**Discussion Questions**

to accompany

***Animal Behavior,* Eleventh Edition**

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**Chapter 13**

**Social Behavior and Sociality**

13.1 Given the differences in reproductive success for the three categories of male lazuli buntings (*Passerina amoena*), how can we account for the evolutionary persistence of males with dull and, especially, intermediate plumage?

13.2 Lions (*Panthera* *leo*) live in prides composed of variable numbers of females and males. Each pride defends its own territory (Mosser and Packer 2009). If lion social groups form because of the benefits of communal defense of a territory, what prediction follows about the interactions between prides of different sizes? What additional predictions can you make about the size of prides and (1) the quality of the defended habitat, (2) the survival of female pride members, and (3) the fitness of females? Would you be surprised to learn that as pride size grows, the foraging efficiency of the group does not increase? How can you reconcile this finding with the existence of relatively large prides? When lion prides get large, one subgroup may move away and take up residence in a nearby territory. Prides that have recently split tend to interact with relatively little aggression. Why?

13.3 In the greater ani (*Crotophaga major*) (Riehl 2011) and the acorn woodpecker (*Melanerpes formicivorus*) (Koenig et al. 1995), a group of females shares the same nest. However, when some females begin to lay eggs in the communal nest, their eggs are often tossed from the nest by other group members. Use a cost–benefit approach to explain why females whose eggs are destroyed still remain with the group. Do you think the egg-tossing females are really cooperating with the others in their group?

13.4 Given the results of our calculations of inclusive fitness for male pied kingfishers (*Ceryle rudis*) (see Table 13.1), isn’t it maladaptive to be a delayer? Why aren’t there any completely sterile helper male pied kingfishers?

13.5 In the purple-crowned fairy-wren (*Malurus coronatus*), most subordinate helpers at the nest feed full siblings or half siblings, but some helpers are unrelated to the nestlings they assist (Kingma et al. 2011). What Darwinian puzzle is created by these findings, and how might you solve the puzzle by using inclusive fitness theory, as Uli Reyer did in his pied kingfisher study? What predictions follow from the explanation(s) that you propose?

13.6 Helpers at the nest have been found in only about 9 percent of all bird species (Cockburn 2006). One attribute of these species that has often been linked to the evolution of helping behavior is the delayed dispersal of juveniles, as we illustrate with Seychelles warblers (*Acrocephalus sechellensis*). But another factor that might have promoted the evolution of helping is a very low adult mortality rate. These two ideas have sometimes been presented as competing hypotheses, but how might they both reflect the same ecological pressure that makes helping at the nest an adaptive temporary option for young birds?

13.7 Some organisms form clonal societies, such as the aphids that are parthenogenetically (asexually) produced by their mother (Stern and Foster 1997). These carbon copy individuals live together, often in hollow plant galls. Some individuals in the clone develop into larger-bodied soldiers that fight with intruders that attempt to enter the gall and feed on the aphids within (Pike et al. 2007). Likewise, certain sea anemones sometimes form clusters of genetically identical individuals that live on the ocean floor. When two such populations come into contact, they may “fight” with each other for control of the local sea bottom (Turner et al. 2003). In what ways would you expect these creatures to behave more like the honey bee and other eusocial insects than like cooperatively breeding birds? Why? Use gene-centered thinking to predict how clonal organisms might still differ from the eusocial insects in the extent and nature of their altruism.

References

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