Letter to the Editor

RE: Ethical Issues Concerning Animal Research Outside the Laboratory

Balancing the Benefits of Wildlife Research Against Potential Harm

We agree with Russow and Theran (2003) that all research involving animals, including wildlife research, requires a balancing of the value to be gained against the potential harm caused by research methodologies. However, we are concerned that Russow and Theran's emphasis on "ethical harm" could mislead readers who lack experience with or knowledge of how wildlife research is conducted and are unaware of its contribution to scientific knowledge, wildlife conservation, and the well-being of animals in the wild. Here, we attempt to balance Russow and Theran's presentation of the issues by providing insight into the study of animals in the wild and the potential benefits to be derived therefrom. We also address assertions made by Russow and Theran regarding "distress," the use of controls in scientific studies, impacts on populations and ecosystems, and public perceptions.

Wildlife biology is motivated by the need and desire to understand the lives of animals in natural environments. In recent years, an increasing number of studies have been undertaken to develop appropriate conservation or management strategies in a world in which most species face challenges resulting from anthropogenic changes to the landscape. In these cases, the study species, other species that share their habitats, and often the individual study animals themselves, benefit from the research. In addition, a growing number of studies of fundamental scientific issues in behavioral ecology and ecophysiology are conducted on wild animals under natural conditions, as scientists have come to understand the limitations of laboratory and captive work in those areas. Whether the primary motivation of field studies is the advancement of scientific knowledge or the acquisition of information used for management purposes, wildlife research yields results that are directly relevant to the welfare and conservation of the species, communities, and ecosystems studied. Indeed, species conservation would not be possible without a solid base of information derived from field studies and it could be argued that conservation decisions and actions made without the benefit of a scientific basis could be ineffective or even harmful.

Most wildlife biologists continually interact with their study animals, and consequently are uniquely knowledgeable about them and uniquely concerned with their welfare. Whatever the purpose of the studies, biologists must evaluate how their study animals are affected by the study methods. They strive to minimize adverse effects—for ethical and scientific reasons—to ensure that the scientific results and the management recommendations that flow from them will be valid. Therefore, wildlife biologists continually observe and measure responses to research activities. An extensive scientific literature exists on tests for adverse effects of field procedures (e.g., Nisbet 2000), and peer-reviewed guidelines for the use of wild animals in research have been published (e.g., Ornithological Council 1999). Many scientific journals require authors to provide evidence that animal welfare and professional guidelines have been followed, request peer reviewers to identify possible failures to do so, and reject papers based on ethically questionable practices. Wildlife biologists who study vertebrates understand that their subjects may experience transient negative effects (such as "fear" or "stress") when handled or disturbed, and so they seek to minimize those effects, and are satisfied when behavioral and physiological changes are short-lived and functional effects are undetectable.

The discussion by Russow and Theran of "ethical harm" is of concern for several reasons. We reject the notion that ethical considerations in wildlife biology somehow differ from those pertaining to laboratory-based research involving animals. Therefore, we reject Russow and Theran's assertion that any infringement on the wild nature of the study animals constitutes "ethical harm."

More importantly, ethical harm cannot be observed, measured, or assessed and therefore cannot be balanced against benefits. The IACUC should consider only the observable or measurable impacts of methodology—such as changes in behavior, physiology, or function in the wild. "Ethical harm" and "distress" or other human labels are not objective and are not capable of measurement. For instance, Russow and Theran assert that all trapping and handling will cause distress but the concept of "distress" is inherently subjective, and "distress" has proved impossible to quantify or define for non-human animals. (The term is not defined in the Animal Welfare Act, the Public Health Service Policy on Human Care and Use of Laboratory Animals, the ILAR *Guide for the Care and Use of Laboratory Animals* (the

Guide), or the US Government Principles for the Utilization and Care of Vertebrate Animals Used in Testing, Research, and Training). This is not just a philosophical issue, but has practical implications for biologists in selecting methods for handling and manipulating animals, and for institutional animal care and use committees (IACUCs) in reviewing proposed protocols. Because the term "distress" is subjective, undefined, and unquantifiable, it cannot be said that trapping and handling—or any methodology—causes distress; this is simply not a useful construct. Biologists should and do recognize that research methods may have negative impacts, and that they must make every effort to minimize those impacts, whether transitory or not, minor or more serious.

