

Challenges in the Capture and Handling of Wild Birds in Research

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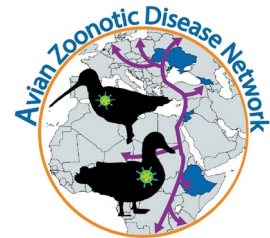
February 10, 2022



Jeanne Fair, Ph.D.



- Scientist, Biosecurity & Public Health Los Alamos National Laboratory – 27 years
- IACUC Chair 2003-2013
- Research focus in epidemiology and animal disease ecology. Dr. Fair is the founder of for a long-term (27 years) research project on the impacts of stress on avian populations
- In 2012, Dr. Fair was the Editor-in-Chief of the *Guidelines for the Use of Wild Birds in Research*
- Currently co-PI for an international avian zoonotic disease network research project



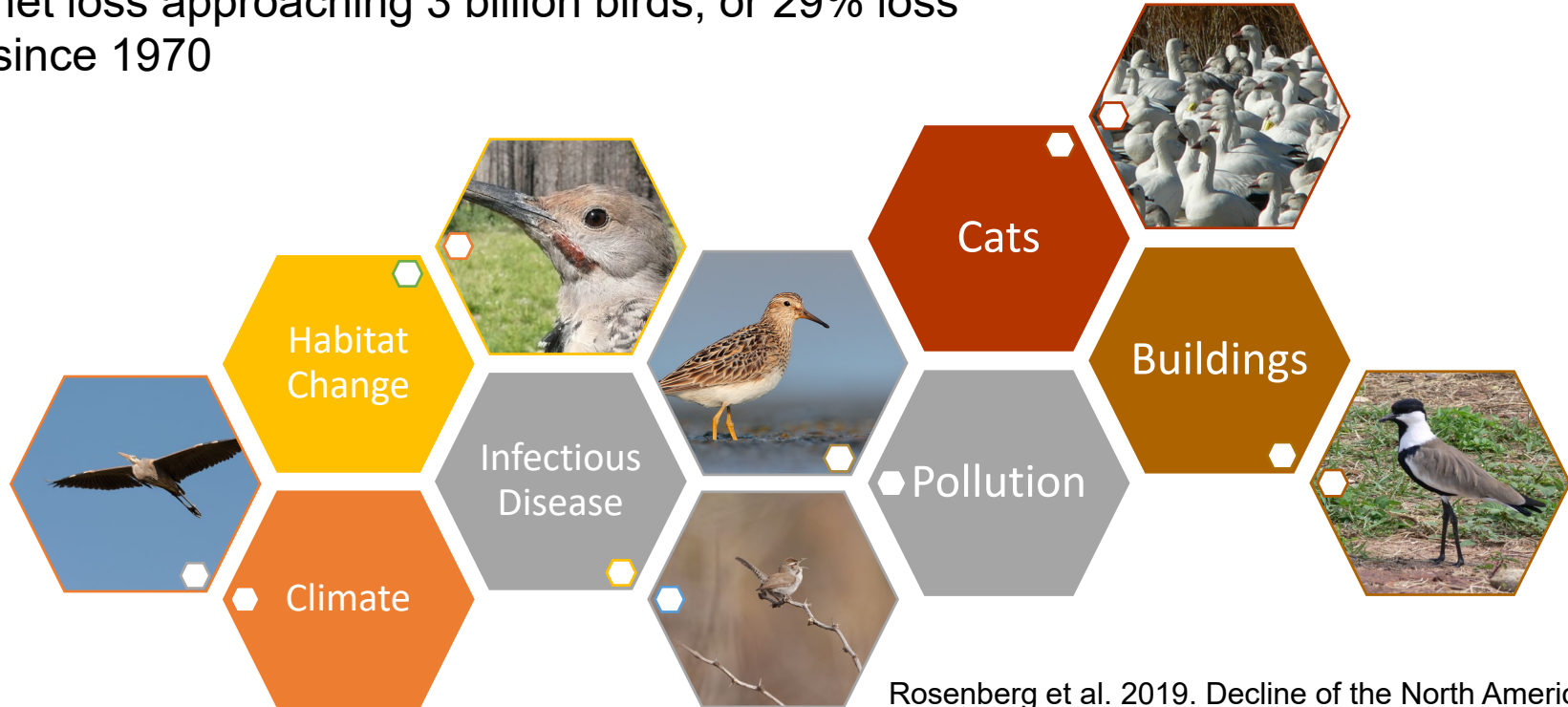
Overview

- Misconceptions & realities of handling and sampling wild birds
- Resources for IACUCs and researchers
- Biosafety and training considerations
- Euthanasia in the field (being ready if necessary)



Why study wild birds?

