

The National Academies of
SCIENCES • ENGINEERING • MEDICINE

**Discussing and Understanding Animal Welfare Challenges
in Research and Education on Wildlife, Non-Model Species and Biodiversity – A Workshop
February 9 – 10, 2022 – Agenda
Virtual-Only, Global-Webcast**

The National Academies of Sciences, Engineering, and Medicine will appoint a planning committee to organize and convene a workshop to discuss the current understanding of animal welfare challenges in research and education on wildlife and biologically diverse animal species. The workshop will focus on issues associated with the unique welfare considerations of research with species having diverse physiologies and behaviors and living in diverse habitats, for which the recommendations outlined in the current version of the *Guide for the Care and Use of Laboratory Animals* (8th edition) present challenges. By heightening awareness, increasing sensitivity, and promoting discussions on animal research and education for these non-traditional research animal species, the workshop will help inform the planning process for tailoring guidance for humane care and use of a wide diversity of animals both in traditional “brick-and-mortar” laboratory animal facilities and beyond (e.g., field laboratories and field stations, and terrestrial and aquatic settings under both captive and natural conditions) while maintaining the integrity of research. The workshop will include presentations and panel discussions to explore various related topics and questions.

DAY ONE	
10:00---10:10 AM EST	Welcome and Brief Introductions – Corrine Lutz and Co-Chair Anne Maglia
10:10 AM --- 11:55 PM (1 hr. 30 min)	<p>Session 1: Perspectives on Animal Welfare Considerations Between Lab Animal and Free-ranging Fish & Wildlife Field Research</p> <p>Operative terms, including the regulatory use of “Field Studies”; introduce gradations between field and lab (enclosures with differing amounts of containment); issues that present particular challenges for field personnel and oversight bodies. Representatives from NSF, USDA, OLAW, and AAALACi will offer perspectives on challenges associated with their respective roles with regard to wildlife and steps to address them.</p> <p>Moderator: Anne Maglia, Ph.D.</p> <p style="text-align: center;"><u>Introduction to Challenges Involving Wildlife</u> Robert Sikes, Ph.D. <i>Professor of Biology</i> <i>Past President, American Society of Mammalogists</i> <i>University of Arkansas at Little Rock</i></p>

	<p><u>Animal Welfare Perspectives on Wildlife Research: US National Science Foundation</u></p> <p>Anne Maglia, Ph.D. <i>Associate Vice Chancellor for Research Administration and Integrity University of Massachusetts Lowell</i></p> <p><u>Research Conducted on Wild Animals and The Animal Welfare Act</u></p> <p>Carol Clarke, D.V.M., DACLAM <i>Senior Staff Officer (Laboratory Animals) APHIS Animal Care U.S. Department of Agriculture</i></p> <p><u>Research Involving Wild Animals from an OLAW Perspective: Challenges and Opportunities</u></p> <p>Nicolette Petervary, V.M.D., M.S., DACAW <i>Animal Welfare Program Specialist Division of Policy and Education Office of Laboratory Animal Welfare (OLAW) National Institutes of Health</i></p> <p><u>AAALAC Perspective: Wildlife Studies – Beyond the Three Primary Standards</u></p> <p>Jeff Wyatt, D.V.M., MPH, DACLAM <i>Professor & Chair, Comparative Medicine University of Rochester School of Medicine & Dentistry Environmental Justice Advocate Seneca Park Zoo</i></p>
11:55 - 12:05 PM	Break
12:05 - 1:05 PM	<p>Session 2 (Part 1): Review Laws, Regulations, and Permits Associated with Fish and Wildlife</p> <p>Regulatory requirements unique to wildlife that exist at multiple levels (international as well as from national to state and local, and including native lands); regulatory and permit issues associated with release/reintroduction of animals held in captivity; differences between and overlap of research vs management and how these impact oversight requirements.</p> <p>Moderator: Sharon Shriver, Ph.D.</p>

