The Ornithological Council

PROVIDING SCIENTIFIC INFORMATION ABOUT BIRDS

American Ornithologists' Union

Association of Field Ornithologists

CIPAMEX (Sociedad para el Estudio y Conservación de las Aves en México)

Cooper Ornithological Society

Neotropical Ornithological Society

Pacific Seabird Group

Raptor Research Foundation

Society for the Conservation and Study of Caribbean Birds

Society of Canadian Ornithologists/ Société de Ornithologistes du Canada

The Waterbird Society

Wilson Ornithological Society

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Dear Dr. Brown,

Please accept these comments regarding the OLAW's announcement (1 March 2013) that
OLAW encourages PHS-Assured institutions to begin using the 2013 AVMA Guidelines when reviewing research projects as soon as possible, and expects full implementation after 1 September 2013.

We hope it will be evident to you after reading these comments that it is time for the PHS to formally recognize alternate, biologically appropriate standards for wildlife research, particularly as to euthanasia standards, because the AVMA Guidelines are simply biologically inappropriate for wildlife studied in the field in most circumstances. Specifically, we call on the PHS to issue guidance that states clearly that in the case of wildlife, it is appropriate for the IACUC to approve research protocols that will be consistent with the guidelines published by the American Society of Mammalogists, the Ornithological Council, and the American Society of Ichthyologists and Herpetologists.

While the AVMA Guidelines were in the revision process, we participated as fully as allowed by the AMVA. We submitted the available information as to thoracic compression. Based upon the we information submitted to the AVMA and the complete absence of evidence offered by the AVMA to support its position as to euthanasia methods used in the field generally and specifically as to thoracic compression, we can state that the new Guidelines lack a sound scientific basis. The application of the new AVMA guidelines in the context of wildlife biology conducted in the field setting will have serious negative consequences for wildlife research without any scientific evidence that these Guidelines are necessary or advisable as the sole source of authority as to humane practices in a context for which they were not intended. For these reasons, we strongly urge OLAW to issue an addendum stating that with regard to wildlife biology conducted in field settings, compliance with PHS Policy can

be met using the standards established by the scientific societies of biologists who are experts in that kind of research. Specifically, we request that the PHS Policy be amended to read:

> *g. Methods of euthanasia used will be consistent with the recommendations of the American Veterinary Medical Association (AVMA) Panel on Euthanasia (PDF), unless a deviation is justified for scientific reasons in writing by the investigator.* ***In the case of wildlife, methods of euthanasia will be consistent with the Ornithological Council's Guidelines to the Use of Wild Birds in Research, Guidelines of the American Society of Mammalogists for the Use of Wild Mammals in Research, and the American Society of Ichthyologists and Herpetologists' Guides to the Use of Fishes in Research and the Use of Amphibians and Reptiles in Research.***

The Ornithological Council has published a new fact sheet (Appendix A) and a position statement (Appendix B) pertaining to thoracic compression. Both are appended to this letter.

Our objection to the recognition by PHS of the AVMA guidelines rests on three issues:

- The guidelines are by their very terms inapplicable to most wildlife research and even to a great deal of biomedical research; and
- The guidelines are based on human social constructs rather than biologically meaningful distinctions;
- The AVMA's position regarding thoracic compression is without a scientific basis and is inconsistent with the application of metrics as to other methods considered by the Guidelines

We also raise procedural and legal concerns regarding the recognition by PHS of the guidelines of an outside organization to the exclusion of other guidelines and without independent peer review by scientists with relevant expertise, all in contravention of the HHS and NIH information quality guidelines.

Inapplicability of the AVMA Guidelines to most wildlife research

By its very terms, the AVMA guidelines do not apply to some forms of research, including most wildlife biology conducted in the field setting. It is therefore inappropriate for the PHS to recognize these standards as appropriate for compliance with PHS Policy with regard to those types of research.

The AVMA characterizes euthanasia as a matter of **both** purpose and technique. The Guidelines say:

> Humane disposition reflects the veterinarian's desire to do what is best for the animal and serves to bring about the best possible outcome for the animal. Thus, euthanasia as a matter of humane disposition can be either intent or outcome based. Euthanasia as a matter of humane disposition occurs when death is a welcome event and continued existence is not an attractive option for the animal

> as perceived by the owner and veterinarian. When animals are plagued by disease that produces insurmountable suffering, it can be argued that continuing to live is worse for the animal than death or that the animal no longer has an interest in living. The humane disposition is to act for the sake of the animal or its interests, because the animal will not be harmed by the loss of life. Instead, there is consensus that the animal will be relieved of an unbearable burden...euthanasia does not deprive the animal of the opportunity to enjoy more goods of life (i.e., to have more satisfactions fulfilled or enjoy more pleasurable experiences). And, these opportunities or experiences are much fewer or lesser in intensity than the presence or intensity of negative states or affect. Death, in this case, may be a welcome event and euthanasia helps to bring this about, because the animal's life is not worth living but, rather, is worth avoiding. What follows the decision to euthanize (end suffering) is a humane technique that minimizes pain, distress and negative effect to the animal.

The AVMA posits that euthanasia as a matter of humane disposition occurs when death is a welcome event and continued existence is not an attractive option for the animal as perceived by the owner and veterinarian." This "rule" will apply in the case of wildlife research in only one situation: where the researcher did not intend to kill the animal, but the animal was injured and it would be more humane to end its life than to simply walk away. However, in most cases, animal lives are taken in the course of wildlife research as a matter of the study design; these are usually otherwise healthy animals – a situation in which death would not be a welcome event and continued existence is precisely the option that the animal itself seeks to obtain. It would be nonsensical to suggest that the humaneness of the method differs among these two cases.

