IACUC POLICY # 31

Aquatic Animal Housing

I. Purpose
Animal Resource Facilities (ARF) provides housing and husbandry for animals used in research and teaching at the University. Some species, such as aquatic animals, may need to be housed outside of the ARF facility to best accommodate the needs of the research and to provide optimal care for the animals. Maintaining fish outside of ARF requires Institutional Animal Care and Use Committee (IACUC) approval PRIOR to housing fish in this manner. The purpose of this policy is to provide guidance on what criteria are required to house fish at the University. This policy is based on the recommendations and requirements of the 2010 Guide for the Care and Use of Laboratory Animals.

II. USC Aquatic Animal Housing Guidelines
1. Water Quality
   a. Water quality parameters and life support systems for aquatic animals will vary with the species, life stage, total biomass supported, and the animals’ intended use.
   b. Characteristics that may affect the appropriateness of water quality include temperature, pH, alkalinity, nitrogen waste products, phosphorus, chlorine/bromine, oxidation-reduction potential, conductivity, salinity, hardness, dissolved oxygen, total gas pressure, ion and metal content, and the established microbial ecology of the tank.
   c. Appropriate water quality characteristics must be recorded daily. Written and/or electronic records must be available at the housing site for IACUC inspection at all times.
   d. Recirculating systems are strongly preferred over static/renewal systems. The use of static/renewal systems for fish species must be scientifically justified.

2. Life Support System
   a. A life support system refers to the physical structure used to contain water and house animals, as well as any ancillary equipment used to move and/or treat water.
   b. The type of life support system should be appropriate for the intended use. The selection and/or design of a life support system should be based on the natural habitat of the species, age/size of the species, number of animals maintained, availability and characteristics of the water required, and the type of research.

3. Temperature, Humidity, and Ventilation
   a. Most aquatic animals are poikilothermic and depend on the temperature of their environment to sustain physiologic processes.
   b. Temperature should be controlled at the appropriate level and monitored daily. If
temperature falls outside the appropriate range, a monitoring and reporting plan should be in place such that the person responsible for the animals and/or ARF is notified immediately.

c. The volume of water contained in a room can affect room temperature, temperature stability, and relative humidity. Air handling systems must be adequate to compensate for these thermal and moisture loads.

4. Illumination
   a. Aquatic species are often sensitive to changes in photoperiod, light intensity, and wavelength.
   b. Light-dark cycles should be appropriate to support normal physiological function.

5. Noise and Vibration
   a. Aquatic species may be sensitive to noise and vibration transmitted through the water.
   b. Effects of noise and vibration may be present but subclinical.
   c. If noise and vibration are evident the system must be modified, placed on isolation pads, or moved to another location.

6. Housing must meet the following criteria:
   a. Allow for the normal physiological and behavioral needs of the animals, including excretory function, control and maintenance of body temperature, normal movement and postural adjustments, and, where applicable, reproduction. In some poikilothermic reptiles and amphibians, microenvironmental temperature gradients may be needed for certain physiologic functions such as feeding and digestion.
   b. Allow conspecific social interactions (i.e., schooling in fish species).
   c. Provide a balanced, stable environment that supports the animals’ needs.
   d. Provide the appropriate water quality and characteristics, and permit monitoring, filling, refilling and changing of water.
   e. Allow access to adequate food and allow removal of food waste.
   f. Restrict escape or accidental entrapment of animals or their appendages.
   g. Be free of sharp edges and/or projections that could cause injury.
   h. Allow for observation of the animals with minimal disturbance.
   i. Be constructed of nontoxic materials that do not leach toxicants or chemicals into the aquatic environment.
   j. No present electrical hazards.

7. Space
   a. Space recommendations and housing density vary extensively with the species, age, and size of the animals, the life support system and the type of research.
   b. The needs of each situation must be evaluated by the IACUC in consultation with the Principle Investigator to determine appropriate housing space. Advice from outside experts may be indicated.

8. Husbandry
   a. Food should be stored in a type-appropriate manner to preserve nutritional content, minimize contamination, and prevent entry of pests.
   b. The animal room should be regularly cleaned and disinfected.
   c. Animals must receive daily care from qualified personnel who have sufficient understanding of the housing system to identify malfunctions and, if they are unable to address a system failure of such magnitude that it requires resolution before the next workday, access to staff who can respond to the problem.
9. Security
   a. Housing must be in a secure location with access restricted to personnel listed on the
      approved IACUC animal use protocol.
   b. Attending Veterinarian and IACUC must have access to the room.

III. Policy Implementation
1. Potential housing sites for aquatic species must be inspected and approved by the IACUC PRIOR
   to acquisition of animals. If the principle investigator obtains animals prior to IACUC approval,
   he/she may be required to transfer the animals to an appropriate location or euthanize them if
   appropriate housing is not available.

2. Exceptions to this policy are considered to be exceptions to the Guide and require a written
   scientific justification in the Animal Use Protocol. The exception request must provide adequate
   scientific justification for not following the Guide and will be reported, as required, to
   accreditation and regulatory agencies.