# FIU Guidelines for Use of Birds in Research

At FIU, each teacher, student, or researcher must ensure the welfare of the birds under his/her care and treat them in a humane manner. Each bird's protection depends on the conscience of each person handling the bird to advance basic and/or clinical principles to improve health care for all birds.

The Guide for the Care and Use of Laboratory Animals (Guide) used by the PHS and American Association of Accreditation of Laboratory Animal Care does not specifically address the husbandry and care of birds. Areas of the Guide that address, in general, with program and facility-wide issues were intended to be applied with professional judgment. In the case of birds, such judgment requires familiarity with the needs of the species in question. "FIU Guidelines for use of Birds in Research" is intended to aid the institutional bird care and use committee (IACUC) in meeting these needs.

## RELEVANT FEDERAL LAWS AND IMPLEMENTING RULES AND REGULATIONS
**The following legislation must be taken into account:**

### Animal Welfare

The Animal Welfare Act of 1966 (Public Law 89-544), as amended by the Animal Welfare Act of 1970 (Public Law 91-579) and by the 1976 Amendments to the Animal Welfare Act (Public Law 94-279).

Implementing rules and regulations are published in the Code of Federal Regulations (CFR), Title 9 (Animals and Animal Products), Sub-chapter A— Animal Welfare, Parts 1, 2, and 3. All amendments to the rules and regulations are periodically published in the Federal Register under the heading; Department of Agriculture, Animal and Plant Health Inspection Service. Copies of the rules and regulations can be obtained from the Offices of the Deputy Administrator, U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services, Federal Building, 6505 Belcrest Road, Hyattsville, MD 20782.

### Endangered Species

The Endangered Species Act of 1973 (Public Law 93-205; 87 Stat. 884) became effective on December 28, 1973, and thereby supplanted the previous Endangered Species Conservation Act of 1969 (Public Law 91-135:83 Stat. 275).

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## A. General Considerations

Many applications and proposals for research grants now require that each investigator provide written assurance that research with birds will meet the following requirements:

•Procedures with birds must avoid or minimize distress and pain to the birds, consistent with sound research design.

•Procedures that may cause more than momentary or slight pain or distress to the birds should be performed with appropriate sedation or analgesia except when justified for scientific reasons in writing by the investigator in advance. Due to masking, absence of pain or discomfort response is not a reliable indicator that there is no pain or discomfort.

•Birds that would otherwise experience severe or chronic pain that cannot be relieved will be euthanitized at the end procedure or, if appropriate, during the procedure.

•Methods of euthanasia will be consistent with recommendations of the American Veterinary Medical Association (AVMA) Panel on Euthanasia (Smith et al. 1986) unless deviation is justified for scientific reasons in writing by the investigator.

•The living conditions of birds held in captivity should be appropriate to satisfy the standards of hygiene, nutrition, group composition and numbers, refuge-provision, and protection from environmental stress necessary to maintain that species in a state of health and well-being.

•The housing, feeding, and non-veterinary care of the birds will be directed by a scientist (generally the investigator) trained and experienced in the proper care, handling, and use of the species being maintained or studied.

•Studies should use the fewest birds necessary to answer reliably the questions posed. Use of adequate samples at the outset will prevent unnecessary repetition, resulting in waste or increased distress

•The omission from these guidelines of a specific research or husbandry technique (or their application to particular species) must not be interpreted as proscription of the technique.

Additional general considerations that should be incorporated into any research design using birds include the following:

•The Investigator must have knowledge of all regulations pertaining to the birds under study, and must obtain all permits necessary for carrying out proposed studies.

• Researchers working outside the United States should, in addition to following these guidelines, ensure that they comply with all regulations of the country in which the research is being performed. Work with many species is regulated by the provisions of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

• Regulations affecting a single species may vary with country. Local regulations may also apply. Individuals of endangered or threatened taxa should neither be removed from the wild (except in collaboration with conservation efforts), nor imported or exported, except in compliance with applicable regulations.

•Before initiating research, investigators must be familiar with the study species and its response to disturbance, sensitivity to capture and restraint, and, if necessary, requirements for captive maintenance to the extent that these factors are known and applicable to a particular study.

•Removal from the wild of potentially nest- or young-tending individuals should be avoided during the breeding season unless justified for scientific reasons.

