The IACUC's Wild Classification

The research portfolio at Great Eastern University (GEU), a medical school, is primarily biomedical research, with approximately seven Department of Environmental Biology scientists conducting field research activities involving wild species of animals. The collective expertise of GEU's IACUC members qualifies the committee to review and approve proposed animal activities in support of its program; however, wildlife studies submitted for review and approval always created a unique challenge. Consequently, the IACUC decided to develop guidance documents, based on the regulatory requirements, to ensure consistency within the program and adherence to the federal standards and policies. The IACUC invited the IACUC Administrator and the GEU wildlife biologists to participate in the development of the relevant documents, which would then be voted upon and instituted as policies at GEU.

The Administrator initiated the process by providing a general summary on the regulatory expectations and specific information listed in the Animal Welfare Act Regulations (9 CFR Part 1.1 Definitions)[1]. They discussed the primary difference between a field study and field research and what determines the appropriate classification. For example, any activity that involves an invasive procedure, harms, or materially alters the behavior of an animal would be classified as field research and, consequently, require IACUC review and approval. IACUC members and the wildlife biologists agreed:

- That the decision of whether an activity involving wild species was research or a field study had to be made by the IACUC;
- That materially altering an animal's behavior would require an action that affects an animal's behavior more than momentarily; and
- To apply the U.S. Government Principle IV[2] (i.e., procedures that cause pain or distress in human beings may cause pain or distress in other animals) when determining if a procedure is considered invasive or harmful.

As a result, the IACUC approved two policies to help govern wildlife studies at GEU. The first was simple and required all investigators working with wild species to provide a summary of the proposed activities so the IACUC could classify them as field research or a field study. The second policy indicated that US Government Principle IV must be observed and that if a proposed activity caused more than momentary pain or distress to an animal, the activity would be considered potentially harmful and/or invasive and IACUC review and approval was required (i.e., the activity was field research). The IACUC made a special note in the policy regarding the capture of bats and birds using mist netting; specifically, if the activities subsequent the capturing procedure (i.e., mist netting) did not exceed 15 minutes, and the overall behavior of the animal was not altered, the work would be classified as a field study.

Although the policies were approved by a majority vote, the non-affiliated IACUC member expressed a minority view during semi-annual program review. She indicated that she believes the behavior of the animal is materially altered the moment it is

A WORD FROM OLAW AND USDA

In this scenario, questions arise from the non-affiliated member about what activities with wildlife are exempt from IACUC review.

Response from OLAW

The IACUC is responsible for oversight of Public Health Service-funded live, vertebrate animal activities including activities conducted in the field and for those supported by the National Science Foundation, the Veterans Health Administration, and the National Aeronautics and Space Administration[1]. It is imperative that the IACUC have a preliminary process for review of the procedures and the expected impact on the animals and the ecosystem[1,2]. Observational or behavioral activities, such as photography and feces collection, are not as likely to alter or influence the activity of the animals as those that involve capture (including mist-netting), handling, confinement, transportation, or invasive procedures. If the activity is expected to alter or influence the activities of the animals, then further IACUC protocol review and approval is required. Unique to wildlife field research is the potential impact on populations. The IACUC may find its review and decisions affected by local, state, or federal permit requirements[2]. Regarding the non-affiliated member's minority view, the PHS Policy requires its inclusion in the Annual Report to OLAW[3,4].

Response from USDA

This scenario illustrates some of the challenges faced by IACUCs when considering investigations involving free-living wildlife and determining whether they should be classified as field research or a field study. Both respondents have further highlighted many of the points of concern that lie at the heart of this issue, including interpretation of the regulatory language and definitions therein. In this case, the IACUC had to consider whether the use of mist-netting would constitute causing, or potentially causing, harm or materially altering the behavior of the bats or birds under investigation. The USDA has explicitly placed the authority to make these decisions with the IACUC, as the subject matter experts[5,6]. Further, if the IACUC determines it does not have sufficient expertise among its members when considering a particular activity, they have the authority to invite consultants to assist them in the process[7]. ❐

Patricia Brown[1] ✉ and Betty Goldentyer[2] ✉

[1]Director, Office of Laboratory Animal Welfare, OER, OD, NIH, HHS, Bethesda, MD, USA. [2]Deputy Administrator, Animal Care, APHIS, USDA, Riverdale, MD, USA.