As the AVMA Guidelines would be, by definition, inapplicable to most taking of animal life in the context of wildlife research, it would be impossible for a wildlife researcher to ever comply with PHS Policy. No matter how humane the technique, when a healthy animal is sacrificed for scientific research, it is not, as the AVMA defines euthanasia, an

> … act for the sake of the animal or its interests, because the animal will not be harmed by the loss of life. Instead, there is consensus that the animal will be relieved of an unbearable burden...euthanasia does not deprive the animal of the opportunity to enjoy more goods of life (i.e., to have more satisfactions fulfilled or enjoy more pleasurable experiences).

Although the AVMA Guidelines delve into numerous methods of killing non-domestic or non-pet animals, the entire document is based on a premise that entails the ending of life to relieve suffering. "Death, in this case, may be a welcome event and euthanasia helps to bring this about, because the animal's life is not worth living but, rather, is worth avoiding." This is a fine statement with regard to the traditional use of euthanasia by most veterinarians – the ending of a life of a pet or other domestic animal suffering the effects of old age, injury, or illness. It could be extended to the ending of life of animals studied in research if the research resulted in injury or other conditions that cause suffering. It is hard to imagine that this is the case for the majority of animals used in laboratory research, as they are dispatched not because they are suffering but because they are not suitable for further experiments and there is no practical way to continue

housing and caring for them. Therefore, as to most biomedical research, the AVMA Guidelines are inapplicable and it would be impossible for many biomedical researchers to function within these Guidelines and thus comply with PHS Policy.

It is so essential a point that it bears repeating: the AVMA Guidelines, insofar as they rest on a central concept that limits euthanasia to a taking of life for a limited reason that is almost always irrelevant to wildlife biology (or indeed, much biomedical research), are inapplicable and to wildlife biology. No matter how humane the technique, wildlife biologists would not be in compliance with PHS Policy if compliance is based on the AVMA Guidelines.

The termination of the life of animals in most wildlife research would, under the AVMA terms, constitute humane killing. The AVMA distinguishes between euthanasia and humane killing, basing the distinction on the purpose for putting an animal to death. This is a biologically irrelevant distinction. A method is humane or not, or more or less humane than another method, regardless of the purpose of the killing. It matters not to the animal why it is being put to death. The extent of the fear, pain, or suffering, if any, does not vary with the intent of the human. The measure of a method as humane should be the rapidity to loss of consciousness and the extent of pain and suffering prior to that point.

The AVMA expressly states that its guidelines do not apply to humane killing. "The methods described in the Guidelines serve as guidance for veterinarians and others who may need to perform euthanasia. The Guidelines are not intended to specifically address slaughter or humane killing….Neither slaughter nor humane killing is addressed by this document." (at S.6.1.1 on p.68). This statement is inapposite to the statement, above, that euthanasia is also a matter of humane technique that minimizes pain, distress, and negative effect to the animal. Thus, according to the AVMA, the most humane method of killing is not acceptable if it is not done to end suffering. In other words, the taking of life for scientific research could never constitute euthanasia, no matter how humane the technique, unless the animal also happened to be suffering.

Further, despite the statement that the Guidelines are not intended to address humane killing, the Guidelines discuss a number of methods that the AVMA then deems "humane killing." The examples given of humane killing do not include or exclude scientific research.

Biologically meaningless distinctions and standards

The AVMA classification of the taking of animal life in the context of various types of research as euthanasia - and therefore covered by its Guidelines - or as humane killing, and therefore not subject to the Guidelines, is vague, arbitrary, and biologically meaningless.

The AVMA first states that the purpose for the taking of life was not a consideration in devising the new Guidelines:

> Debate exists about whether euthanasia appropriately describes the killing of some animals at the end of biological experiments and of unwanted shelter

> animals. The Panel believes that evaluating the social acceptability of various uses of animals and/or the rationale for inducing death in these cases is beyond its purview;

Nonetheless, the AVMA then goes on to distinguish among those and other purposes. It considers killing for recreational purposes, finfish sampling, depopulation, and eradication to be in the category of humane killing (S6.1.1 at p. 68). The document is unclear and arbitrary as to which category – euthanasia or humane killing – encompasses scientific research. Referring definitions by Yanong *et al*. (2007) pertaining to finfish, the AVMA suggests that the category of euthanasia includes "some field research" without further description in the category of euthanasia. It gives as an example "some small-scale ecological research." Other field research remains unclassified, though the humane killing category includes as "sampling" and gives as examples "large-scale ecological research" and "open ocean collection."

These categories and the examples illustrate that:

> 1. the categories are absolutely irrelevant to the physiology or ethics of a means of euthanasia; and
> 2. the authors of the document demonstrate little understanding of biological research into the natural world. How the scale of the research could possibly make any difference as to how an animal is put to death is unfathomable. Why would it matter if the study takes place at one small field site or seventeen field sites around the world?

We urge the PHS to reject these biologically meaningless categories and the arbitrary assignment of human purpose in taking life to one category or another. That the AVMA statement, which shows no understanding of wildlife biology or ecological studies, chooses to include "some field research" in the category of euthanasia does not mean that the taking of a life in such research should be any the less humane, as circumstances permit.