	<p><u>Animal Welfare Challenges in Research and Education on Wildlife: A Natural History Museum Perspective</u> Adam W. Ferguson, Ph.D. <i>Negaunee Collection Manager of Mammals</i> <i>Gantz Family Collection Center</i> <i>Field Museum of Natural History</i></p> <p><u>Challenges from the National Park Service Perspective</u> Laurie A. Baeten, D.V.M., Ph.D. <i>Attending Veterinarian and IACUC Chair</i> <i>Biological Resources Division</i> <i>National Park Service</i></p> <p><u>Research on Tribal Lands - Unique Examples</u> Caleb R. Hickman, Ph.D. <i>Supervisory Fish and Wildlife Biologist</i> <i>Eastern Band of Cherokee Indians</i> <i>Office of Fisheries and Wildlife Management</i></p>
1:05 - 1:15 PM	Break
1:15 - 2:10 PM	<p>Session 2 (Part 2): Case Studies / Examples</p> <p>Non-target species; unexpected complications with capture of some non-targets (exotics, endangered, etc); venomous and dangerous species; concerns associated with capture; ownership of the animals and data from them (eg. Kyoto protocol).</p> <p>Moderator: Sharon Shriver, Ph.D.</p> <p><u>Unique Challenges When Working with Free-Ranging Wildlife: Hummingbirds As A Case Study</u> Lisa A. Tell, D.V.M <i>Professor</i> <i>University of California Davis</i></p> <p><u>Conducting Biodiversity Surveys in the New Age of Wildlife Discovery</u> Lawrence R. Heaney, Ph.D. <i>Negaunee Curator of Mammals</i> <i>Field Museum of Natural History</i></p>

	<p><u>Field Research Involving Reptiles and Amphibians, Remote Study Sites, and Undergraduate Students</u></p> <p>Heather L. Bateman, Ph.D. <i>Associate Professor, College of Integrative Sciences and Arts Senior Sustainability Scientist, Global Institute of Sustainability and Innovation Arizona State University</i></p>
2:10 – 2:20 PM	Break
2:20 - 3:50 PM	<p>Session 3: Wild Animal Population Concerns</p> <p>Potential impacts on populations and communities beyond the level of the individual that can result from field activities; biosafety in both directions (animals to humans and <i>vice versa</i>); responsibilities and limitations of both permitting agencies and IACUCs regarding oversight of potential impacts.</p> <p>Moderator: Patrice N. Klein, M.S., V.M.D., DACPV, DACVPM</p> <p><u>Challenges of High-Risk Fieldwork and Working with Venomous and Hazardous Species for IACUCs</u></p> <p>Christopher L. Parkinson, Ph.D. <i>Professor, Department of Biological Sciences and Department of Forestry and Environmental Conservation Director, Clemson University Genomics and Bioinformatics Facility Clemson University</i></p> <p><u>Standards of Practice Facilitate Research and Management of White-Nose Syndrome In Bats</u></p> <p>Jonathan Reichard, Ph.D. <i>Wildlife Biologist, National Assistant Coordinator for White-nose Syndrome U.S. Fish and Wildlife Service</i></p> <p><u>Animal Welfare Challenges in Research on Amphibian Disease Ecology: Impacts on Natural Systems, Biodiversity, and Biosafety (part 1)</u></p> <p>Karen Lips, Ph.D. <i>Professor, Department of Biology University of Maryland</i></p> <p><u>Animal Welfare Challenges in Research on Amphibian Disease Ecology: Impacts on Natural Systems, Biodiversity, and Biosafety (part 2)</u></p> <p>Vance T. Vredenburg, Ph.D. <i>Professor and Associate Chair, Department of Biology San Francisco State University</i></p>