•Taxa chosen should be well-suited to answer the research questions posed.

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•A distressed bird provides poor data.

•In cases of doubt, or in the absence of specific justification for relaxed standards, the stricter regime of analgesia and asepsis should be adopted.

•Techniques appropriate for one experiment or at one time may be counterproductive in another.

•High standards of cleanliness should be practiced routinely during invasive procedures.

• Repeated surgeries on a single subject are generally discouraged unless they are part of a single anesthesia.

The IACUC must be aware that although vertebrates typically used in laboratory research represent a small number of species with well understood husbandry requirements, the class Aves contains at least 9,000 species with very diverse and often poorly known behavioral, physiological, and ecological characteristics. This diversity, coupled with the diversity of field research situations, requires that each project be judged on its own merits.

The premature stipulation of specific guidelines could severely inhibit humane care as well as research. The IACUC must note the frequent use of the word "should" throughout these guidelines, and be aware that this is in deliberate recognition of the diversity of birds and situations covered by the guidelines. Investigators, on the other hand, must be aware that use of the word "should" denotes the ethical obligation to follow these guidelines when realistically possible.

When field studies on wild vertebrates are to be reviewed, the IACUC must include personnel who can provide an understanding of the nature and impact of the proposed field investigation, the housing of the species to be studied, and knowledge concerning the risks associated with

maintaining certain species of wild birds in captivity. All studies of breeding biology should consider the impact of nest visitation, and visits should be minimized as long as demands or sound scientific results are not jeopardized. Investigators should monitor their studies for adverse effects of disturbance. Whenever possible, action should be taken to alleviate or minimize detrimental activities. Research activities should be consistent with the gathering of adequate samples for valid research results, yet be balanced to minimize adverse effects.

## B. SAMPLING

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### What is an adequate sample?

An adequate sample is defined as the minimum number of specimens or other data necessary to ensure investigative and statistical validity. The sample size required for a study thus depends on the nature of the investigation and the extent of variation in the parameters being studied. Computer modelling can help define and sometimes reduce sample size requirements.

### Appropriate identification of models

Where an individual ID of birds in a study is needed, for marking procedure to be effective, it should meet as many of the following criteria as possible (Marion and Shamis 1977).

- The bird should experience no immediate or long-term hindrance or irritation.
- The marking should be quick and easy to apply.
- It should have readily visible and distinguishable digits and/or colors.
- The markings should persist on the bird until research objectives have been fulfilled.
- The bird should suffer no adverse effects on its behavior, longevity, or social life.

## C. LABORATORY BIRD MANAGEMENT

The proper management of laboratory bird facilities depends on many subjective and objective factors that interact differently in different institutions. Well trained and motivated personnel can ensure high-quality bird care even in the presence of deficiencies in the physical plant or housing equipment. "Proper management" is defined as any system of housing and care that permits birds to grow, mature, reproduce, and behave normally and to be maintained in physical comfort and good health. "Proper management" also implies environmental and genetic control to minimize variations that may modify bird's response to a particular experimental regimen. Proper management of laboratory birds is essential to the welfare of the birds, to the validity of research data, and to the health and safety of the bird-care staff.

## Housing

Criteria for evaluating a caging or housing system - The caging or housing system is one of the most important elements in the physical environment of laboratory birds. Inasmuch as the well-being of the bird and the control of experiments are influenced by the caging or housing system, it should be designed carefully. The following criteria may be used to evaluate the caging or housing system (hereinafter referred to as the "system"):

- The system should be designed with the birds physical comfort as a primary consideration. Physical comfort, as applied specifically to housing, includes such factors as keeping the birds dry and clean, or providing an appropriate aquatic or marine environment; keeping the birds at a comfortable temperature; providing sufficient space to permit freedom of movement and normal postural adjustments; avoiding unnecessary physical restraint; providing convenient access to clean food and water; and if birds are housed in groups, preventing overcrowding.

- The functional operation of the system should be compatible with maintenance of birds in good health, as indicated by such things as normal growth and development and the prevention of diseases.

- Throughout the system, keeping the cages, runs, and pens in good repair should be considered mandatory to prevent injury to the birds, to promote physical comfort, and to facilitate effective sanitary maintenance and servicing. Particular attention should be given to avoiding sharp edges and broken wires, to keeping cage floors in good condition, and to refurbishing or replacing rusted equipment.