As a glaring example of this inconsistent and arbitrary classification, the AVMA states that kill traps should be classified as "humane killing." This classification - despite the statement that the document does not apply to humane killing, without regard to the scale of the research, and notwithstanding the classification of research based on the scale of the research - means that the under the AVMA standards, the use of a particular kill trap for small mammals in a very local study (one field site, for instance) would have to meet the AVMA's standards for euthanasia while the exact same kill trap for the same mammals, if used in multiple field sites over a wide geographic area, would not be covered by the AVMA standards for euthanasia.

On occasion, an animal that is a research subject in a wildlife study sustains injuries in the course of the research and no veterinary care is available. Termination of life was not planned as part of the research protocol. The taking of the life in this case is essentially what the AVMA characterizes as "euthanasia." These cases illustrate the absurdity of the AVMA distinction and the classifications. The methods available are going to be the same as those where the research protocol entails the planned termination of life. In fact, the methods available are likely to be even more limited in these cases. And, of course, the primary concern is the need to minimize or eliminate pain and suffering. From the animal's point of view, it matters not at all whether its

death is included in a research protocol, whether the AVMA calls that kind of activity "euthanasia" or "humane killing," or why its life is ending. The pain and suffering is not a function of labels and categories. **Although we reject these labels and categories as biologically meaningless, for the purpose of PHS compliance, these situations should be regarded as humane killing, and, therefore, not covered by the AVMA Guidelines.**

To the extent that the PHS persists in recognizing the AVMA guidelines as the appropriate standards for PHS compliance, we urge PHS to:

1. Recognize that alternative standards developed by experts in various fields of research are also acceptable as a matter of compliance with PHS Policy
2. State unequivocally that the AVMA guidelines do not apply to wildlife field research.
3. State that methods of euthanasia in wildlife research in the field that are at least as humane as those classified by the AVMA as "conditionally acceptable" or "acceptable" will be regarded as such regardless of the purpose of the termination of the animal's life.

We further ask that should PHS chose to continue to regard the AVMA guidelines as an acceptable standard, that it should state clearly that the termination of life for field research should be in the category of humane killing and that PHS Policy is concerned only with humane technique. It is then critical that PHS state that although the AVMA Guidelines do not apply to humane killing, that PHS accepts the concept of humane killing. Otherwise, IACUCs will be compelled to reject outright all protocols – for any form of research – that entail taking the life of an animal that is not suffering or that remains healthy and unimpaired when the study ends, or that is taken for the purpose of obtaining scientific material for research.

This is the only way that the recognition of the AMVA Guidelines by PHS as the sole standard can incorporate most wildlife research and biomedical research in a manner consistent with the social construct that the AVMA has used to define euthanasia. When we terminate the life of an animal for research purposes, it is *not* to do what is best for the animal; it is done to obtain material for scientific research. Again, we point out that by the AVMA's own definition, this is not a matter of euthanasia. It is a matter of humane killing, and, as the AVMA states, its Guidelines do not apply to humane killing.

The purpose of the Animal Welfare Act and its enforcement by NIH through the Health Service Extension Act and the PHS Policy is to ensure humane treatment of animals studied in research. The AVMA guidelines are not the only standard by which humane treatment can or should be measured. If there is independent evidence of other appropriate methods, these should be allowed by the PHS. If a standard recognized by the PHS actually excludes most wildlife research and much biomedical research, no matter how humane the method, then the PHS must recognize other standards that are humane and that are applicable to these forms of research.

It would be inappropriate for the PHS to require compliance with a standard that by its own terms does not apply to certain kinds of research or the taking of life for certain purposes that the standard expressly excludes but that can be carried out in as humane a manner as those included under the standard.

Thoracic compression

Lack of scientific basis

The AVMA 2013 Guidelines state that:

> Thoracic (cardiopulmonary, cardiac) compression is a method that has been used by biologists to terminate the lives of wild small mammals and birds, mainly under field conditions. Although it has been used extensively in the field, data supporting this method are not available, including degree of distress induced and time to unconsciousness or death. Based on current knowledge of the physiology of both small mammals and birds, thoracic compression can result in substantial pain and distress before animals become unconscious, thus lacking key humane considerations that can be addressed by other methods. Various veterinary and allied groups do not support thoracic compression as a method of euthanasia.[413–416] Consequently, thoracic compression is an unacceptable means of euthanizing animals that are not deeply anesthetized or insentient due to other reasons, but is appropriate as a secondary method for animals that are insentient.

The AVMA is simply wrong in stating that there are "data supporting this method are not available, including degree of distress induced and time to unconsciousness or death." To the contrary, the Ornithological Council submitted data that the AVMA chose to disregard for reasons they chose not to divulge, perhaps or most likely because the data were observational and did not measure brain activity. Specifically, when asked by the AVMA, we submitted the following information:

> The consensus* was that birds weighing less than 100 g should be unconscious within 5 seconds and dead within 15-20 seconds. Birds between 100-250g become unconscious within 10-20 seconds and could take 20-60 seconds to be verifiably dead. More confidence was universally attributed to estimates of smaller birds, and less confidence in estimates and greater variation in bird response were described for larger birds.
>
> *Consensus of five of the most active and experienced field ornithologists in attendance. Each has used thoracic compression on ~500->1000 birds over a career of field collecting and each was interviewed privately, without knowledge of the statements made by the others.

Even though the information we submitted might not have been deemed suitable by the AVMA, it is important to note that it is the *only* data available. The AVMA does not counter these observations with observations or data of its panelists. It simply ignores the evidence.

In our comments to the AVMA, we noted that J. Jill Heatley, DVM, MS, Dipl ABVP (Avian), Dipl ACZM Associate Professor, Zoological Medicine College of Veterinary Medicine, Texas A&M University, gave us permission to quote her as follows: "Based on literature search I can find no evidence for or against thoracic compression [as a form of euthanasia] in avian species."