✉*e-mail: brownp@od.nih.gov; betty.j.goldentyer@usda.gov*

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References

1. Public Health Service. *Policy on Humane Care and Use of Laboratory Animals* – Frequently Asked Questions. Applicability of the PHS Policy, Question No. A.6. *Does the PHS Policy apply to animal research that is conducted in the field?* (US Department of Health and Human Services, Bethesda, MD, USA). online at: https://olaw.nih.gov/faqs#/guidance/faqs?anchor=question50290
2. Institute for Laboratory Animal Research. *Guide for the Care and Use of Laboratory Animals* 8th edn. (National Academies Press, Washington DC, 2011). p. 32.
3. Public Health Service. *Policy on Humane Care and Use of Laboratory Animals* – Frequently Asked Questions. Institutional Reporting to OLAW, Question No. C.6. *What are PHS requirements for recording and reporting minority views?* (US Department of Health and Human Services, Bethesda, MD, USA). online at: https://olaw.nih.gov/faqs#/guidance/faqs?anchor=question50311
4. Office of Laboratory Animal Welfare, National Institutes of Health. *Annual Report to OLAW*. 3. Instructions. https://olaw.nih.gov/resources/documents/annual-report.htm#instructions
5. USDA Animal Welfare Regulations 9 CFR § 2.31(a).
6. USDA Animal Welfare Regulations 9 CFR § 2.31(d)(1).
7. USDA Animal Welfare Regulations 9 CFR § 2.31(d)(3).

captured, and studies involving mist netting should always be classified as research.

What are your thoughts? ❐

Lauren Danridge ✉ and Bill Greer ✉
Animal Care & Use Office, University of Michigan, Ann Arbor, Michigan, USA.
✉*e-mail: danridlm@umich.edu; wggreer@umich.edu*

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References
1. Animal Welfare Act Regulations 9 CFR Part 1.1 https://www.aphis.usda.gov/animal_welfare/downloads/bluebook-ac-awa.pdf
2. Public Health Service. *PHS Policy on Humane Care and Use of Laboratory Animals* (U.S. Department of Health and Human Services, National Institutes of Health, Bethesda, MD, 2015).

What Constitutes Material Alteration of Behavior?

At question is what constitutes 'material alteration' of behavior and whether the IACUC is the one empowered to make that determination. USDA APHIS has repeatedly declined to define the operative terms 'invasive', 'harm', and 'material alteration', except by example, and have instead relied upon the IACUC to consider each situation and arrive at a decision. Comments from the final rule for the Field Studies definition[1] provide important insights regarding this question and the intent of the regulations. USDA APHIS noted (pg 6312) statements from two commenters that "…any study has the potential to harm or materially alter the behavior of animals under study; therefore no study could be classified as a field study." Similarly, in responding to a comment on implantation of radiotransmitters on pg 6313, USDA APHIS responded that implantation by "…perforation or incision in a manner that could cause more than short-lived pain or distress may materially alter the behavior of the animal for more than a short period of time." In addition to the foregoing comments, the USDA APHIS Animal Care Inspection Guide[2] states that "[a]nimals euthanized, killed, or trapped, and collected, such as for study or museum samples, from their natural habitat via humane euthanasia" are not to be included on the USDA annual report. Finally, the recent Wild Animals Tech Note[3] makes clear that death by methods that meet the regulatory definition of euthanasia are not considered "harm". These responses by USDA APHIS to the final rule along with language in the Inspection Guide and the Tech note make clear that the intent was not to exclude all activities with free-ranging animals, but only those that meet some undefined level of material alteration of behavior.

