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UNIVERSITY OF CALIFORNIA, SANTA CRUZ
THE INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE

SEMI-ANNUAL PROGRAM REVIEW AND SITE REPORT

April 2020 to September 2020

Obtained by Rise for Animals.
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INTRODUCTION

The Institutional Animal Care and Use Committee (IACUC) is required by the Public Health Service Policy and by the Animal Welfare Act to site visit animal facilities and study areas semiannually and to review the campus program for the humane use and care of housed animals. The purpose of this review is to evaluate the program based on the National Institutes for Health (NIH) *Guide for the Use and Care of Laboratory Animals* (hereinafter referred to as the *Guide*) and to recommend changes where necessary. The following report covers the period April 2020–September 2020.

FACILITY INSPECTIONS

[redacted] **Animal Facility** was inspected by the following IACUC members on the dates noted:
September 15, 2020
[redacted] **and Dave Casper**

[redacted] **([redacted] Building, [redacted] Center) Facility** was inspected by the following IACUC members on the date noted:
September 21, 2020

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[redacted] **and** [redacted]

[redacted] **(pools),** [redacted]**,** [redacted]**, and Greenhouse Facilities** was inspected by the following IACUC members on the date noted:
September 21, 2020
[redacted] **and** [redacted]

[redacted] **Facility (**[redacted]**)**, was inspected by the following IACUC member on the date noted:
September 14, 2020
David Feldheim

[redacted] **Facility**, was inspected by the following IACUC member on the date noted:
September 15, 2020
Dave Casper

Procedural Areas—animal euthanasia in labs [redacted] **and** [redacted]**—**was inspected by the following IACUC member on the date noted:
September 15, 2020
David Feldheim

Procedural Areas—labs on [redacted] **floors** [redacted]**—**was inspected by the following IACUC members on the date noted:
September 14–16, 2020
[redacted]**, Dave Casper, David Feldheim**

DESCRIPTION OF THE PROGRAM

The animal care and use program in effect at the University of California, Santa Cruz during the period is described below. The description of the program follows the organization of the *Guide*. An evaluation of the program is included in this report. Please see the table of contents for location.

I. INSTITUTIONAL POLICIES

A. MONITORING THE CARE AND USE OF ANIMALS

The University of California, Santa Cruz has established the institutional animal care and use committee, The Institutional Animal Care and Use Committee (IACUC), which reports to the Vice Chancellor of Research, the responsible institutional official for the animal care and use program on the UC Santa Cruz campus. The IACUC consists of 12 members and six alternates.

Members:

Name	Degree	Title	IACUC Category

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[redacted]	Ph.D.	Professor, EE Biology	Scientist
[redacted]	M.A.	Proposal Analyst, Office of Sponsored Projects	Non-Scientist
Dave Casper	D.V.M.	Campus Veterinarian	Attending Veterinarian, Scientist
Dave Feldheim, Chair	Ph.D.	Professor, MCD Biology	Scientist
[redacted]	Ph.D.	Professor, EE Biology	Scientist
[redacted]	Ph.D.	Professor, EE Biology	Scientist
[redacted], Vice Chair	Ph.D.	Research Scientist, IMS	Scientist
[redacted]		Animal Resource Manager	Scientist
[redacted]	Ph.D.	Associate Professor, Physics	Scientist
[redacted]	Ph.D.	Biological Safety Officer	Scientist
[redacted]	M.S.	Community Member, Santa Cruz County Office of Education	Non-Affiliated, Non-Scientist, Public Member

Alternates:

[redacted]	B.S.	Graduate Student, [redacted] Lab, Alternate for [redacted]	Scientist
[redacted]	M.S.	EH&S Research Support Manager, Alternate for [redacted]	Scientist
[redacted]	B.A.	Animal Technician, IMS, Alternate for [redacted]	Scientist
[redacted]	M.A.	Grants Office, Office of Sponsored Projects, Alternate for NS affiliate	Non-Scientist
[redacted]	M.S.	Community Member, Santa Cruz County Office of Education, Alternate for [redacted]	Non-Affiliated, Non-Scientist, Public Member