The absence of hard data that TCC renders these small animals unconscious in a time-frame consistent with the expectations for euthanasia does not mean it doesn't occur, but rather that supporting data are simply not available. With the kind permission of Dr. Heatley, we are including her full comments as Appendix C.

In fact, the AVMA itself acknowledged this in a backgrounder it published in October 2011: "To date, there is a lack of research into the merits and demerits of thoracic compression." If this is the case, then the panel members could have no basis upon which to make any determination except personal experience. As demonstrated below, there is no indication that any of them have had much, if any, experience in the use of thoracic compression, much less the extensive experience of the ornithologists who have used this method for decades.

We have reviewed the citations to literature offered by the AVMA to support the statement that "Various veterinary and allied groups do not support thoracic compression as a method of euthanasia." Copies of all items are provided to aid you in your review of our assertions. The first is a letter from R. Avery Bennett (Appendix D) speaking on behalf of the Association of Avian Veterinarians (AAV). It states that thoracic compression entails suffocation, but fails to recognize that this is also true with the use of CO_2, a method of killing that dispatches millions of rodents used in research every year despite the availability of more humane methods. Bioethicist Bernard Rollin– quoted by the AVMA in its 2011 backgrounder for his opposition to the use of thoracic compression - has termed CO_2 "the most egregious ethical mistake in the [2007] AVMA Guidelines" (Rollin 2009). He goes on to describe its unpleasant effect on animals and the lab techs and researcher who use this method of euthanasia and compares it to waterboarding. The Bennett letter offers no data or other evidence regarding thoracic compression. It simply states an objection and proffers that a barbiturate overdose would be the preferred method, or failing that, cervical dislocation. It is evident that Dr. Bennett and the AVA were uninformed about the availability of controlled substances to field biologists and were also unaware that specimens must be intact. Cervical dislocation distorts the spine and often, especially with small animals, results in the separation of the head from the body of the animal. It is simply inappropriate for the collection of specimens, because the carcasses must be intact. In correspondence between the AVA (by R. Bruce Nixon) and the Ornithological Council, Dr. Bennett states that the AAV had reviewed the literature but as the AVMA itself and Dr. Heatley have stated, there is no published literature on this subject. Dr. Nixon went on to state that there are alternatives, even in extreme environments, but when asked to identify those alternatives, he would not identify those alternatives unless the executive director of the Ornithological Council met with the AAV animal welfare committee in person at some unidentified time and place. He failed to note that inhalants such as isoflurane and sevoflurane are generally unavailable to those who do not hold a veterinary license and that veterinarians are generally prohibited by state law and by the AVMA's own ethical standards from providing these substances to researchers.

The second citation is to a letter to the Journal of the American Veterinary Medical Association by John Ludders (Appendix E), a retired research veterinarian from Cornell for whom we have great respect. That letter describes the physiological mechanism of thoracic compression, as described by the AVMA in its 2007 guidelines, and states that the method constitutes suffocation. Like Dr. Bennett, Dr. Ludders fails to note that suffocation is also the mechanism of CO_2 and kill traps, the former considered acceptable with conditions by the AVMA and the latter considered

"practical and effective" for scientific collection of animals and sufficient as "humane killing" though both entail a greater period to loss of consciousness than thoracic compression.

Dr. Ludders also notes that thoracic compression is said to be very rapid and goes on to say that "What may be a brief moment in time to you and me may, in fact, be a very long interval to the animal that has a high metabolic rate such as a bird." Of course, that would also be true with regard to the use of CO_2 or any other method of euthanasia, many of them approved by the AVMA as acceptable or acceptable with conditions although they take longer than does thoracic compression to cause loss of consciousness and are at least as painful or distressful. In any case, we have discussed this issue with Dr. Ludders over a period of years. In personal correspondence, Dr. Ludders stated that "Less than 5 seconds is good, 15 seconds is too long" referring to a panel on euthanasia organized by the Humane Society of the United States and specifically alluding to loss of consciousness. If this is an appropriate standard, then thoracic compression should be considered acceptable, and certainly more acceptable that CO_2, which takes quite a bit longer to cause loss of consciousness.

The next citation is to a paper by Dr. Susan Orosz (the full paper and Dr. Orosz's *Curriculum vitae* are attached as Appendix F). The entire text reads as follows:

"Thoracic compression has been used historically for birds in the field (Gaunt, 1999) but this method of euthanasia is not recommended due to concerns about the efficacy, prolonged duration of the procedure, the potential for distress of the bird, and the perception of pain."

The paper gives not one reference; not one scrap of data. It is a mystery how Dr. Orosz knew anything about the duration of the procedure or its efficacy. It is not apparent that Dr. Orosz has had any experience with ornithological research in the field. Her CV (included in Appendix F), though admirable, indicates no relevant experience.

Dr. Orosz then recommends CO_2 or isoflurane and says that if they are not practical, to use barbituates. However, she admits, "The availability of controlled drugs is often limited for personnel performing avian euthanasia under field and some other circumstances, and this can limit the use of this method." She also neglected to recognize the prolonged duration of the procedure, the potential for distress, and the perception of pain resulting from the use of CO_2.

Additional inaccuracies and inconsistent application of metrics

Assuming that there are no data available of the type acceptable to the AVMA, we question the making of a determination based on the absence of data. Were it not for the fact that the AVMA guidelines are then the standard required for PHS compliance, and the fact that it often is interpreted (rightly or not) as an inviolable bright line by Institutional Animal Care and Use Committees, this might be nothing more than an academic discussion. However, it becomes quasi-regulatory in nature when given mandatory status by federal funding agencies. As noted in the discussion of procedure, below, this situation falls far short of the HHS Information Quality guidelines and the NIH Information Quality guidelines.

