found at <http://home.uleth.ca/~sean.walker/INSECT>

Dr. Cade's Presentation-

Bertram, S. M. 2002. Temporally fluctuating selection of sex-limited signaling traits in the Texas field cricket, *Gryllus texensis*. *Evolution* 56:1831-1839.

Gray, D. A. and W. H. Cade. 2000. Sexual selection and speciation in field crickets. *Proceedings of the National Academy of Sciences, USA* 97:14449-14454.

Discussion-Sexual Selection and Sensory Exploitation

Endler, J. A. and Basolo, A. 1998. Sensory ecology, receiver biases and sexual selection. *Trends in Ecology and Evolution* 13:415-420.

Sakaluk, S. K. 2000. Sensory exploitation as an evolutionary origin to nuptial food gifts in insects. *Proceedings of the Royal Society of London, Series B* 267:339-343.

Aguilar, A. Córdoba. 2002. Sensory trap as the mechanism of sexual selection in a damselfly genetical trait (Insecta: Calopterygidae). *American Naturalist* 160: 594-601.

Student Presentation Topics

1. Alternative Strategies in Dawson's Burrowing Bees

Simmons, L.W., J. L. Tomkins, and J. Alcock. 2000. Can minor males of Dawson's burrowing bee, *Amegilla dawsoni* (Hymenoptera : Anthophorini) compensate for reduced access to virgin females through sperm competition? *Behavioral Ecology* 11(3):319-325.

Alcock, J. 1996. Provisional rejection of three alternative hypotheses on the maintenance of a size dichotomy in males of Dawson's burrowing bee, *Amegilla dawsoni* (Apidae, Apinae, Anthophorini). *Behavioral Ecology and Sociobiology* 39(3):181-188.

2. Evolution of Polyandry

Sakuluk, S. K., J. M. Schaus, A-K. Eggert, W. A. Snedden, and P. L. Brady. 2002. Polyandry and fitness of offspring reared under varying nutritional stress in decorated crickets. *Evolution* 56(10):1999-2007.

Tregenza, T, and N. Wedell. 2002. Polyandrous females avoid costs of inbreeding. *Nature* 415:71-73.

3. *Copulatory Courtship and Cryptic Female Choice*

Tallamy, D. W., B. E. Powell, and J. A. McClafferty. 2002. Male traits under cryptic female choice in the spotted cucumber beetle (Coleoptera: Chrysomelidae) *Behavioral Ecology* 13(4): 511-518.

Edvardsson, M. and G. Arnqvist. 2000. Copulatory courtship and cryptic female choice in red flour beetles, *Tribolium castaneum*. *Proceedings of the Royal Society of London, Series B.* 267:559-563.

4. *Sexual Cannibalism in Sagebrush Crickets*

Johnson, J. C., T. M. Ivy, and S. K. Sakaluk. Female remating propensity contingent on sexual cannibalism in sagebrush crickets, *Cyphoderris strepitans*: a mechanism of cryptic female choice. *Behavioral Ecology* 10(5)227-233

Sakaluk, S. K. and T. M. Ivy. 1999. Virgin-male mating advantage in sagebrush crickets: differential male competitiveness or non-independent female mate choice. *Behaviour* 136:1335-1346.

5. *Fighting or Sneaking in Dung Beetles*

Moczek, A. P. and D. J. Emlen. 2000. Male horn dimorphism in the scarab beetle, *Onthophagus taurus*: do alternative reproductive tactics favor alternative phenotypes. *Animal Behaviour* 59: 459-466.

Emlen, D. J. 1997. Alternative reproductive tactics and male-dimorphism in the horned beetle *Onthophagus acuminatus* (Coleoptera: Scarabaeidae). *Behavioral Ecology and Sociobiology* 41:335-341.

6. *Sexual Conflict and the Evolution of Female Colour Morphs in Damselflies*

Andres, J. A., R. A. Sanchez-Guilluen and A. C. Rivera. 2002. Evolution of female colour polymorphism in damselflies: testing the hypotheses. *Animal Behaviour* 63(4):677-685.

Van Gossum, H. R. Stoks, and L. De Bruyn. 2001. Frequency-dependent male mate harassment and intra-specific variation in its avoidance by females of the damselfly *Ischnura elegans*. *Behavioral Ecology and Sociobiology* 51(1):69-75.

7. *Lekking Behaviour and Sandflies*

Jones, T. M., and R. J. Quinnell. 2002. Testing predictions for the evolution of lekking in the sandfly, *Lutzomyia longipalpis*. *Animal Behaviour* 63:605-612

Jones, T. M., R. J. Quinnell, and A. Balmford. 1998. Fisherian flies: benefits of female choice in a lekking sandfly. *Proceedings of the Royal Society, Series B.* 265:1651-1657

8. *Male mating tactics in scorpionflies*

Engqvist, L. and K. P. Sauer. 2002. A life-history perspective on strategic mating effort in male scorpionflies. *Behavioral Ecology* 13(5):632-636.

Bockwinkel, G. and K. P. Sauer. 1994. Resource dependence of male mating tactics in the scorpionfly, *Panorpa vulgaris* (Mecoptera, Panorpidae). *Animal Behaviour* 47(1):203-209.

9. *Sexually transmitted diseases and Sexual Selection*

Webberley, K. M., G. D. D. Hurst, J. Buszko, M. E. N. Majerus. 2002. Lack of parasite-mediated sexual selection in a ladybird/sexually transmitted disease system. *Animal Behaviour* 2002 63:131-141.

Abbot, P. and Dill, L. M. 2001. Sexually transmitted parasites and sexual selection in the milkweed leaf beetle, *Labidomera clivicollis*. *Oikos* 92:91-100.