Population trajectories and size estimates indicates a net loss approaching 3 billion birds, or 29% loss since 1970



Rosenberg et al. 2019. Decline of the North American Avifauna
Science (366) 6461: 120-124

Wildlife Research in the Field

All studies with animals are regulated,
wildlife have additional permits requirements

Field study means any study done on free-living
wild animals in their natural habitat



Misconceptions for working with wild birds

If a person touches the nest of a bird, birds will never come back to that nest (19%)

Bird feeders should be taken down in the fall because they keep birds from migrating

Sampling birds for blood must be done by a veterinarian

All species are similar, and if it is not new knowledge if it already documented in poultry studies or a similar taxon



Who cares?

- Scientists - because they care about their research subjects
- Scientists - because they want to minimize investigator impacts when studying behavior
- Scientists - because Institutional Animal Care and Use Committees (IACUC) who review research protocols rely heavily on standards established by experts



Plus the animals care
Everyone cares

The Role of the IACUC

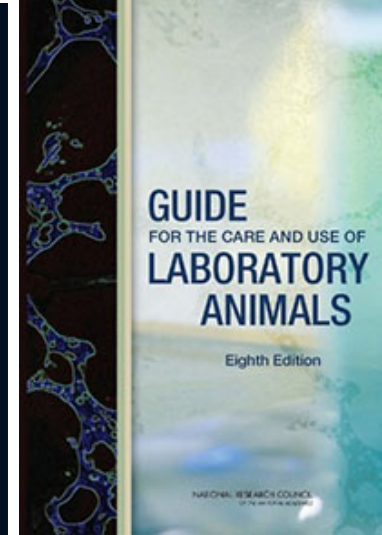
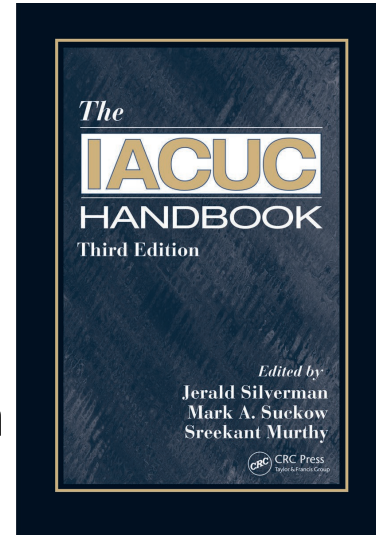
A clear, strong commitment to humane research methods is necessary to assure the public and policy makers that the profession is adequately self-policed and the community is comfortable with the work

- Research protocol review
- Annual program review
- Facilities review
- Address animal concerns
- Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC International) conducts reviews every 3 years



Gap filling

- Institutional Animal Care and Use Committees (IACUCs) rarely have members who are wildlife biologists, much less ornithologists
- They should seek out expertise when assessing protocols for research involving wild birds
- *The Guide* is recognized by IACUCs at the federal and state agencies as the authoritative source of information



AVMA Guidelines for the Euthanasia of Animals: 2020 Edition*

Members of the Panel on Euthanasia

Steven Leary, DVM, DACLAM (Chair); Fidelis Pharmaceuticals, High Ridge, Missouri
Wendy Underwood, DVM (Vice Chair); Indianapolis, Indiana
Raymond Anthony, PhD (Ethicist); University of Alaska Anchorage, Anchorage, Alaska
Samuel Cartner, DVM, MPH, PhD, DACLAM (Lead, Laboratory Animals Working Group);

IACUC Review

- Importance of research question justifies use of animals?
- Study personnel have training in species/techniques?
- **R**efine - consider alternatives to any procedure that causes more than momentary pain or distress
- **R**educe - the number of animals used should be the minimum that is consistent with the aims of the experiment
- **R**eplace - use non-animal models when possible (e.g., *in vitro* methods)