In fact, on the same basis, the AVMA in 2000 and 2007 classified the technique as conditionally acceptable. Without additional information, there is no basis for a change in the classification. In fact, however, the AVMA had additional information, provided by the Ornithological Council, documenting the rapidity of the method, as based on the extensive experience and observations of ornithologists who have used the method for years. If anything, this should support retaining the conditionally acceptable classification.

We also note that the AVMA's description of the method is anatomically and physiologically inaccurate. The guidelines do not include a description but a backgrounder issued by the AVMA in October 2011 states, "*Thoracic compression is the application of pressure to an animal's chest to prevent respiration and/or cardiac movements to cause death. This technique is used in some field research settings to terminate the life of small wildlife (birds and mammals)*." This is simply incorrect. We have tried to correct this misimpression more than once, to no avail. There is no pressure on the chest, except the pressure that results from holding the bird. In fact, as described on the fact sheet, pressure is applied immediately behind the pectoral muscle mass, in the soft-tissue area between the coracoid process and the spine. As thoracic compression is most commonly used in the context of collecting specimens, which entails the need for an intact carcass including the skeleton, scientists would not use thoracic compression if it entailed putting enough pressure on the sternum to stop respiration; it would likely result in the breaking of the fragile bones of small birds. We acknowledge that this misimpression (that the mechanism involves restriction of the lungs via compression of the sternum) stems in part from documents that have been issued by the ornithological community. We hope that the revised fact sheet, which corrects this description, will resolve this particular misunderstanding.

The AVMA also stated in the October 2011 backgrounder (Appendix G) that:

> The Association of Avian Veterinarians states that thoracic compression is *"akin to suffocation of mammals"* and *"cannot be considered humane."* Individual veterinarians have expressed similar positions based on the **belief** (emphasis added; it is belief, not fact; there is no suggestion that they have studied the method) that thoracic compression does not stop the heart. And, ethicist Bernard Rollins [sic] (2009) states that *"suffocating birds using thoracic compression (crushing the chest)"* is currently *"unthinkable"* as a method of euthanasia.

The AVMA failed to note that in that same paper Rollin (the correct spelling is Rollin, not Rollins) soundly condemned the use of carbon dioxide. Indeed, Rollin calls the acceptance of carbon dioxide as a means of killing millions of rodents the "most egregious ethical mistake in the [2007] AVMA guidelines. Rollin wrote:

> In my 30 years as an ombudsman for animals at Colorado State University, I have received more complaints about CO_2 killing than any other issue. Technicians and some researchers are greatly upset by the degree to which rats and mice struggle and attempt to climb out of the box where CO_2 is administered. And this is no surprise to anyone knowing the rudiments of respiratory physiology. Carbon dioxide drives respiration, so breathing CO_2 while conscious must feel something like asthma, or being held under water — consider the effectiveness of

> waterboarding. And it is noteworthy that emergency rooms take asthmatics as soon as they come in — so great is the panic associated with feeling like one "cannot breathe" even among those who know what is going on. As an asthmatic, I would describe the sensation as bad as any pain I ever had. Furthermore, CO_2 forms carbonic acid on mucus membranes, adding further irritation. And we know that breathing CO_2 is highly aversive to humans — if any of you doubt me, take a whiff of dry ice!
>
> Furthermore, the time to unconsciousness can be 30 seconds or more — a far cry from instantaneous and a very long time to be in agony. At the root of my and many others' aversion to CO_2 is the ethical judgment that seconds of suffocation cannot reasonably be called a good death, though supporters of CO_2 argue that it is "only seconds." This shows that the debate is not primarily scientific, but at root ethical.

The AVMA 2013 guidelines acknowledge the pain and distress that result from the use of CO_2. The guidelines recognize that it might take as long as 30 seconds for animals to lose consciousness. Despite the extensive evidence that CO_2 results in pain and distress, and despite the "prolonged duration" (language used by the AVMA and the "various veterinary and allied groups" to describe thoracic compression; these groups are said by the AVMA to not support thoracic compression as a means of euthanasia), the AVMA accepts the use of CO_2 for most species.

Apparently, abundant proof of pain, distress, and prolonged duration results in an "acceptable" rating for CO_2, even where alternatives such as isoflurane and injectable substances are readily available. However, where there is no evidence other than the unsupported statements of panel members and others, as contradicted by the expertise of those who actually use the method, and where alternatives are few, if any, the AVMA classifies thoracic compression as unacceptable. The only reasonable conclusion is that the AVMA guidelines are, in this regard, arbitrary and capricious. There is no reason given for this glaring inconsistency. For this reason, PHS should categorically reject the AVMA classification of thoracic compression and the accompanying text in the 2013 guidelines. Instead, PHS should recognize as appropriate, expert-based standards the guidelines issued by the taxonomic societies as to euthanasia generally and specifically with regard to thoracic compression.

