Author's Commentary on "The Gladiator Sparrow: Ethical Issues in Behavioral Research on Captive Populations of Wild Animals"

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When someone hears or reads about research on nonhuman animals and potential ethical problems with that research, the research typically has biomedical applications. This type of research uses non human animals as models for human beings, in experiments with new products or techniques. Ethical arguments against this research have generally fallen under two major views: a utilitarian view or a deontological (rights-based) view. From the utilitarian viewpoint, the question hinges on whether the study organism has the capacity for suffering; if so, we need to take that suffering into account.(1) According to this view, if we would not conduct an invasive and terminal experimental procedure on a one-week-old human infant, we probably would not be ethically justified in doing the same procedure on an adult dog.

From the rights-based viewpoint, the question of suffering is not the central criterion for evaluating our decisions about non human animal research. For this view, the major problem with non human animal research is that we are using living, sentient individuals as resources, as means to our ends.(2) Each animal is an "experiencing subject of a life" that has importance to that individual, regardless of the species in question and regardless of that individual's usefulness to us as researchers. Thus, according to this view, it is ethically wrong to ignore the rights of that individual animal and use it in an experiment as a model for disease or biological processes in our own species.

But what if the research does not have a direct, immediate application to our own species? What if, instead, we are interested in understanding the basic ecological

and evolutionary processes that govern the living world? One field of research taking this approach and using nonhuman animals as research subjects, is the field of animal behavior. Ethologists, comparative psychologists, and behavioral ecologists study the behavioral patterns of nonhuman animals and humans in both captive settings and in the organisms' natural settings. The goals of the research are to understand the behaviors animals use to feed, reproduce, communicate, and avoid predation -- how these behaviors develop, the mechanisms by which they are elicited, what functions they serve, and how they evolved in the species. Indeed, for those of us concerned about the use of nonhuman animals in research, a solid understanding of the ethology and natural history of the species is fundamental to know what might be painful to an animal or what is an abnormal environmental context or stimulus for a species. To arrive at this understanding, research with nonhuman animals is necessary. While mathematical modeling, computer simulations, and strictly observational data often serve as the foundation for generating predictions about behavior, experimental studies involving manipulations are often necessary to test the predictions.

How does one decide whether a given ethological experiment with non humans should be done -- whether it would be ethically justifiable? A decision model proposed by Bateson(3) and Driscoll and Bateson(4) provided a useful set of three criteria to consider: the likely amount of animal pain, the quality of the research question and design, and the certainty of benefit of the research. If these three criteria are envisioned as three axes stretching from a "low" ranking to a "high" ranking, a cube is generated. Not surprisingly, acceptable experiments with nonhuman animals occur in regions of the cube characterized by lower levels of animal pain, higher levels of research quality, and higher levels of certainty of benefit. Extreme amounts of animal pain would render an experiment not justified, even if the experiment were designed well and promised solid benefits. Alternatively, if an experiment exposed the subjects to little or no pain, it might be justified even if the experiment may not be strongly controlled or if the practical benefits or gains in knowledge were not perceived to be great. Further, a moderate amount of animal pain might be justified in a well-designed experiment if the study had a high likelihood of benefit.

An important extension of this decision cube would take into account what might be called a conservation criterion.(5) Research carried out on, or that might affect, an abundant species may not be justified on a species or population that was

threatened or endangered. This conservation concern can conflict with other ethical views of animal research. For example, if one were studying the natural history of a small island population of marsupials that was being decimated by an introduced rodent species, under this conservation criterion one might be justified in trying to eradicate the rodent species (an action the rights-based view, for example, would see as ethically wrong).(6) When joining the decision cube to the conservation question, one is therefore faced with a number of potentially conflicting criteria in trying to decide whether a particular research project in animal behavior might be justified.

"The Gladiator Sparrow" case touches on many of these issues. The research is designed to reveal basic principles and processes of behavioral development -- the benefit that might accrue from the research may have no direct application to human welfare whatsoever. Then again, understanding socialization processes during development that lead to certain behaviors being displayed in a nonhuman animal species may be of some significance to our understanding of human behavior. With basic research like the study described in the case, one simply cannot know beforehand the practical results that might be obtained. The questions raised in the case touch on our notions of whether some groups of animal species may be more or less preferable as study organisms in behavioral research and how this decision might relate to utilitarian or rights-based views. They also relate to the fact that with behavioral research, the questions asked and the design of research are often inseparable from the ethical issues confronting the research. However, the remainder of this commentary will focus on one of the most fundamental issues in this case -- studying aggression in a captive group of animals.

In this case, the behavior in question is aggressive behavior, and a study of aggression in and of itself brings many of these ethical issues to the forefront. Perhaps the most central issue in this case is that, by definition, research on aggression will involve pain and suffering for some of the animals. Further, the study of aggression in a captive setting raises the stakes. Although a captive setting allows for increased experimental control and for extremely detailed observations of behavior and its development, in this case it also exacerbates the problem of animal pain. In a captive setting, an individual being attacked by another cannot escape the interaction by leaving the area, as might be the case in the species' natural setting. This concern has led some authors to view any captive study of natural behaviors like aggression, infanticide, or predation -- or any field study with

manipulations to increase the likelihood of these events -- to be ethically problematic.(7)

In her discussion of ethical problems with studies of predation or aggression, Huntingford argued that the conflict between the pain involved in the experiment and the likely information acquired by doing the experiment will come out in favor of doing the experiment to the extent that six criteria are met:

1. The theoretical importance of the study is critically evaluated by several researchers, including researchers outside the particular field of aggression and predation studies.
2. The behavior of the subjects in the experiment is recorded in extreme detail.
3. Care is taken not to replicate unnecessarily experiments with the particular species or question; collaborative research with other workers in the field or of that species should be pursued.
4. Data are collected from natural (unmanipulated, noncaptive) settings as much as possible.
5. Models rather than live predators/aggressors are used whenever possible.
6. Aggression and other potentially dangerous or painful encounters are kept to a minimum and to as short a duration as possible.(8)

It is informative to look at the case of The Gladiator Sparrow in light of Huntingford's six criteria (as well as those of Bateson, Cuthill, and Driscoll and Bateson, discussed above).