The IACUC is responsible for:

1. evaluating the animal care and use program at least once every six months for compliance with the requirements and recommendations of the Guide;
2. inspecting all the institution's animal facilities at least once every six months for compliance with the provisions of the Guide;
3. submitting written reports of the above evaluations and inspections and an annual report to the Institutional Official, Vice Chancellor of Research, Scott Brandt;
4. reviewing concerns involving the care and use of animals under the jurisdiction of the UC Santa Cruz campus;
5. making recommendation to the Institutional Official, Vice Chancellor of Research, regarding any aspect of the institution's animal program, facilities, or personnel training;
6. reviewing and approving, requiring modifications to secure approval, or withholding approval of:
   a. animal-use protocols describing proposed uses of live vertebrate animals for research or instruction by UCSC faculty, students or staff;
   b. those sections of Public Health Service applications or proposals related to the care and use of animals; and
   c. proposed changes regarding the use of animals in ongoing activities;
7. notifying investigators in writing of its decision to approve or withhold approval of the above, or of modifications required to secure IACUC approval;
8. suspending an activity involving animals if it determines that the activity is not being

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conducted in accordance with the applicable provisions of the Animal Welfare Act, the Guide, or the policies of the State of California, the University of California, or other applicable regulatory bodies.

As part of fulfilling the above responsibilities, IACUC meets regularly and performs semiannual site inspections. Subcommittees are formed as needed to perform site inspections and other tasks.

B. VETERINARY CARE

Routine veterinary care is provided on the UC Santa Cruz campus and [redacted] by veterinarians with training and experience in laboratory animal science and marine mammal medicine.

C. PERSONNEL QUALIFICATIONS

1. Veterinary Staff

The campus veterinarian reports as the Attending Veterinarian (AV) of the IACUC (IACUC) to the Institutional Official (IO), Vice Chancellor of Research (VCR), and is responsible for administering the animal care program on the UC Santa Cruz campus. Responsibilities include the hiring and direct supervision of all vivarium personnel, provision of veterinary care, supervision of space assignments in all campus animal facilities, review and approval of all plans for modifications to animal facilities and representing the Chancellor on all matters relating to animal care and use for research, teaching, and display. The campus veterinarian serves as an ex-officio member of The Institutional Animal Care and Use Committee (IACUC).

David Casper DVM is the full-time campus veterinarian. He has been a clinical veterinarian specializing in small animal and exotic animal practice since 1973, additionally involved in marine mammal medicine since 1979, and involved with marine mammals at the UC Santa Cruz [redacted] since 1990. A member of the International Association of Aquatic Animal Medicine, Dr. Casper was formerly veterinarian and director of research at the John G. Shedd Aquarium. He has worked on marine mammal projects in Florida, Texas, North Carolina, California, and Alaska. Dr. Casper belongs to a number of relevant professional organizations appropriate to the practice of laboratory animal medicine including AVMA, CVMA, CLAMS, AALAS, IAAAM.

2. Animal Care Staff

a. [redacted], [redacted], **and** [redacted] **Animal Facilities**, The [redacted] and [redacted] Animal Facilities are staffed by an Animal Resource Manager, [redacted], and 4 full-time experienced animal technicians. [redacted] in [redacted] are maintained by Dr. [redacted] and her team. [redacted] in [redacted] are maintained by Dr. [redacted] and his team.

b. [redacted] **and** [redacted] **Building,** Dr. David Casper oversees all animal care and use issues at [redacted]. Assistant Director of the Institute of Marine Sciences [redacted] manages the [redacted] facility. [redacted] reports to Director of the Institute of Marine Sciences [redacted], who in turn reports to the Dean of the Division of Physical and Biological Sciences Paul Koch. There are two investigators that consistently

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maintain living marine mammals at [redacted]: the [redacted] research group led by Dr. [redacted], senior trainers are [redacted] and [redacted], and the [redacted] lab led by Dr. [redacted], senior trainer [redacted]. Dr. [redacted] occasionally maintains elephant seals at the [redacted] for short (days-weeks) periods of time. Dr. [redacted] maintains a laboratory with [redacted] at the [redacted], Dr. [redacted] maintains laboratory of fish at the marine lab, Dr. [redacted] maintains a laboratory with [redacted] at the [redacted] and the greenhouse, and the [redacted] Center houses an assortment of [redacted], and displays a [redacted] maintained by [redacted]. Dr. [redacted] maintains [redacted] in [redacted] rooms of [redacted] and at the [redacted] greenhouse.