The same inconsistency is found in the AVMA's discussion of kill traps, some of which result in suffocation. The AVMA cites as "found to meet standards for certain species" one trap for which mean (+/- SE) estimated times to loss of consciousness and heartbeat were < or = 55 sec and 305 (+/- 8) sec, respectively after firing the trap; this study confirmed that the trap can be expected to render > or = 70% of captured fishers irreversibly unconscious in < or = 3 min ($P < 0.05$). (Proulx and Barrett 1993). The trap described in another paper cited in this context had similarly long duration: "The C120 Magnum trap, equipped with a 66 x 69 mm pan trigger, which favored double strikes in the neck and thorax regions, successfully killed nine of nine wild mink (*Mustela vison*) in simulated natural conditions. Average times to loss of consciousness and heartbeat were estimated at less than 72 (+/- 24) sec and 158 (+/- 48) sec, respectively, after firing of the trap. This study confirmed that the C120 Magnum trap can be expected to render greater than 79% of

all captured mink unconscious in less than or equal to 3 min (P less than 0.05)." (Proulx et al. 1990). These times – along with the reported times in other papers cited by the AVMA as reaching "the required level of efficacy" far exceed the times reported for thoracic compression.

Availability of alternatives

The AVMA goes on to state that:

> The consensus of veterinarians with field biology training and expertise is that portable equipment and alternate methods are currently available to field biologists for euthanasia of wildlife under field conditions, in accordance with current standards for good animal welfare. Anesthetics can be administered prior to application of thoracic compression. Depending on taxa, open-drop methods or injectable agents that do not require DEA registration can be used. These alternate methods are generally practical to use with minimal training and preparation as standard procedures prior to embarking upon fieldwork.

First, we doubt that there is consensus. It would appear that the consensus exists – if at all – only among the members of the panels who wrote the new Guidelines. It has been reported by veterinarians in attendance at an AVMA session at which the draft Guidelines were discussed that there was considerable dissension over the question of thoracic compression. We were not privy to the internal discussions so we do not know what specific aspects of the issue caused such dissension. However, given that it appears that only one or two of the members of the avian panel has had experience in the field setting, it would seem that any consensus reached on the availability of portable equipment and alternate methods was made by a group of individuals who had little or no relevant experience or information.

Our organizations have consulted veterinarians with field experience and they concur that there are circumstances for which no practical alternatives exist. Second, IACUC veterinarians reviewing protocols for more than a hundred museums, universities, and research institutions have approved the use of thoracic compression in field conditions. That they continue to approve it is strong evidence of the absence of practical alternatives in most cases. Finally, the experience of the hundreds of biologists who have conducted field research for decades should not be discounted, and particularly not for the purpose of substituting the unsubstantiated statements (consensus or not) of others who seemingly lack such experience.

Second, the insistence that "alternatives are available" is really puzzling, given that the AVMA did not make the same type of statement with regard to CO_2. Having determined that is "acceptable with conditions, notwithstanding the distress associated with suffocation and the pain resulting from the formation of carbonic acid on the respiratory and ocular membranes, and the prolonged duration (depending on initial concentrations and fill rates), the AVMA chose not to list CO_2 as unacceptable notwithstanding the ready availability of alternatives in the laboratory environment, including injectables. We can only speculate about the reason for the failure to insist that the most humane method that is readily available in that setting be used in lieu of one that is far less humane; it is likely that practicality – the need to euthanize large numbers of

animals, often at one time – was a consideration. It is therefore hard to understand why practicality was not a standard considered by the AVMA with regard to thoracic compression.

Of greater concern, though, is a misleading statement by the AVMA about the availability of the supposed alternatives. The 2013 guidelines state that, "Anesthetics can be administered prior to application of thoracic compression. Depending on taxa, open-drop methods that do not require DEA registration can be used." It is true that certain substances such as isoflurane and sevoflurane are not regulated at the federal level, i.e., by the DEA. However, as the AVMA certainly knows, they are regulated at the state level and therefore available only to state-licensed physicians. Thus, a veterinarian must be willing to obtain it and provide it to the ornithologist for use in field research. Some states restrict the use of substances by licensees to situations where a Veterinary-Client-Patient Relationship exists. According to the AVMA, this relationship is established only when "the veterinarian has sufficient knowledge of the animal(s) to initiate at least a general or preliminary diagnosis of the medical condition of the animal(s). This means that the veterinarian has recently seen and is personally acquainted with the keeping and care of the animal(s) by virtue of an examination of the animal(s), or by medically appropriate and timely visits to the premises where the animal(s) are kept. The veterinarian is readily available, or has arranged for emergency coverage, for follow-up evaluation in the event of adverse reactions or the failure of the treatment regimen." Of course, these conditions are essentially inapplicable to most field research or to the methods of euthanasia used in the context of field research, but as it is a legal restriction in some states, veterinarians in those states may be unwilling to provide it to field researchers. In some states, the license restricts the use of the substance to a particular location, making it impossible to use the substance legally at a field site. In some countries, inhalants are not available to anyone but licensed physicians and veterinarians, who are not permitted to supply it to others.

We have attempted to investigate the availability of isoflurane in other countries and have received responses ranging from "available without a prescription" (Guatemala) to "very hard to get, requiring orders from a licensed veterinarian" (Mexico, South Africa) and "sold only to veterinarians and even then, difficult to obtain because it is fairly expensive and not widely used here" (Japan).

Notwithstanding the challenges of obtaining inhalants, it is true (as we explained to the AVMA) that isoflurane can be used in some field conditions. In fact, many wildlife biologists use it when conditions permit. If the research is conducted near a field station or in a situation where supplies can be stored or replenished, this is certainly an option and indeed, some field biologists use isoflurane either to induce unconsciousness or to euthanize animals.

However, such resources are not available in all field situations. Such is certainly the case where investigators are presented with opportunities to capture small birds or mammals that represent important specimens in the course of conducting other research. For instance, while looking around old buildings or moving woody debris investigators can uncover shrews or native mice, or they might retrieve a bat from a well shaft. In these instances the investigators are almost always without euthanasia equipment or supplies of any kind.