Three Rs

- **Reduce**

- Most often a concern with getting sufficient sample sizes to appropriately test hypotheses
- Larger samples typically needed to compensate for variance in field conditions
- Sufficient samples needed within age and gender classes when examining ecology (e.g., survival, habitat use)
- Situations can arise when you get more than requested in original IACUC protocol (e.g., migratory bird fallout or great luck in capture of birds)



Three Rs

- **Refine**

- Substantial refinements have been made in wildlife techniques & technologies
 - Advances in telemetry, capture methods, drones
- Research is often limited due to cost or study site limitations
- Often, little species specific information available to allow refinement
 - Refinement of methods often done through learning while conducting the study



Three Rs

- **Replace**

- Study of ecology, behavior, survival of a specific organism necessitates use of that organism
- Replacement usually done to develop techniques for use with T&E species
 - e.g. Killdeer could be used as surrogate for endangered Mountain Plover
- That is not to say that replacement cannot be used in field studies, only that it is uncommon



Training

- **Training of PI**
 - PI needs to understand that what IACUCs do is required by law and is designed to improve the science overall and protect animals
 - Required training is often limited to the 'generic' IACUC training on lab animals
 - Taxon-specific training is beneficial
 - Need to be provided with resources specific for wildlife



Training

- **Training of the IACUC**

- IACUCs need to understand the realities of field research and diversity of wildlife and situations
- IACUCs need to be flexible and adaptable in evaluation of protocols
 - Some methods may seem less stressful, but complexity may not be understood
 - e.g., helicopter net gunning versus trapping animals
 - e.g., use of live versus artificial lures in trapping raptors



Guidelines for the Use of Wild Birds In Research



THE ORNITHOLOGICAL COUNCIL

Providing Scientific Information about Birds

GUIDELINES TO THE USE OF WILD BIRDS IN RESEARCH

Special Publication 1997

Edited by

Abbot S. Gaunt & Lewis W. Oring

Third Edition 2010

Edited by

Jeanne M. Fair, Editor-in-Chief

Ellen Paul & Jason Jones, Associate Editors

Guidelines to the Use of Wild Birds in Research is:

- Peer reviewed
- Science-based discussion of the ethical aspects of ornithological research methods to promote the humane handling of wild birds used in research
- Full literature review

Revision



Prompted by need for changes in permit and animal welfare regulations and full literature review of methods and impacts

What's covered



Permits: collecting, banding, salvage, endangered species, import/export, refuge special use, IACUC protocols

Investigator impact: discussion of impacts of commonly used research methods

Scientific collecting: why, sample size, humane methods, and impacts on population and habitat

Marking: types of markers, responsibilities for and ownership of banding data

Transport: moving birds to laboratories, holding facilities, and short-term captivity

