

BIO 45 -- Exam 1 -- Ways of Studying Behavior -- 4 October 2000
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NAME _____ FOR STUDY ONLY – MATERIAL COVERED MAY DIFFER IN 2002 _____

Question 1 _____ out of 10

Question 2 _____ out of 12

Question 3 _____ out of 8

Question 4 _____ out of 10

Question 5 _____ out of 10

Total Points: _____ out of 50

INSTRUCTIONS:

1. Put your name on this page only - **Transfer the exam number to each page** of the exam.
2. **Read each question very carefully.** You need to figure out **exactly** what each one asks. Give us **concise, short answers**. **Do not write on the back of the page** unless you have had to change your answer. Writing legibly will often help more than adding sentences. We will take off points for errors even if the correct answer is given.
3. When examples are asked for, give preference to well documented ones. **Do not use hypothetical or anecdotal information (unless it is asked for)**. Citing species names and names of those who did the experiments will reduce ambiguity in your answers.
4. **Do not use the same example more than once on the exam.**
5. **If you feel a question is ambiguous - ask for clarification!** Some questions are meant to be confusing unless you have a solid grasp of the material. Do not hesitate to ask - some ambiguities are not intended and will be corrected during the exam.
6. Terms:

Explain = Show that you **understand** what is going on - don't just list facts.**Cite or Identify** = Who did the work on what species and some details relevant to the question. If you can't remember names, give enough detail for us to identify the study you mean.**List** = You do not have to go into detail. Make sure the items in your list are really distinct.**Briefly** = a few well-chosen words or phrases will suffice.

1. (10 pts) What do we mean? **Briefly** answer both questions

A. "Adaptation are always adaptive traits, but adaptive traits may not be adaptations." **Explain**

B. What do we mean by "a genetic basis" for a behavior

2. (12 pts) Lists of things: remember, lists do not require detailed explanations or examples

A. List three reasons why an adaptation may not be perfect:

1.

2.

3.

B. The environment plays **three key roles** in the production and evolution of animal behavior. What are they? Just a sentence each

1.

2.

3.

3. (8 pts) Genes, environment and behavior:

A. Cite an example from Alcock that **contradicts** this statement: "If a behavior is totally inflexible in adults and is exactly the same the first time it occurs as the last time, then it is clearly genetically determined."

B. Cite an example from Alcock that **supports** this statement: "Most people would consider the developmental environment of a behavioral trait to be that within an egg or womb. However, the developmental environment can be external to either parents or the developing offspring."

4. (10 pts) Show your understanding of some basic concepts in behavioral ecology. One or two well-phrased sentences without unneeded details will answer each question.

A. Suppose there is no variation in the population for a behavioral trait (and its associated morphology). Suppose you cannot create variation (i.e., like cutting and gluing tails to change their lengths). You can still **directly** test an adaptation hypothesis for this trait? **Using an example, briefly explain how.**

B. "... **the authors** subsequently declare that knowledge of the underlying genetic, developmental and historical bases of a behavior is not required to conclude that it is adaptive." [S. Cameron. 1997. Trends Ecol & Evol. 409-410]. **Are the authors right? Why?**

C. Explain how the horns of female antelope **could** be used to illustrate both adaptation and incidental effect?

Female horns as an adaptation:

Female horns as an incidental effect:

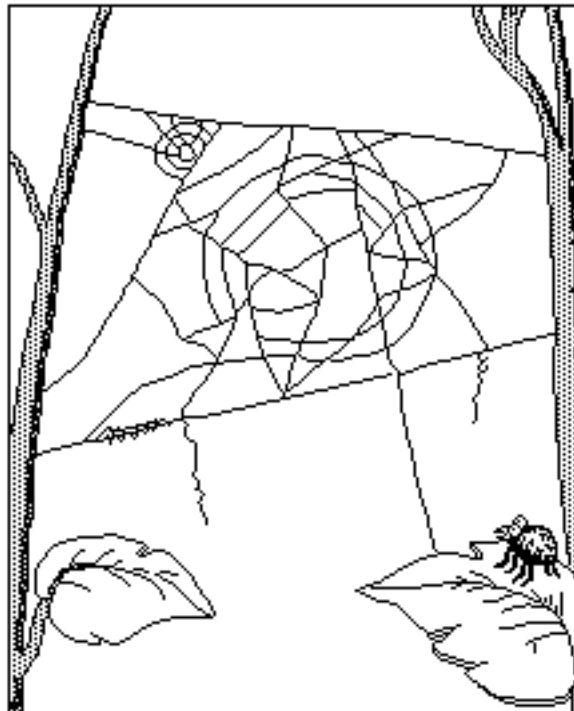
5. (10 pts) There are a number of hypotheses for infanticide in langurs and other animals. Alcock notes that one should make a set of predictions for the alternative hypotheses that when tested could distinguish between them. I have started a table for doing that, you finish it
 (The cannibalism hypothesis is that males must replenish energy after the expense of take-over)

Predictions	Alternative Hypotheses	
	Sexual Competition	Cannibalism Hypothesis
Infanticide only occurs after take-overs	+++	+++
Remove the group male, new male still commits infanticide		---
(4 pts)		

+++ = Strong support for hypothesis

--- = Hypothesis not supported

+ = Weak support for hypothesis



"Whoa! ... That CAN'T be right!"