

	<b>Title: Husbandry Care of Fish</b>	<b>SOP #</b>	AV 35-300
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## Standard Operating Procedure

### 1. Purpose

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To outline the minimum standards of care for fish.

### 2. Scope

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All departments providing animal care for fish must meet or exceed these minimum requirements which are based on the Public Health Service Policy and the *ILAR Guide for the Care and Use of Laboratory Animals*.

### 3. Prerequisites

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The Principal Investigator (PI) or designee will require a blank Standard Operating Procedure (SOP) template to complete the 'Husbandry Care of Fish' SOP for their department/research study. The SOP template is available from the Institutional Animal Care and Use Committee (IACUC) Chair.

The PI should review the 'Management of SOPs' policy (SOP# AV 20-101) for steps for completing and maintaining the SOP.

### 4. Responsibilities

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The Principal Investigator or designee will develop a 'Husbandry Care of Fish' SOP for their department/research study.

The SOP must be approved by the Attending Veterinarian (AV) and the IACUC.

### 5. Procedure

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Facilities:

- Counters and floors should be moisture-resistant, nonabsorbent, impact-resistant, and relatively smooth.
- Floors should have adequate drainage.
- Walls should be moisture resistant and have GFI electrical outlets that are properly positioned to eliminate possible safety hazard.



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- Adequate storage space should be available to help facilitate cleaning and storing of tanks and supplies.
- Tanks must not be housed directly on floors.
- Illumination schedules should be of a duration that will not compromise the well-being of the species being housed.
- Fish should be housed in primary enclosures that meet their general needs (i.e. proper size tank for species specific requirements, and for maintaining appropriate densities for group housed fish).
  - Primary enclosure requirements will be based on species needs, behavior, and goals of the study.
- If a social species, fish should be housed in compatible pairs or groups of the same sex.
  - Single housing of social animals must be consistent with the standards established in the 'Environmental Enrichment and Social Housing' policy (SOP# AV 30-102).

**Temperature and Humidity:**

- Humidity does not directly impact aquatic animals. However, high levels of humidity in fish rooms can be detrimental to electronic equipment and necessitates meticulous care/cleaning of automatic feeders.
- Regular monitoring of the HVAC system is important is best performed at the room level
- Room temperature should be recorded on a room log sheet.

**Identification:**

- Each tank should be individually identified and have an approximate fish count.

**Environmental Enrichment:**

- Refer to the 'Environmental Enrichment and Social Housing' policy (SOP# AV 30-102).

**Daily Monitoring:**

- Observe each tank and check fish for health issues.
  - Signs to look for include abnormal swimming behavior, discoloration of the water or fish, and failure to feed properly.
  - Contact the veterinary care service identified in the Animal Use Protocol (AUP) about care for sick fish.
- Check all automatic feeders and clean when necessary.
- Check that each tank has an individual identification.
- Adjust fish count as needed.
  - Document all transfers, deaths and euthanasia of fish.



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- Check and record water temperature which should be maintained at either 10-28°C, or the recommended temperature for the specific species being housed (for example, cold water fish 5-15°C, temperate water fish 12-26°C, and warm water fish 18-35°C).
- Document room activities on room log sheet.

**Weekly Monitoring:**

- Standing/Static water tanks:
  - Siphon solid wastes from tanks as needed.
  - Replace at least 25% of the tank water volume every two weeks, using appropriately conditioned water.
  - Clean all filters at least every two weeks.
  - Remove algae by scraping tanks, so that algal growth does not interfere with daily observation of animals.
  - Check and record water quality (dissolved oxygen, ammonia/nitrite/nitrates) at least weekly for new tanks until filters are cycled.
    - If water quality values are out of the normal range (*for example: cold water: <6.0 mg/L dissolved oxygen, >300 ug/L ammonia; temperate water: <5.0 mg/L dissolved oxygen, >400 ug/L ammonia; warm water: <4.0 mg/L dissolved oxygen, >500 ug/L ammonia*), contact your supervisor or PI to correct the issue.
  - Document tank checks on room log sheet.
- Recirculating systems with central filtration:
  - Siphon solid wastes from tanks as needed.
  - Back-flush/clean mechanical filtration systems as needed.
  - Monitor biological filtration system media levels.
  - Monitor and record water quality data (dissolved oxygen, ammonia/nitrite/nitrates, pH).
  - Replace at least 25% of system water volume or as appropriate with conditioned water as determined by nitrate levels, total ammonia nitrogen, and/or pH.
  - Control algae growth, if any, as with the procedure in static tanks above.
  - Clean tanks in place with a brush to remove mild algae accumulation on an “as needed” schedule.
- Flow-through water tanks:
  - Clean tanks in place with a brush to remove mild algae accumulation on an “as needed” schedule.
  - Check water quality (dissolved oxygen, ammonia/nitrite/nitrates) weekly or more frequently based on fish density, or when changes are made to the system.