Also of concern to us are the statements "Anecdotal evidence suggests that even a study as seemingly benign as playing bird songs can have an impact on the breeding population in the area studied" and "Releasing animals into a new area alters the ecosystem." They imply that it is the responsibility of IACUC committees to ". . . protect and preserve both individual species and the environment." We remind readers that in the case of research involving wild birds and all endangered species, the issue of impact on populations and species, or on ecosystems, is addressed by an extensive permitting system. The US Fish and Wildlife Service issues the permits that are mandatory under the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, the Endangered Species Act, and other wildlife protection laws. A permit issued by this agency indicates that the research—which has been reviewed by agency biologists before the permit is issued—is meritorious, and that any anticipated impact on the population or the species is warranted. Land management agencies, including the National Wildlife Refuge system, the National Park Service, the Bureau of Land Management, and the Forest Service all issue permits for research on these federal lands, so the impacts on the ecosystem have already been assessed and found to be acceptable. Many states also require permits for research on state lands. These agencies and their biologists have far more expertise with regard to weighing the balance of research value against possible population-level impacts and impacts on the ecosystems than do most IACUC members. We urge the IACUCs to respect the judgment of these agencies, as evidenced by the issuance of required permits.

We are concerned, too, with Russow and Theran's statement: "Sham surgery to establish a control group in a clinical trial setting, for example, would constitute malfeasance." We hope that the readers recognize that the use of the word "sham" for scientifically-required controls is not a pejorative, but is in fact standard terminology. The paragraph in which this sentence appears was ambiguous enough to have been read different ways by several readers. The statement may refer to sham controls generally, or to the specific example they offer. Establishing appropriate control groups for experimental or other comparisons is an absolute requirement if scientifically-valid results are to be obtained. Sham controls are used in studies involving manipulative procedures, in order to ascertain that the treatments themselves, rather than other aspects of the procedures, were responsible for observed effects. It would be difficult to design a sham control that does not involve all elements of the procedure other than the actual treatment.

The final statement of concern is their assertion that because "research outside the laboratory is more open to public scrutiny," that its ethical values should be reviewed more carefully by the IACUC. Putting aside the difficulty (and nonrelevance) of determining if a potential negative public reaction might be "reasonably informed," we reject this notion and assert that all research on animals should be held to the highest standards and the same intensity of review. Further, we again assert that examining ethical values does not serve the interests of animal welfare, the IACUC, or the researcher. Ethical values are the reason we have animal welfare laws and regulations, but the IACUC has to work within an objective framework of observable or measurable impacts in evaluating the potential benefit of the research. In addition, fieldwork incorporating humane methodologies and providing valuable biological information can serve important public education functions. Citizens seeing "science in action" come away with an appreciation otherwise impossible to acquire, and educating the public has been an important component of many field-based research programs.

The evaluation of potential impacts of methodologies on individuals and of the value of the research, in the context of the challenges of fieldwork, requires specialized knowledge. In our experience, wildlife biology is poorly represented among the organizations concerned with the humane treatment of animals in research, despite the fact that practicing wildlife biologists are more knowledgeable than any other group about their subjects and research methodologies. The first edition of the ARENA/OLAW Institutional Animal Care and Use Committee Guidebook (ARENA/OLAW Guidebook) did not include any field biologists among its authors and editors. The ILAR *Guide* is similarly lacking in input from wildlife biologists. We share responsibility for this situation and are taking measures to correct it. For instance, the Ornithological Council contributed to the second edition of the ARENA/OLAW Guidebook, encourages field biologists to volunteer to serve on IACUCs, and serves as a source of expert information for IACUC members who have questions about ornithological research.

The lack of experience and expertise in wildlife biology on the part of those who set standards and review protocols for research involving live animals makes it likely that the relationship between the "worth" of particular studies and the perceived effects on study subjects may be misjudged. We thus encourage IACUC members who have limited expertise in wildlife biology to consult with outside experts, as recommended by the ARENA/OLAW Guidebook. If appropriate experts cannot be found at a particular institution, professional societies can recommend individuals qualified to fill that role.