Even on planned collecting expeditions researchers frequently work in very remote areas reached on foot or are otherwise without access to fresh supplies, or where circumstances do not permit the substance to be stored under the conditions recommended by the manufacturer (20 to 25°C (68 to 77°F). [See USP Controlled Room Temperature]. On collecting expeditions researchers frequently work in very remote areas without access to fresh supplies. A 36-day expedition based out of the University of New Mexico returned to the United States having collected nearly 700 bird specimens. Although one liter of isoflurane would probably have been sufficient (depending on the size of the birds collected), carrying a liter container, cotton, and numerous containers or devices for administering the isoflurane for the 10 k daily hikes from the field camp would have been highly impractical. Had they inadvertently spilled or lost the isoflurane, they would have been unable to obtain more. They were at least 24 hours from an urban area where they might have been able to replenish their supply. An expedition of this sort will ordinarily result in the collection of about 600 bird specimens.

Research in Alaska poses similar challenges. John W. Martin is employed by the U.S. Fish and Wildlife Service and chairs the IACUC for the refuges in that region. He reports that he reaches nearly all his field sites by small aircraft and is not permitted to carry isoflurane on those aircraft for obvious reasons – a spill could incapacitate the pilot. The University of Alaska has had researchers at remote sites such as Cape Pierce for three months. They are flown in by seaplane and can bring only as much food and gear as the plane can carry. The plane returns at most every other week to bring food and other supplies – if the weather permits. Even if the plane could carry isoflurane, there would be no way to establish a reliable method of resupply. Researchers would need to resort to another method of euthanasia under those circumstances, and where animals are being collected for voucher specimens or for hormonal profiles, decapitation is not acceptable as an intact carcass is needed.

Carrying isoflurane on commercial aircraft poses additional challenges. The IATA Dangerous Goods Manual treats the liquid form as "Aviation regulation liquid, not otherwise specified" and places it in hazard class 9. Though the amount that can be carried on a passenger aircraft is not problematic, it requires IATA training and certification and there are, of course, specific packaging requirements. Unfortunately, it is often the case that even when substances are properly packaged and labeled, airlines will reject them. We have had countless reports of experiences where airlines rejected: dry shippers (essentially, large thermos bottles that are flushed with liquid nitrogen that is then discarded before the shipper is filled and sealed - these are unregulated and yet airlines have refused to accept them); whole-animal specimens, even when completely dry; blood samples, feathers, and other tissues; dry ice; and more. We have no confidence that an airline will agree to carry inhalant anesthetics even when properly packaged and labeled. The IATA manual is voluminous and very complex. Airlines' staffers are not trained in the IATA regulations and will readily reject an unfamiliar item simply because they don't know how to determine if it is acceptable.

Circumstances such as those described above afford few alternatives for euthanasia and isoflurane and pharmaceuticals are not among them. Veterinarians frequently will refuse to give controlled substances to researchers, particularly for off-label use, due to AMDUCA restrictions and out of concern for potential abuse. Some IACUCs and universities will refuse to allow their use unless a veterinarian is present. These substances frequently cannot be carried legally into

other countries. Researchers working in these circumstances are essentially limited to firearms and thoracic compression. Some institutions resist allowing the use of firearms for safety reasons.

Lack of requisite expertise with regard to thoracic compression or field research

The individuals who served on the AVMA working groups on birds and on wildlife who were apparently responsible for making the determination as to thoracic compression seemingly have little or no experience with this method and none have experience conducting wildlife research in the field, to the best of our knowledge. We made efforts to determine if any of the members on the avian panel and the wildlife panel had experience working in field conditions. As the AVMA did not include their *Curricula vitarum* in the document, we have done the best we can with literature searches and other online information. The information we were able to obtain about each of them appears in Appendix H.

It appears that few have had experience working in field conditions. We could confirm that Laurel Degernes (bird panel) has had experience working in field conditions. Over the course of three years working in two remote Alaska field camps, assisting with a study of Pigeon Guillemots (*Cepphus columba*). Her work entailed taking liver biopsies from these birds. At both sites – each of them stationary - she worked in surgical suites set up in Weatherports. The suites had heat and light and sophisticated equipment for administering isoflurane and monitoring the vital signs of the birds. All supplies had been brought to the sites in advance. She also worked on a retrofitted military troop transport ship, again, in a fully equipped surgical suite.

None of these conditions remotely resembles the conditions under which most field ornithologists work, and certainly not the most extreme – although not uncommon – multi-week expeditions to remote locations.

It is of particular interest to note that Dr. Degernes said in that paper, “"I vividly recall a conversation that I had with Dan [Mulcahy; a prominent wildlife veterinarian with the U.S. Geological Survey] concerning veterinarians working with wildlife biologists, and how there have been strained relationships in the past when egos got in the way of the 2 groups working together as a united team. Basically, the clear message was that each group has important contributions to bring to a project, none of which are more or less important to the overall success. In other words, veterinarians and biologists each have their areas of expertise, and veterinarians should not presume that they know more than biologists about particular species."

This is the approach that the AVMA should have taken with regard to field ornithology. We offered to provide expertise and were turned down. The AVMA does not claim to have had any members on the avian or wildlife panel who had had personal experience in field ornithology or personal experience with thoracic compression. It would appear that all were highly experienced in euthanasia methods in controlled settings such as clinics, laboratories, and zoos, but none had any meaningful appreciation of field conditions. They should have limited their guidelines to their own areas of expertise and they certainly should not have made statements without any supporting evidence.