In the case of undefined terms, the IACUC is the body charged with considering activities and making a determination as to whether they meet the regulatory definition. Additional wording in the final rule (pg 6313) states that "[m]embers of the IACUC are required to have the experience and expertise to assess the research institution's animal programs, facilities, and procedures, including review of all proposed and ongoing research." The examples for material alteration of behavior provided in the Tech Note depict activities likely to alter normal patterns for long periods of time or to impact survival or reproduction of individuals (fitness in evolutionary terms). Capture, particularly in traps, can result in some animals becoming trap wary and thus more difficult to capture a second time, but capture can also result in animals becoming more prone to capture for the food reward used as bait. In neither of these cases are animals behaving in an unnatural way; they are simply responding to input, including stressors in their environment, and altering behavior as they would if the stressors were native predators or situations encountered in the course of daily activities. In other words, stress and distress are distinct, with only distress likely to cause a material alteration of behavior. Similarly, activities that do not disrupt the animal's ability to express normal species-specific behaviors and responses and that do not impact survival or reproduction should not be considered material alteration of behavior. These considerations aside, because the extent of impact is likely to vary among species, environments, and seasons, determination of whether specific activities meet the threshold of material alteration of behavior is the province of the IACUC and should be considered during protocol review. ❐

Robert S. Sikes[1] ✉ and L. Michael Romero[2] ✉
[1]*Department of Biology, University of Arkansas at Little Rock, Little Rock, AR, USA.* [2]*L. Michael Romero, Tufts University, Department of Biology, Medford, MA, USA.*
✉*e-mail: rssikes@ualr.edu; Michael.Romero@tufts.edu*

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References
1. 9CFR Part 1 [Docket no. 98—043—2) https://www.federalregister.gov/documents/2000/02/09/00-2922/field-study-definition
2. USDA APHIS Animal Care Inspection Guide https://www.aphis.usda.gov/animal_welfare/downloads/Animal-Care-Inspection-Guide.pdf
3. USDA & APHIS, *Research involving free-living wild animals in their natural habitat* (Tech Note, 2021) https://www.aphis.usda.gov/animal_welfare/downloads/tech-note-free-living-wild-animals.pdf

The Goal Should Not Be To Find Loopholes In Coverage

The Great Eastern University's IACUC seems to be searching for reasons not to review some wildlife projects. The IACUC has limited experience with wildlife research, probably leading to discomfort and perhaps avoidance when faced with such submissions. The presence of a few wildlife biologists at the university (but not necessarily on the IACUC) does not guarantee expertise in mist-netting. The undefined terms, "invasive procedure, harms, or materially alters the behavior of", are used in the Animal Welfare Act regulations (9 CFR 1.1) to determine if a field project is excluded from classification as a field study. A recent USDA APHIS Tech Note also did not define the terms; instead, it offered a few examples, most of which are rarely used in wildlife research[1]. The lack of explicit definition of regulatory terminology continues to present interpretation challenges for many IACUCs unfamiliar with wildlife research.

I agree with the non-affiliated member that the behavior of the animal is materially altered the moment it is captured. The term "materially altering the behavior" does not refer only to the effects of manipulations done after capture; capture is enough. Capture is the wildlife research technique most likely to cause unintentional morbidity and mortality and it clearly causes distress. Done properly, mist-netting is fairly safe but it is not benign. About 70% of the mortality associated with mist-netting birds occurs while the bird is still in the net[2]. However, the consequences of mist-netting are not limited to death, as there is a continuum of effects, in terms of both time and severity[3]. Birds and bats are not mist-netted solely to catch them and it makes no sense to exempt the capture technique if the research procedures that follow capture also need review.

The IACUC's conclusion that "materially alters an animal's behavior" requires an action affecting behavior more than momentarily has no basis in either law or in science. There is no agreed-upon definition for "momentarily", so this decision merely adds another undefined term to the list. The IACUC later states that an arbitrarily chosen post-capture limit of 15 minutes for undefined procedures to be permissive for designation as a field study, not requiring IACUC review. Would a procedure like tissue biopsy or transmitter attachment be allowed without review so long as it could be accomplished in under 15 minutes from capture? The important thing is what is done to the animal, not how long it takes. Also, if cooperators from another institution have an IACUC with a shorter time limit for procedures after capture, does that mean that they cannot participate in the

COMPLIANCE CONSIDERATIONS

The Protocol Review coordinators offer the following compliance considerations:

1. What is a field study and what is field/wildlife research?

Field study is specifically defined in the AWAR as "a study conducted on free-living wild animals in their natural habitat. However, this term excludes any study that involves an invasive procedure, harms, or materially alters the behavior of an animal under study."[1] To be clear, to qualify as a field study, the activities cannot involve any of these stipulations[2].