In summary, we applaud Russow and Theran for bring-

ing attention to the need for IACUCs to seriously consider the welfare of wildlife studied in research. However, we urge IACUC members charged with reviewing field study protocols to seek professional assistance in weighing the values, methodologies, and possible ecological and public impacts of such studies, for the benefit of all involved.

References

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The Authors Reply

First, we would like to thank Nisbet and Paul for their very thoughtful letter, which helps to move the discussion forward. We would also like to point out that we agree with several of their main points, in particular the following: (1) the importance of having knowledgeable experts on IACUCs and any group responsible for formulating legislation or regulations on animal research, (2) the fact that ethical values are the core of animal welfare laws, and (3) the benefits to both humans and animals that can accrue from responsible and well-designed research. However, they raise several issues that require further scrutiny. Two of the most crucial issues are the role of ethics in evaluating scientific research (indeed, the whole relation between science and ethics) and the more specific challenge to our use of the term "distress." The designated role of IACUCs also requires clarification.

Ethics and the sciences are two different disciplines, but they must work hand in hand. The benefit of this synergy has been recognized for nearly half a century in human research, as witnessed by the outrage about the Tuskegee studies on syphilis and the many "experiments" in Nazi death camps, as well as the less dramatic emphasis on designing better informed consent agreements (Jones 1993). Good ethical decisions must be informed by good science, but they require going beyond the question of whether good scientific data might result. Debates rage even today about whether the data from Nazi hypothermia studies should be used—not because the science was flawed, but because of the methods used to obtain these data (Moe 1984; Sheldon 1989).

Nisbet and Paul mention many controls that they believe are already adequate to ensure that wildlife research meets the highest standards ranging from peer review to the Endangered Species Act. It must be remembered, however, that not all research is peer reviewed, and when it is, most journals and conferences rely solely on scientists who have often been trained to look just at the science, not the ethics. The legislation they cite covers only a small percentage of the animals used in wildlife research—animals from black bears to field mice would not be covered unless the research were conducted on federal land. Even then, oversight and review are minimal and often the responsibility of personnel who are untrained in the complexities of evaluating research projects.

There are, of course, observable and measurable impacts of methodology, as Nisbet and Paul mention. They are often the best indications of whether one method of capturing, handling, or marking an animal is better than another. However, we cannot ignore the fact that National Institutes of Health guidelines specifically state that if a procedure causes distress to a human, we must assume that it will also cause distress in an animal, unless we have good reason to think otherwise. Thus, their proposed limitations on IACUCs are contrary to the basic guidelines that an IACUC must follow. Considering "distress"—using that specific term—is part of their charge.

There is another reason for resisting the suggestion that "*transient* negative impact" is preferable to "distress" when evaluating the impact of research on animals. Some of the impact may not be immediately obvious, but can have long-term effects. Migratory, territorial, or social animals may show long-term changes that would not be immediately obvious. This evidence is particularly important to keep in mind in evaluating wildlife research, because many studies involve only brief contact or observation of the animals.

Finally, Nisbet and Paul "reject the notion that ethical considerations in wildlife biology somehow differ from those pertaining to laboratory-based research involving ani-

mals." We certainly agree that the general ethical and regulatory principles remain the same, although the two cases pose different specific questions that an IACUC would have to consider. Methods of capture are rarely an issue in laboratory research. Conversely, the quality of housing may not be a factor in wildlife research. Selective breeding and frequent contact with humans can produce animals that are more acclimated to handling and living in a laboratory setting. Thus, we agree with Nisbet and Paul's plea for biologists to become more involved in IACUC deliberations, and lend their expertise to consider these important questions.

To summarize, we have argued that (1) research must be evaluated against ethical as well as scientific standards, and (2) IACUCs are charged with just this responsibility and with trying to determine the level of pain or distress to which animals might be subject. This argument by no means ignores or undervalues the importance of much of the research, but rather highlights the complexities of evaluating the ethical dimension of animal research, particularly wildlife research.

References

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