

## 9.20 MIT

### Classes #25-26: Discoveries of Sociobiology

Monday Nov 7, Wednesday Nov 9, 2005

#### *Reading:*

- John Alcock, *The Triumph of Sociobiology* (Oxford 2001), ch 6, pp 93-127

#### *Study questions: Alcock ch 6*

1. What big change in animal behavior research occurred after about 1970? (pp 94-95)
2. What view of evolution was presented by the famous ethologist Konrad Lorenz in his 1966 book, *On Aggression*, a view of Darwinian theory that has been rejected by sociobiologists? Why did this mistake not impede K.L. in his major studies?
3. In 1964, William D. Hamilton published a very influential paper that included an analysis of the altruistic behavior of sterile workers in colonies of social insects. What knowledge that had been unavailable to Charles Darwin did Hamilton apply to this problem? (p 96)
4. How are naked mole rats similar to the Hymenoptera (social insects) in a way that leads sociobiologists to predict altruistic behavior in these mammals? (p 97-98)
5. Why did Trivers and Hare (1976) predict that in colonies of social insects, workers would care more for future queens than for future drones (males)? (p 101)
6. Why should it matter to European wood ant workers whether their mother mates with one male or with several? (p 102)
7. What is the explanation for why a male damselfly stays near a female he has first mated with rather than fly off in search of other females to mate with? What did G. A. Parker, in 1970, call this type of phenomenon? Would you expect it to be widespread across various species? (pp 104-109)
8. Why have male fruit flies evolved so they inject chemicals that harm their mate, chemicals injected along with their sperm? Explain in terms of evolutionary "fitness", following the logic of G.C. Williams (1966). (p 109-112)
9. Explain the evolutionary logic of the mating behavior of hanging flies studied by Randy Thornhill (1976). Why does the male present the receptive female with a gift of food, like a dead moth, and why does the gift have to be above a certain size to be most effective? (p 113-115)
10. What is meant by "cryptic female choice" in sociobiology? Would you expect such phenomena to be found in mammals? Humans? (p 116)

11. Among Seychelles warblers what are the advantages for young birds if they help their parents rear siblings by becoming a “helper-at-the-nest”? (clearly a form of altruism)? (p 123-124)
12. In his studies of these warblers, the sociologist J. Komdeur (1997) made a surprising discovery: Females can regulate the sex of their offspring. Why has this ability evolved? Explain in terms of female fitness, and behavioral differences between male and female offspring. (p 126-127)
13. See Appendix, Ch 6, Q 1

(Read Appendix Q 2 also because of the interesting phenomena described there.)