

MIDTERM 1 REVIEW

Your first midterm will be held in class on Wednesday, 10 March. To help you prepare, we are providing you with two things: a copy of the first midterm from 2002 and this list of the lecture and lab topics that relate to the first midterm.

The sample exam is intended to give you an idea of the type of questions that we will ask. Note that we have not covered exactly the same set of topics and examples this year, so don't panic if not everything is familiar! But, you should be able to answer most of the questions on the exam, so it is probably in your interest to spend some time going over it. Answers will be posted on the web site later this week.

The outline of lecture topics is intended to jog your memory and to help you fill in potential gaps in your notes and, possibly, understanding of course material. You will have a chance to review all of this in lab this week, plus during office hours next week.

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Lecture 1: What is behavioral ecology?

- One-liner definition of behavioral ecology
- Contrasting behavioral ecology, ethology and cognitive psychology (ex: California ground squirrel response to snakes)
- Five “rules” or basic characteristics of behavioral ecology
- Critiques of behavioral ecology and the adaptationist approach
- Heuristic value of adaptationist studies

Lecture 2: Testing adaptive hypotheses

- Correlational vs experimental studies
- Shortcomings of early correlational studies (ex: primate social systems)
- Shortcomings of *some* early experimental studies (ex: mountain bluebird aggression)
- Designing an adaptive study: Harris’ sparrow example

Lecture 3: Natural versus sexual selection

- Continuation of Harris’ sparrow example
- Definition of sexual selection: concordance between sexual and natural selection
- Sexual selection models: opposition between sexual and natural selection
- Natural selection costs in sexual selection (ex: crickets and fly parasite, barn swallow tails lengths and survival, foraging ability)
- Wrap up: lots of competing selective pressures on almost any phenotypic trait

Lecture 4: Bateman's principle

Conclusion of discussion of natural vs sexual selection

Bateman's principle: studies of *Drosophila* lead to the basic tenets of sexual selection

Bateman's curves (gradients) and their implications for sexual selection

Lecture 5: More Batemania

Questions about Bateman's principle

Sperm limitations (ex: parasitoid wasps)

Costs of reproduction (ex: hermaphroditic polychaete worms)

Female rs versus number of mates (ex: cowbirds)

Variance in reproductive success (ex: sea horses and pipefish)

Wrap: bottom line on Bateman

Lecture 6: New directions in sexual selection 1

Emphasis on good genes models

Fluctuating asymmetry: definition

Example studies: barn swallow tails, swordtail stripes, dirty t-shirts

What does FA really mean about male quality?

Lecture 7: New directions in sexual selection 2

Immunocompetence

Hamilton-Zuk hypothesis: predicted inter vs intra specific predictions

Parasites, mate choice, and MHC: turkey snood example, pheasant spur example

Mate choice and MHC: mouse mate choice studies, human dirty t-shirt studies

Still numerous missing "links" to fill in between female choice, male phenotypes, male "quality," and male genotypes

Lecture 8: Film on sexual selection

Several topics for consideration given in class

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Lab topics to review:

Discussion on adaptation

Methods of observational data collection

Study questions on sexual selection

Study questions about hyenas