- The system should meet the investigator's research requirements.

The following are some examples of the considerations that should guide those who must determine the need for separate housing by species:

- Some species may carry subclinical or latent viral infections that can be fatal when transmitted to other species
- Prey species should not be kept near birds of prey.

Minimum Cage Size - In general, cages should provide sufficient room for normal maintenance, behavior and wing-flapping.

Lighting - For many species it is advantageous to use full spectrum (UV) light sources in indoor facilities.

Photoperiod - Unless experimental protocols dictate otherwise, birds should normally be maintained on photoperiods natural to the species.

Temperature - Temperature range appropriate to the species should be maintained with a thermostat-controlled heating/cooling source.

### Sanitation

Cleanliness - Bird facilities should be kept clean, neat, and uncluttered. A schedule of regular sanitary maintenance is necessary and should include elimination of hazardous biologic, chemical, and physical agents. Bird rooms, corridors, storage spaces, and other areas of a bird facility should be cleaned as often as necessary, and appropriate detergents and disinfectants should be used to keep them free of dirt, debris, and harmful contamination.

Waste Disposal - All waste should be collected, removed, and disposed of in a safe, sanitary manner.

Vermin and odor control - Programs should be instituted to control or eliminate cockroaches, flies, escaped or wild rodents, and other similar pests. All vermin or pest breeding sites should be sealed over or eliminated, and pesticides or traps placed so as not to endanger birds.

Provisions for emergency, weekend, and holiday care - Provisions should be made for emergency care of birds. Institutional security personnel and fire or police officials should know how to reach a person responsible for the birds. This can be accomplished by prominently posting the names of such responsible persons in the facilities or by listing them with the institution's central telephone center or security department. The objective is to ensure that the birds will be cared for in case of emergency. Provisions should be made for observation and care of birds every day, including weekends and holidays, both to safeguard their well-being and to satisfy research requirements.

## D. LABORATORY BIRD QUALITY AND HEALTH

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### Primary considerations#

Recently captured birds may experience difficulty in adjusting to conditions of captivity. The potential problems will be highly species-specific, and investigators will have to rely on the good judgment and experience of those who have handled the taxa in question. Frequent and careful observation of birds during the adjustment period is necessary to ensure satisfactory acclimation.

Many species of small birds injure themselves by repeatedly poking their beaks and heads through cage mesh in attempts to escape.

Food and water should be conspicuous and widely scattered to facilitate discovery by the bird.

Birds introduced into social situations should be watched carefully for adverse effects of aggression.

The living conditions of birds should be appropriate for each species and contribute to their sound health and comfort.

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### Veterinary care

Adequate veterinary care and postmortem examinations should be provided by a licensed veterinarian. Such care includes full-time or regularly scheduled attendance by a veterinarian with frequency appropriate to institutional needs; oversight responsibilities for bird husbandry programs; frequent observation of all birds by a person qualified to verify the health of each bird; availability of veterinary medical service for birds found to be ill or injured, application of currently accepted measures of prophylaxis and therapy appropriate for each species; establishment of procedures for disease containment and surveillance; consideration of humane aspects of bird experimentation, such as the proper use of anesthetics, analgesics, and tranquilizing drugs; appropriate surgical procedures and postsurgical care; and proper euthanasia procedures.

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Staple food: Birds should be fed palatable, uncontaminated, and nutritionally adequate food daily or according to their particular requirements unless the experiment protocol requires otherwise.

Water: Fresh water should be given daily for species that require water. For species normally taking water baths, water should be provided in open containers to allow bathing. Some birds may be misted for feather maintenance.

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### Quarantine and isolation of birds

Quarantine is the separation of newly received birds from those already in the facility until the health of the newly received bird has been evaluated. This evaluation should be made in accordance with acceptable veterinary medical practice. Applicable local, state, or federal regulations pertaining to health of birds must be followed. Generally all newly acquired birds shall be kept in strict quarantine from other populations of birds for 30-45 days.

Isolation is the separation of birds that are known to be or suspected of being diseased, or known to be or suspected of carrying disease, from birds that are in good health. When infectious hazards are recognized, the birds involved should be isolated from other birds by placing them in isolation units or separate rooms.