Of those who appear to have had experience with wild birds in field conditions or in captivity (where there would be no reason to use thoracic compression), Dr. Degernes has worked with wild birds both in the field and in captivity, but at least as can be determined from her *Curriculum vitae*, she has worked on raptors, waterfowl, and seabirds – all of them too large for the use of thoracic compression. Dr. Hartup works with cranes; these birds are far too large for the use of thoracic compression.

Procedural objections

The substantive concerns detailed above demonstrate that the upcoming AVMA Guidelines, at least with regard to thoracic compression, fall far short of the standards of the Information Quality Act and the PHS guidelines that implement that Act.

The HHS Guidelines for Ensuring the Quality of Information Disseminated to the Public call for NIH to be responsive to intended users of that information:

> *Information should be responsive to its intended users, including the public. NIH strives to stay informed of user needs, through user feedback, consultation with advisory committees and peer review groups, and conference participation.*

We hope that NIH will take seriously the need to evaluate independently the standards of an outside organization before adopting those standards and imposing them on others. **Standards lacking scientific merit should not become the policy of the NIH. The AVMA guidelines pertaining to field research methods generally and specifically to thoracic compression lack scientific merit.**

The 2004 OMB Information Quality Guidelines impose a standard of quality that entails integrity, objectivity, and utility. Influential scientific information, characterized by an expectation on the part of the agency that the information "will likely have an important effect on the development of domestic or international government or private sector policies or will likely have important consequences for specific technologies, substances, products or firms" is subject to the higher standard of reproducibility.

How the substantial reproducibility requirement applies to a document that does not entail original research is somewhat unclear. However, we suggest that at the very least, a statement that is made without any supporting scientific evidence is not reproducible; it is inherently subjective and any number of experts in the subject might come to a different conclusion. We have demonstrated that very point in our letter to AAALAC with regard to the statement made in the *Guide* regarding the need for veterinary input for the most routine procedures.

At the very least, OLAW should convene its own panel of experts, adhering to the requirements of the Federal Advisory Committee Act, to determine appropriate compliance standards. It is inappropriate for OLAW to simply accept the standards of an outside organization, without a robust and independent peer review, and then impose those standards on others without regard to the process by which those standards were developed.

Scientific justification and departures from PHS Policy

In its adoption of the ILAR Guide, OLAW developed a set of criteria for determining when "departures" from the Guide could be approved by the IACUC. Specifically, "IACUC approval of departures from the *Guide* must be based on scientific, veterinary medical, or animal welfare issues." < http://grants.nih.gov/grants/olaw/departures.htm>.

We note that the Guide statement with regard to euthanasia expressly includes the current edition of the AVMA Guidelines and it is a "should" statement: "Unless a deviation is justified for scientific or medical reasons, methods should be consistent with the AVMA Guidelines on Euthanasia." According to OLAW < http://grants.nih.gov/grants/olaw/departures.htm> deviation from a "should" statement is not a departure from the Guide if it conforms with a locally established performance standard, which is not applicable to this discussion. However, if approved by the IACUC because it is scientifically justified or for a veterinary or animal welfare reason, it is a departure and must be reported to the Institutional Official but not to OLAW.

Seemingly, this scheme should be sufficient to permit the use of thoracic compression without the institution having to worry about noncompliance with PHS policy. However, the language of the PHS Policy itself muddies the waters. It reads, "g. Methods of euthanasia used will be consistent with the recommendations of the American Veterinary Medical Association (AVMA) Panel on Euthanasia (PDF), unless a deviation is justified for scientific reasons in writing by the investigator." The "will" term seems to be the equivalent of a "must" statement in the Guide.

It could very well be argued that if the IACUC determines that the use of thoracic compression is scientifically justified, then there is no need for PHS to disavow this particular aspect of the AVMA Guidelines. However, experience tells us that IACUCs are reluctant to approve thoracic compression. Even before the AVMA released its 2013 Guidelines, we saw that numerous IACUCs were refusing to approve the use of this method based only on the release of the draft guidelines. Numerous scientists have reported to us that they have been told – even in advance of the submission of protocols, i.e., prior to submitting justifications – that the IACUC has stated that thoracic compression will not be approved. One individual found that his IACUC rejected the use of thoracic compression even though his constituted the most extreme example of a field expedition – the team would be in extremely remote locations, never less than a day's hike from the nearest road – for four weeks. They would be collecting hundreds of birds, many of them within a short time frame. It would be impractical, if not impossible, to assure an adequate and reliable source of isoflurane or another inhalant, much less to carry numerous killing jars, across the rugged montane region.

The likelihood that one or more IACUCs will refuse to allow the use of thoracic compression is the secondary concern. However, that is has already occurred and is likely to continue occurring demonstrates that the adoption of the AVMA Guidelines will, in fact, have significant repercussions for wildlife biology. At the very least, then, OLAW should issue a statement

concurrent with the adoption of the AVMA Guidelines, that thoracic compression is not "banned" and that its use is permitted when scientifically justified. However, the primary concern remains that the Public Health Service and the National Institutes of Health should not adopt, endorse, or use as a compliance standard a guideline that lacks a sound scientific basis.

Conclusion

We thank OLAW for considering our concerns and hope that these comments have proved useful. The Ornithological Council and the researchers who comprise our member societies take animal welfare very seriously. We support OLAW's efforts to assure and improve the care and treatment of animals used in research, and we know that the NIH will take such measures as are necessary to assure that the standards by which research protocols are judged and animal care programs are assessed are of the highest possible quality and are biologically sound.

Sincerely,

Ellen Paul
Executive Director

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