1. We can assume that the Institutional Animal Care and Use Committee (IACUC) of Clarisse's university comprises several scientists and at least one community member and that her study passed the IACUC's criteria for theoretical importance. On the other hand, given the nature of studies of aggression or predation, it may be important for researchers such as Clarisse and her adviser to go beyond the IACUC and request commentary on the research question and design from several researchers in and outside the particular field.
2. We can perhaps assume, given the information in the case, that Clarisse has analyzed behavioral interactions of her birds in great detail. This information may be particularly relevant to the question of unnecessary pain and suffering of birds in her future work. If Clarisse has collected dozens of dependent behavioral measures in her work, she may be able to find antecedents of

aggression in the behavioral repertoires of the birds that allow her reliably to predict aggressive and potentially harmful behaviors. Thus, in future studies, she may be able to stage encounters using one of these antecedent behaviors as her measure of aggressive interaction.

3. This criterion is an area where Clarisse probably did not prepare sufficiently in establishing her research design. It also points to a weakness of present IACUC protocol applications. These applications typically ask for a Web-based literature search for related studies and for alternatives to research with nonhuman animals. Most Web-based literature searches only go back for the last two decades or so, however, which means that older studies may go unnoticed by some researchers. That could be particularly damaging in a field like animal behavior, where a great deal of very detailed natural history studies of species may be several decades old. In this case study, Clarisse did not contact Drs. Cabral and Marable, and she may not have been aware of their earlier work until well into her study. Clarisse should have known these researchers' work better than she apparently did, and should have contacted them before initiating her study. Knowing she might encounter extreme amounts of aggression among the birds, she may have been better able to minimize losses in her study.
4. Had Clarisse herself had first-hand knowledge of and data on aggression in the wild with the particular population of Gladiator sparrow she would study, she may have been more ready to deal with the level of aggression that would occur in her birds. On the other hand, if she were studying a population whose behavioral interactions had been studied thoroughly by other researchers, it may not be necessary for her to spend a year or more observing the behavior of the birds in the natural setting.
5. It is difficult to tell from the case study whether the use of models rather than live birds might have been possible in Clarisse's study. If she plans to carry out more manipulated and experimental tests of aggression and/or responses to aggression in the future, however, it may be possible to use stuffed models of the sparrows in aggressive postures or playbacks of aggressive vocalizations, rather than using real birds to test subjects' behavior.
6. This point is similar to the discussion brought up in Criterion 2. If Clarisse were able to know with a high reliability that a given behavior "A" of a bird virtually always led to fighting and harm to another bird, she may be able to use behavior "A" as her measure of aggression, and stop any interactions between two birds after that behavior is displayed by one of the birds.

To summarize, Clarisse seems to have done a fair amount of preparation for her research, and she has met the expectations and concerns of her IACUC in developing her study. On the other hand, given the nature of her research project, she perhaps should have prepared more thoroughly. Had she known the extent of the aggression she would observe (and from the case it seems likely she could and should have known this), she could have been ready for what she would encounter with the birds. She could have set up testing situations, or in general could have been better prepared, to minimize the losses in her study as well as the amount of pain suffered by the birds, while still collecting the data required to answer her research questions.

- (1)P. Singer, Animal Liberation (New York: New York Review and Avon Books, 1975).
- (2)T. Regan, The Case for Animal Rights (Berkeley: University of California Press, 1983).
- (3)P. Bateson, "When to Experiment on Animals," New Scientist, 20 February 1986: 30-32.
- (4)J. W. Driscoll and P. Bateson, "Animals in Behavioral Research," Animal Behaviour 36 (1988): 1569-74.
- (5)I. Cuthill, "Field Experiments in Animal Behaviour: Methods and Ethics," Animal Behaviour 42 (1991): 1007-1014.
- (6)See Cuthill, "Field Experiments."
- (7)See M. Bekoff, "Experimentally Induced Infanticide: The Removal of Birds and Its Ramifications," Auk 110 (1993): 404-406; M. Bekoff and D. Jamieson, "Reflective Ethology, Applied Philosophy, and the Moral Status of Animals," in P. P. G. Bateson and P. H. Klopfer, eds., Perspectives in Ethology, Vol. 9 (New York: Plenum Press, 1991); S. T. Emlen, "Ethics and Experimentation: Hard Choices for the Field Ornithologist," Auk 110 (1993): 406-409; and F. B. Orlans, T. L. Beauchamp, R. Dresser, D. B. Morton, and J. P. Gluck, The Human Use of Animals: Case Studies in Ethical Choice (New York: Oxford University Press, 1998), Chapter 8.
- (8)F. A. Huntingford, "Some Ethical Issues Raised by Studies of Predation and Aggression," Animal Behaviour 32 (1984): 210-215.