Bio 45 - Discussion #5 – The Nature of Sex - 22 - 24 Oct. 2002

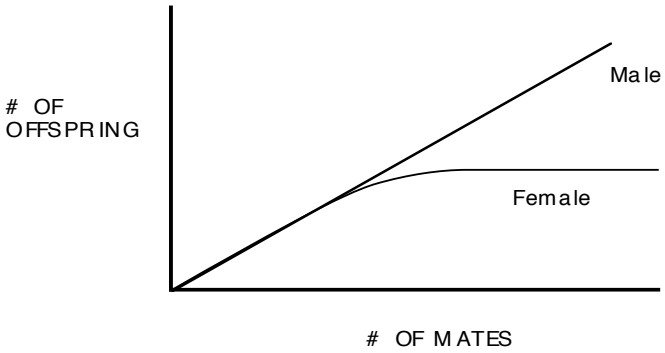
I. PURPOSE:

One of the more popular stories about the evolution of behavior is that of the nature sexual behavior – especially the nature of males and females. You will see an example of this story in the video (The Nature of Sex – Part 1 "Primal Instinct -- a Nature Series film by Genesis Film Productions Ltd.) we will watch in section. Males are presented as competitive, aggressive, attractive and committed by their genes to a focus on mating. Females are cautious, choosy and focused on their offspring.

I thought the film might be an interesting starting place for the next set of lectures. Here you will see a popularized version of the story. The part of the video we will watch will only take 30 min. The rest of the time is open to a general discussion of the issues raised by the video and the graph below. Your goal for today is not so much to identify and correct mistakes of interpretation or overt sexism by the makers of the video, but to get a sense for the kinds of generalizations being made. How far are you willing to go with such generalizations about the way males and females are or ought to be – try to ignore humans for now.

At the core of the way in which male and female are presented in this video is the following graphical representation of the "biological reality" of male and female. We will spend some time qualifying and explaining the messages presented here and their theoretical background and incompleteness. However, for now it would be good for you to relate the perspectives presented in the video to this graph.

Potential Relationship



This figure is often used to illustrate the male and female perspectives on how many mates to have. The **potential relationship** shown reflects three general but not universal facts. These are that 1) it takes longer for females to mate, have kids, and be ready to mate again than it does for males, 2) females produce relatively fewer gametes than males do, and 3) in one reproduction all of a female's gametes can be fertilized by one or a few males. In general, female reproduction is seen as limited by the number of eggs and investment in resulting zygotes. Male reproduction is limited not by sperm, but by the number of receptive females. At some point, females stop gaining new kids by mating with more males (law of diminishing returns again). Males continue to gain kids as they mate with more females. Given the relationship shown above, males are favored over their rivals when they are better at finding females, convincing them to mate, and preventing other males from finding or mating with them.

One can read a lot into and out of this graph -- it is dangerously simple and general. For example, one could argue that the graph shows that males "prefer" or "are designed to" mate as often as possible while females "prefer" monogamy. Or, one could argue that it predicts multiple mating by females would be maladaptive -- what can they possibly gain?

II. READINGS - Skim the following:

1) Alcock - Ch. 11: 317-327

III. ASSIGNMENT:

The relationship in the graph is an oversimplification that rests on a number of assumptions. It conveniently focuses on the constraints imposed on females by relatively high parental investment while ignoring the costs of and limits on frequent mating by males. Look again at the graph and think of what might alter the relationship shown.

Consider the following questions -- you should brainstorm about one of them in your journal and be ready to share you ideas with the section.:

1. Is the relationship shown true for all kinds of animals?
2. Is number of mates a good index of number of kids or the quality of kids produced?
3. What things might cause males to gain less from additional matings or cause females to gain more from additional matings even though it did not increase the number of kids they had?
4. What if females (e.g., of insects or fish) had high fecundity and varied in fecundity? What might change in the relationship shown?
5. What other assumptions about the relationship between matings and fitness (number of kids) can you find that might be misleading or wrong?
6. Is there any situation or kind of organism where: 1) the male and female curves would be the same, or 2) the male and female curves would be reversed? In other words, is the relationship shown true, but exaggerated, or might it be incorrect for at least some species?

There are no easy answers for these questions. Graphs like these are illustrations of concepts not facts, laws or experimental results. They are powerful because of their simplicity and intuitive appeal. They must be used carefully least we confuse assumption with fact or thinking with understanding.