"Examples of activities involving free-living wild animals in their natural habitat that meet the definition of a field study and are therefore exempt from IACUC review of those activities related to the care and use of the animals:

Include but are not limited to procedures where pain/distress is slight or momentary and does not impact well-being:

- Observational studies where no animals are captured or handled.
- Observational studies where human presence does not impact animal behavior."[3]

It follows, then, that wildlife/field research are those studies involving wild animals that do not meet the criteria to qualify as a field study.

2. How do IACUCs know what constitutes as "materially altering"?

Other than the criteria for including or excluding activities as field study, the term "materially altering" has no definition in federal mandates. In fact, IACUCs are provided the authority to evaluate whether an activity with free-living wildlife in its natural habitat is regulated under the AWA."[3]

This flexibility means that the IACUC could, for example, determine that the behavior of an animal is materially altered when the activity being conducted changes the animals' ability to live normally (vs. if the activity had not been conducted) and/or have an impact on the welfare of the animal (i.e., increasing its vulnerability, preventing it from adapting or coping, affecting the long-term survival or health/wellbeing of the animal).

3. Is mist-netting field research?

The IACUC must determine whether an activity qualifies as a field study.

4. What should the IACUC do about the minority view?

Minority views must be included in the Annual Report to OLAW[4], and include "the minority view(s) exactly as submitted by the IACUC member(s) i.e., in the submitting IACUC member's words"[5]

The non-affiliated member contributes to the diversity of perspectives in the membership of the committee and represents the general community interests in the proper care and use of animals[6]. Consequently, it would behoove the IACUC, and the institution, to ensure that the IACUC policies are developed with the general community interests in mind. Although it would be self-imposed regulatory burden, the GEU IACUC could qualify mist-netting (in and of itself) as field research. ❐

Lauren Danridge ✉ and Bill Greer ✉
Animal Care & Use Office, University of Michigan, Ann Arbor, Michigan, USA.
✉*e-mail: danridlm@umich.edu; wggreer@umich.edu*

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References

1. Animal Welfare Act Regulations, 9 CFR Part 1.1 https://www.aphis.usda.gov/animal_welfare/downloads/bluebook-ac-awa.pdf
2. USDA, APHIS https://naldc.nal.usda.gov/catalog/5238106
3. USDA, APHIS, Tech Note: *Research Involving Free-living Wild Animals in Their Natural Habitat*. https://www.aphis.usda.gov/animal_welfare/downloads/tech-note-free-living-wild-animals.pdf
4. OLAW FAQs. *6. What are PHS requirements for recording and reporting minority views?* https://olaw.nih.gov/guidance/faqs#c6
5. OLAW. *Instructions for the 2021 Annual Report*. https://olaw.nih.gov/resources/documents/annual-report.htm
6. NIH OLAW. *Guidance on Qualifications of IACUC Nonscientific and Nonaffiliated Members* https://grants.nih.gov/grants/guide/notice-files/not-od-15-109.html

GEU project or co-author a paper? Setting an arbitrary time limit to determine when a protocol needs review contributes little to animal welfare and the creditability of science in general.

In real life, most IACUCs review all new project proposals rather than struggling to interpret undefined and vague regulatory language to establish loopholes in coverage. Many journals require research reported in submitted manuscripts to have been approved by an IACUC[4]. A journal editor reading a submitted manuscript describing capture by mist-netting and subsequent procedures may reject an author's assertion that their IACUC was justified in not reviewing their research. Data gathered without IACUC approval should not be published. ❐

Daniel M. Mulcahy ✉
Retired Wildlife Veterinarian, Anchorage, AK, USA.
✉*e-mail: drdanielmulcahy@gmail.com*

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References

1. USDA & APHIS, *Research involving free-living wild animals in their natural habitat* (Tech Note, 2021) https://www.aphis.usda.gov/animal_welfare/downloads/tech-note-free-living-wild-animals.pdf
2. Clewley, G. D., Robinson, R. A. & Clark, J. A. *Ecol. Evol.* **8**, 5164–5172 (2018).
3. Spotswood, E. N. et al. *Meth. Ecol. Evol.* **3**, 29–38 (2012).
4. Mulcahy, D. M. *ILAR J.* **58**, 371–378 (2017).