	<p><u>A Brief Summary of the Inherent Aspects of Risk Management in the Context of Wildlife Animal Use Activities</u></p> <p>John A. Bryan, II, D.V.M., M.S. <i>Zachery Consulting, LLC</i></p>
3:50-4:00 PM	Break
4:00-5:00 PM	<p>Moderator: William Bowerman, Ph.D., ILAR Standing Committee</p> <p>1-hour summary and synthesis of the day's key take-home points by moderators of each session. May include responses to particularly relevant questions that have been submitted via Slido.</p>

DAY TWO	
10:00 -10:10 AM	Welcome and Brief Introductions
10:10 AM - 11:40 PM	<p>Session 4: Restraint and Handling of Animals in the Field, to Include Use of Compounds for Capture and Handling</p> <p>Options for minimizing use of chemical compounds; non-pharm grade and controlled substances and challenges with using them in the field; use of drugs to facilitate handling rather than to control pain and implications for USDA categorization of animal activities; release of animals that have been exposed to chemical compounds in the field (including potential consumption by humans or other animals); challenges and options for non-veterinarians, particularly for use of controlled substances and extra-label use</p> <p>Moderator: Bonnie Beaver, D.V.M.</p> <p><u>Extra-Label Drug Use In Free-Ranging Wildlife: Rules, Regulations and Reality</u> Lisa A. Tell, D.V.M <i>Professor</i> <i>University of California Davis</i></p> <p><u>The Use of Pharmaceutical Agents in Carnivores, Bears and Ungulates Within a Wildlife Management Agency (Reality and Challenges)</u> Mark Drew, D.V.M, M.S., DACZM <i>Wildlife Health Services, LLC</i></p>

	<p><u>A Brief Introduction to the Complexities of Working with Multiple Agencies to Conduct Wildlife Animal Use Activities</u> John A. Bryan, II, D.V.M., M.S. <i>Zachery Consulting, LLC</i></p> <p><u>Challenges in the Capture and Handling Wild Birds in Research</u> Jeanne M. Fair, Ph.D. <i>Biosecurity & Public Health</i> <i>Los Alamos National Laboratory</i></p> <p><u>Capture and Handling of Free-living Wild Small Mammals for Research and Education</u> George James Kenagy, Ph.D. <i>Professor of Biology, Emeritus, Department of Biology</i> <i>Curator of Mammals, Emeritus, Burke Museum of Natural History and Culture</i> <i>University of Washington</i></p>
11:40 - 11:50 PM	Break
11:50 -12:45 PM	<p>Session 5: Role of Veterinary Medicine in Wildlife Research</p> <p>Role of the veterinarian and oversight for use of controlled substances in the field by non-veterinarians; AMDUCA; options for input from veterinarians and oversight bodies for ongoing work with high-profile species by field crews; availability of veterinarians with taxon-appropriate expertise</p> <p>Moderator: Gail Golab, Ph.D., D.V.M., MANZCVS, DACAW</p> <p><u>The Wildlife Veterinarian's Role in Championing Animal Welfare Programs and Policies</u> Margaret A. Wild, D.V.M, Ph.D., CWB® <i>Professor, College of Veterinary Medicine</i> <i>Washington State University</i></p> <p><u>Understanding, Respecting, and Enhancing the Role of Veterinary Medicine in Wildlife Research: A Wildlife Biologist's Perspective</u> Kevin Monteith, Ph.D. <i>Associate Professor, Natural Resource Science</i> <i>University of Wyoming</i></p>