## Prevention, Diagnosis, Treatment, and Control of Diseases

All psittacines, columbiformes, falconiformes, and gallinaceous birds shall be managed appropriately for ornithosis (chlamydiosis) by antigen antibody or culture. The investigator or other qualified person should observe all laboratory birds daily for clinical signs of illness, injury, or abnormal behavior. All deviations from normal and all deaths should be reported promptly to the person responsible for disease control and postmortem exams.

Veterinary medical service should be provided on a timely basis for ill or injured birds. Currently accepted measures of diagnosis, therapy, and prophylaxis should be applied as appropriate.

Separation by species and source - The physical separation of birds by species is usually appropriate for protection against interspecies transmission of infectious diseases; to prevent anxiety due to interspecies conflict; and to meet experimental and environmental requirements. This separation is best accomplished by housing species in separate rooms. It may also be advisable to house birds from different sources in separate rooms.

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### Records#

Records should include source and eventual disposition of each bird, the strain or stock, the name and location of the responsible investigator, and pertinent information.

## E. DISPOSITION OF BIRDS AFTER EXPERIMENTS

Upon completion of studies, researchers should release field-trapped specimens whenever practical and ecologically appropriate. Exceptions are if national, state, or local laws prohibit release, or if release might be detrimental to the existing gene pool in a specific geographic area, or where there is threat of introduction of disease into the wild population.

### Release

As a general rule, field-trapped birds should be released only:

- At the site of the original capture, unless conservation efforts or safety considerations dictate otherwise. For those latter exceptional circumstances, prior approval of relocation should be obtained from appropriate state and/or federal agencies, and approved relocations should be noted in subsequent publication of research results:

- If their ability to survive in nature has not been irreversibly impaired.

- When local and seasonal conditions are conducive to survival.

Care is required to enhance the chances of survival of birds following release. Each bird should be examined for signs of injury or disease. Birds should be released early in the day and during favorable weather so that they will be able to feed and locate suitable roosting sites before dark. Released birds should not bear the color bands that fit the color sequences allotted to a licensed bird bander. Released birds that have been marked with body color should be returned to normal coloration prior to release so as not to inhibit breeding potential or invite predation.

Captive birds that cannot be released should be properly disposed of, either by distribution to colleagues for further study, or preservation and deposition as teaching or voucher specimens in research collections, to other collectors, or zoos. Special arrangements may be suitable for purpose-bred psittacines.

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### Euthanasia

In both the field and laboratory, the investigator must be careful to ensure that birds subjected to a euthanasia procedure are dead before disposal. In those rare instances when specimens are unacceptable for deposition as vouchers or teaching purposes, disposal of carcasses must be in accordance with acceptable practices as required by applicable regulations. Carcasses containing toxic substances or drugs (including euthanasia agents must not be disposed of in areas where they may become part of the natural food web.

The technique for euthanasia should not interfere with postmortem analysis and should be as swift and painless as possible. The many acceptable techniques for euthanasia have been reviewed by the AVMA (Smith et al. 1986).

Finally, euthanasia is not a technique for the disposal of birds at the end of an experiment but a procedure to end chronic distress or pain. Investigators should seek ways to provide healthy experimental subjects with the opportunity for a continued, comfortable existence.

The purpose of this guide is to assist scientific institutions in using and caring for laboratory birds in ways judged to be professionally appropriate. The recommendations are based on scientific principles, expert opinion, and experience with methods and practices that have proved to be consistent with high quality bird care.
The scientific community has long recognized a scientific and ethical responsibility to provide appropriately for the welfare of birds used for research and education in biology and medicine.

This should be understood by all that it is deliberately written in general terms so that the recommendations may be applied in the diverse scientific institutions that use birds for education and research; professional judgment is essential in the interpretation of these recommendations.

## F. OCCUPATIONAL HEALTH

An occupational health program is mandatory for personnel working in laboratory bird facilities and for other personnel with substantial bird contacts. The program should include replacement physical examinations and, for personnel in some specific job categories, periodic physical examinations are advisable with particular attention to persons with chronic respiratory disease, immunosuppression, or pregnancy.

**Humane Care and Use of Birds Association of Avian Veterinarians © 1998**

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