

Biology 414, Fall 2014

Life Histories and Reproduction

Text and other reading material: Judson's (2002) book "Dr. Tatiana's Sex Advice to All Creation" (Available at ISU's bookstore in the Memorial Union or from internet book retailers), and chapters from other textbooks and primary literature provided by the instructor.

To download reading material or a copy of the syllabus, go to the following link:

<http://www.public.iastate.edu/~nvalenzu/EEOB514>

Course description: Welcome to EEOB 514/ Biol 414! This course focuses on a subset of areas in Evolutionary Ecology, namely: the evolution of Life History Strategies, Sex, Mating Systems and Sexual Selection. In so doing, we will discuss the relationships between organisms and the environmental influences on their evolution, with emphasis on evolutionary mechanisms and adaptive strategies.

Course organization: The course consists mostly of discussions combined with some lectures and debates covering a diversity of topics such as the origins of phenotypic variation, natural selection, life history and reproductive strategies. The course is divided into three main units, the first dedicated to providing some fundamental background on Evolutionary Biology, the second dedicated to Life History Evolution, and the third one dedicated to reproductive strategies. A student debate is scheduled within each of the three units of the course. A take home exam is scheduled for the midterm and a final exam at the end of the semester. Discussions during class will concentrate on the assigned readings from the primary literature which are mandatory. I expect students to read the material before class and to actively participate in discussions during lecture. A set of readings is listed for all students (graduate and undergraduate). Additionally, some readings are assigned to graduate students alone (although undergraduate students are welcome to read those if interested). The list of further readings is not mandatory and is provided as a bonus for those interested in exploring additional literature on particular topics.

Midterm Exam: There will be one take-home midterm exam. Students will chose a paper from a list provided by the instructor and write a 1 page (undergraduate students) or 2 page (graduate students) commentary.

Student-lead discussion: during the last two classes of the semester, students will present a discussion on a topic chosen and researched by them related to the areas covered during class or complementary to them.

Final Exam: there will be no final exam during finals week.

Grading:

	Proportion	points
Midterm Exam	1/5	50
Debates (50pts ea. x 3)	3/5	150
Participation	1/5	50
Total	1	250

Special accommodations: Students who require special accommodations to participate in the course should contact me during the first week of class to make the necessary arrangements. Please request that a Disability Resources staff send a SAAR form verifying your disability, and

specifying the accommodation you will need. The Disability Resources (DR) office is located on the main floor of the Student Services Building in Room 1076. Their phone number is 515-294-6624, Fax: 515-294-2397, TTY: 515-294-6635, or e-mail disabilityresources@iastate.edu or accommodations@iastate.edu.

Lecture	Date	Topic	Assigned Readings All Students	Assigned Reading Graduate Students	Non-mandatory papers for those interested
		I. Units and mechanisms of evolution			
1	8/26/2014	Elements of microevolution	Futuyma Ch 1	Jacob 1977	
2	8/28/2014	Genetic and phenotypic variation	Meyers&Bull 2002	Moczek et al. 2011	Grant et al 2006; Sultan 2007
3	9/2/2014	Natural Selection and Adaption	Badyaev 2011	Gould & Lewontin 1979	
4	9/4/2014	Species and Speciation	Pennisi 2006	Noor 2002	Barraclough et al 2012
5	9/9/2014	Tree thinking and comparative biology	Basolo 2002	Weber & Agrawal 2012	
6	9/11/2014	Kin selection and inclusive fitness	Foster et al. 2006	Wilson & Hölldobler 2005	Bshary & Bergmueller 2008
7	9/16/2014	Debate: Levels of selection	Mayr 1997	Darlington 1981, Gould&Lloyd1999	
		II. Life Histories:			
8	9/18/2014	Demography (age and stage structure)	Sterns & Hoekstra Ch10	Metcalf & Pavard 2007	Boyce et al 2006, Ozgul et al 2010
9	9/23/2014	Age and size at maturity	Ricklefs & Wikelsi 2002	Stearns 2000	
10	9/25/2014	Number and size of offspring	Penn & Smith 2007	Simons 2008	Zera & Harshman 2001
11	9/30/2014	Reproductive lifespan and ageing 1	Monahan et al. 2008	Ricklefs 2008	Partridge & Gems 2006
12	10/2/2014	Reproductive lifespan and ageing 2	Bourke 2007	Bronikowsky et al 2011	Bonduriansky et al 2008
13	10/7/2014	Sex and Sex ratio	Trivers & Willard 1973	Uller et al 2007	Barton&Charlesworth1998, Ruthowska&Badyaev2007
14	10/9/2014	Debate: Life history invariants (fact or fiction)	DeJong2005, Savage et al. 2006, Nee et al. 2006	Nee et al 2005	Charnov&Berrigan1991, Molloy etal2011, Uller etal2009
15	10/14/2014	MIDTERM			
		III. Dr. Tatiana's Sex advice to all creation			
16	10/16/2014	Mating systems and sexual selection	Chapter 1	Reynolds 1996	Andersson & Simmons 2006
17	10/21/2014	Sperm competition	Chapter 2	Johnson & Gemmell 2012	Birkhead et al 2005
18	10/23/2014	Debate: Bateman's principle	Tang-Martinez 2012	Jones et al 2005	Tang-martinez & Ryder 2005
19	10/28/2014	Promiscuity	Chapter 3	Gowaty 2012	Adler 2010
20	10/30/2014	Male-male combat	Chapter 4	Kralj-Fišer & Kuntner 2012	Heinze & Weber 2011
21	11/4/2014	Sneaker behavior	Chapter 5	Smith & Ryan 2010	Reichard et al 2007
22	11/6/2014	Sexual cannibalism	Chapter 6	Li et al 2012	Prenter et al 2006
23	11/11/2014	Sexual coercion	Chapter 7	Hruskova-Martisova et al 2010	
24	11/13/2014	Female-Female competition	Chapter 8	Tobias et al 2012	
25	11/18/2014	Homosexuality	Chapter 9	MacFarlane et al 2007	
26	11/20/2014	Monogamy	Chapter 10	Hosken et al 2009	
		THANKSGIVING			
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27	12/2/2014	Inbreeding	Chapter 11	Langen et al 2011	
28	12/4/2014	Only two sexes?	Chapter 12	Perrin 2012	Charlesworth & Charlesworth 2010
29	12/9/2014	Asexuality	Chapter 13	Rosendahl2012, Marynard Smith1986	
30	12/11/2014	Evolution of sex & recombination	Postscript. Judson and Normark 1996	Hartfield & Keightley 2012	
		FINAL EXAM	THERE WILL BE NO FINAL EXAM		