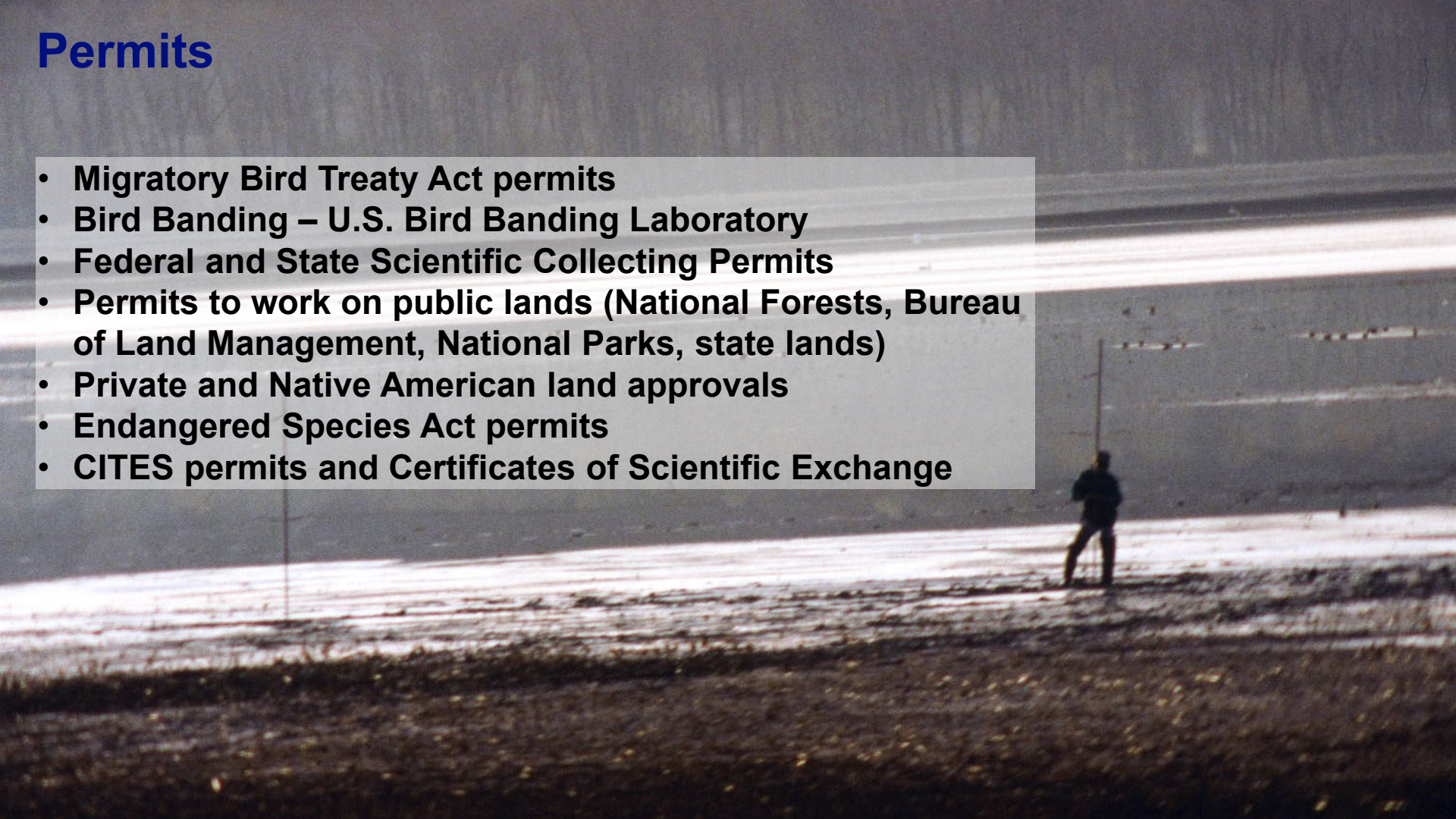
Housing and captive breeding: quarantine and isolation; prevention, diagnosis, treatment and control of animal disease; separation by species and source; daily care; housing/caging; aquatic birds and raptors; identification and records; disposition; zoonoses

Minor Manipulative Procedures: blood samples, collection of other tissues, collection of food samples, cloacal lavage, injections and insertions of implants, determination of egg viability, use of play-back and decoys, artificial eggs, experimental manipulation of plumage

Major Manipulative Techniques: restraint, anesthesia, surgery, laparotomy and other techniques for sexing, euthanasia

Permits

- **Migratory Bird Treaty Act permits**
- **Bird Banding – U.S. Bird Banding Laboratory**
- **Federal and State Scientific Collecting Permits**
- **Permits to work on public lands (National Forests, Bureau of Land Management, National Parks, state lands)**
- **Private and Native American land approvals**
- **Endangered Species Act permits**
- **CITES permits and Certificates of Scientific Exchange**



Biosafety and considerations in the field

- Are biological safety professionals evaluating field collection activities involving biological specimens as part of protocol reviews?
- Are biosafety professionals, who are typically trained to address biosafety issues occurring within the research laboratory, currently equipped with the knowledge to address biosafety in field collection protocols?



Not one-size-fits-all

Wildlife capture & handling techniques will vary with the bird species and field situation

This also applies to euthanasia methods that must be ready to be used in the event of injury



Suggestions



- **Get PIs to serve on IACUC committees**
- **Provide training opportunities for researchers, IACUC, and biosafety professionals**
- **More use of wildlife specific guidelines**
- **Attend IACUC Wildlife 101 workshops**
- **Encourage publication of relevant data on the impacts of research on birds**
e.g., published data on injury and mortality with mist-netting