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- Facilities housing fish where water source is different than campus water (such as the ocean) and are using the flow-through system will have specific procedures for each species being housed, and may be further defined in specific IACUC approved protocols or Standard Operating Procedures.

**Biweekly Monitoring:**

- Replace at least 25% of the tank water volume or as appropriate using conditioned water.
- Clean all filters at least every two to three weeks or as required to maintain optimal function of filtration system and pumps.
- Follow the 'Housekeeping' policy (SOP# AV 50-101).

**Monthly Monitoring:**

- Disinfect and sanitize shelves, counters, racks, tank cleaning utensils, scrub brushes, sponges, enrichment devices, tank specific nets, and floors.
- Clean feed container.
- Check and record water quality (ammonia/nitrite/nitrates) on a subsample of tanks that have had their filters cycled, such that each tank is measured at least every three months.
- Log monthly tank checks on room log sheets.

**Feeding:**

- Can range from continuous (i.e. automatic feeders) to 2-3 times per week, depending on the nutritional quality and quantity of the food fed.
- Feeding interval should be based on fish species, life stage, and specific feeding behavior.
- Fish should be fed palatable, non-contaminated, and nutritionally adequate food daily or according to their particular requirements, unless the protocol under which they are being used requires otherwise.
- Feed should be stored in properly labeled vermin controlled containers.
- Feed should be discarded either 6 months after being received or opened or at the manufacture's expiration date or (when properly stored) when feed is no longer of nutritional value.
- Feed container should be cleaned regularly.

**Euthanasia:**

- Refer to the 'Euthanasia for Aquatic Species' policy (SOP# AV 40-106).

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- Euthanasia methods must meet the requirements for euthanasia outlined in the most current edition of the AVMA Guidelines on Euthanasia.

## **6. *References***

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7. National Institutes of Health: Public Health Service Policy on Humane Care and Use of Laboratory Animals (<http://grants.nih.gov/grants/olaw/references/phspol.htm>).
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9. AVMA Guidelines for the Euthanasia of Animals: 2013 Edition (<https://www.avma.org/KB/Policies/Documents/euthanasia.pdf>).
10. Management of SOPs (SOP# AV 20-101).
11. Environmental Enrichment and Social Housing (SOP# AV 30-102).
12. Housekeeping (SOP# AV 50-101).
13. Euthanasia for Aquatic Species (SOP# AV 40-106).

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## 7. Definitions

1. AV – Attending Veterinarian – responsible for the health and well-being of all laboratory animals used at the institution
2. SOP – Standard Operating Procedure – established or prescribed methods to be followed routinely for the performance of designated operations or in designated situations
3. IACUC – Institutional Animal Care and Use Committee – responsible for assessment and oversight of the institution’s animal care program components and facilities
4. Chair – Chairperson of the IACUC
5. PI – Principal Investigator – a Central Oregon Community College employee having the background and training in scientific and administrative oversight necessary to conduct and manage the proposed study
6. AUP – Animal Care and Use Protocol – protocol created by the principal investigator of the proposed research, testing, or educational study
7. Protocol – Animal Care and Use Protocol – protocol created by the principal investigator of the proposed research, testing, or educational study
8. COCC – Central Oregon Community College
9. Guide – the *Guide for the Care and use of Laboratory Animals*
10. AWA – Animal Welfare Act – requires that minimum standards of care and treatment be provided for certain animals bred for commercial sale, used in research, transported commercially, or exhibited to the public
11. PHS – Public Health Service – establishes guidelines for the proper care of animals to be used in research
12. GFI – Ground fault interrupter – an automatic device that offers personal protection against electrical shock; installed in areas where known electrical hazards exist such as where there is the potential for contact between a person and an electrical appliance in or near moisture or water
13. HVAC – Heating, ventilation, and air conditioning – the technology of indoor environmental comfort
14. mg – milligram – a unit of mass equal to one thousandth of a gram
15. L – liter – a basic unit of volume used for liquids, equal to 1000 cubic centimeters
16. ug – microgram – a unit of mass equal to one millionth of a gram
17. pH – a numeric scale used to specify the acidity or alkalinity of an aqueous solution
18. AVMA – American Veterinary Medical Association – a not-for-profit association that acts as a collective voice for the veterinary profession



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Revision	Author	Revisions Made	Effective Date	Approval
1	Cindy Elston	<ul style="list-style-type: none"><li>• New SOP</li></ul>	11/13/16	Cindy Elston (AV)
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