	<p><u>Understanding, Accepting, & Enhancing the Role of Veterinary Medicine in Wildlife Research:</u> <u>A Wildlife Veterinarian's Perspective</u> Michael W. Miller, D.V.M., Ph.D. <i>Wildlife Veterinarian</i> <i>Colorado Parks & Wildlife</i></p> <p><u>Surgeries in the Field</u> Daniel M. Mulcahy, Ph.D., D.V.M., Dipl ACZM <i>Wildlife Veterinarian (Retired)</i> <i>Journal Editor (Retired)</i></p>
12:45 - 12:55 PM	Break
12:55 - 1:55 PM	<p>Session 6. Pain and Distress, Euthanasia and Humane Killing, Lethal Take</p> <p>Include discussion of bioethics associated with fieldwork practices, options to minimize stress and distress, injuries caused by researcher vs occurring naturally, consider when injuries should be treated as opposed to euthanasia/humane killing, options available for euthanasia/humane killing under varying conditions.</p> <p>Moderator: Robert Sikes, Ph.D.</p> <p><u>AVMA Perspectives on Ending Lives of Wildlife Species</u> David S. Miller, D.V.M., CWB, Ph.D., DACZM, DACAW <i>Lead, Reptiles, Zoo and Wildlife Working Group</i></p> <p><u>Challenges in Humane Killing of Wild Birds as Museum Vouchers Supporting Biodiversity Research</u> Andrew Engilis, Jr., M.S. <i>Curator</i> <i>Museum of Wildlife and Fish Biology</i> <i>University of California, Davis</i></p> <p><u>Context-Dependent Challenges and Decisions for Humane Killing of Wild Small Mammals</u> Rebecca J. Rowe, Ph.D. <i>Associate Professor, Department of Natural Resources and the Environment</i> <i>University of New Hampshire</i></p> <p><u>Challenges in Following Euthanasia Guidelines in Marine Fisheries Sampling</u> Jeffrey Buckel, Ph.D. <i>Professor</i> <i>North Carolina State University</i></p>

1:55 - 2:05 PM	Break
2:05 – 2:50 PM	<p>Session 7: Transition of Wild Animals to Captive Settings and Housing Challenges</p> <p>Enclosures to lab settings; acclimation to captivity; husbandry and captive management; differing food and water requirements, including live prey; monitoring challenges (e.g., hibernating animals); biocontainment, biosafety- multi-species rooms/cages/aquaria/ predator vs prey species</p> <p>Moderator: Elaine Kim</p> <p><u>Establishing Captive Populations of Wild Animals: Communicating with your IACUC</u> Eileen A. Lacey, Ph.D. <i>Professor of Integrative Biology and Curator of Mammals Museum of Vertebrate Zoology and Department of Integrative Biology University of California, Berkeley</i></p> <p><u>Challenges to Wildlife Adjusting to Captivity – Negotiating with the IACUC</u> L. Michael Romero, Ph.D. <i>Professor, Department of Biology Tufts University</i></p> <p><u>Compliance Challenges for Capturing, Transferring and Keeping Wild Bats in Captivity for Research and Teaching</u> Michael Smotherman, Ph.D. <i>Professor of Biology Texas A&M University</i></p>
2:50-3:00 PM	Break
3:00- 4:00 PM	<p>Session 8. Take home listing of resources presently available for IACUCs, regulators, and personnel concerned with wildlife research.</p> <p>Recap goals of workshop and identify broad challenges highlighted over the course of the workshop. Identify existing gaps in knowledge and structure. Identify options for eliminating challenges within the existing structure and potential strategies, synergies, and collaborations within and among the wildlife and biologically diverse animal research, and biodiversity communities that could leverage additional resources and facilitate knowledge acquisition and</p>

	<p>sharing. Solicit input from audience regarding gaps or challenges we have not identified and solutions.</p> <p>Moderator: Anne Maglia, Ph.D.</p> <ul style="list-style-type: none"> • Michael Stoskopf, D.V.M, Ph.D., DACZM • Robert Sikes, Ph.D. • William Greer
4:00-4:10 PM	Break
4:10-5:10 PM	<p>Moderator: Katherine Thibault, Ph.D., ILAR Standing Committee</p> <p>1-hour summary and synthesis of the day's key take-home points by moderators of each session. May include responses to particularly relevant questions that have been submitted via Slido.</p>
5:10 PM	Closing Remarks – Co-Chair Robert Sikes
5:20 PM	<p>Closing of Academies Event – Corrine Lutz</p> <p>Adjourn Day Two</p>