3. Faculty, Graduate Students, and Research Staff

The UCSC faculty is comprised of researchers in several fields of marine and terrestrial biology. Researchers train their staff and graduate students in the techniques necessary to conduct their research. Training of personnel is on a one-to-one basis and as specified in research applications to the IACUC. In addition, UCSC uses the CITI Online Program http://www.citiprogram.org/, to provide and document online instruction tailored to the training needs of particular researchers. The IACUC mandates passage of the BioMedical or non-BioMedical animal welfare course for personnel listed on new and renewal "Full Use with Contact" animal use protocols and a modified course for personnel listed on new and renewal Observational (No Contact) or Vertebrate Sample Tissue animal use protocols. For surgical procedures, personnel performing the surgeries are also required to complete the "Aseptic Surgery" module of "Group B: Biomedical Course for Vivarium Users," "Post Procedure Care of Mice and Rats in Research: Minimizing Pain and Distress," and if applicable "Working with Mice in Research Settings" and/or "Working with Rats in Research Settings." The IACUC Analyst reviews to ensure completion of CITI prior to protocol approval.

D. PERSONAL HYGIENE

Animal technicians are provided with personal protective equipment (PPE). The animal rooms in the [redacted] utilize various levels of biologic security. Entry is restricted into some of the rooms and may require incremental degrees of protective clothing. There is an air shower entry into the facility. There is a dedicated breakroom at the [redacted] Animal Facility as it is prohibited to smoke, eat, drink, or apply cosmetics in the animal holding portion of the facility.

E. OCCUPATIONAL HEALTH

Health risk education is given to all participants in the program. Physical examinations may be required. Employees are required to promptly report any job-related injuries or illnesses, and records of such incidents are required to be kept on file. Environmental Health & Safety (EH&S) maintains the Occupational Health Surveillance System (OHSS), an on-line risk assessment and medical screening. The UCSC OHSS provides a framework for assessing and controlling potential health risks for participants involved with animal research activities. The IACUC Analyst reviews to ensure completion of OHSS assessment prior to protocol approval.

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F. ANIMAL EXPERIMENTATION INVOLVING HAZARDOUS AGENTS

It is required that all use of hazardous agents be reported on the animal use protocol reviewed by IACUC. At least one representative of the campus Environmental Health and Safety Office sits on the committee and is available for consultation on pertinent procedures, approvals, and training.

G. EXCEPTIONS & SPECIAL CONSIDERATIONS

1. Exceptions

The IACUC approved an exception to the *Guide* on changing frequency of wirebar lids and filter tops on October 15, 2019, "At UCSC the wirebar lids and filter tops are changed at a minimum of every 2 months at complete rack change." The IACUC has created a guideline to include this and more exceptions to the Guide (whenever they become necessary), as a guideline can be easily adapted and found.

2. Special Considerations: Physical Restraint

Prolonged physical restraint of alert animals is prohibited unless essential to research objectives. In all cases, such restraint must be justified to, and approved by, the IACUC prior to use. Presently, [redacted] uses physical restraint approved by the IACUC:

Physical restraint: In this stress-induction method, animals are placed into a falcon tube which has many air-holes (more than 30) which allows good amount of ventilation and access to fresh air. Stressed animals are not harmed physically in any way. They will be subjected to daily 2-hours restraint stress for no more than 2 weeks in a separate room. The sessions consisted of 2 hours per day restraint of the mice. During restraint sessions, the mice will be monitored constantly to make sure they are physically healthy.

We also propose to test plasticity-related effects of noise-induced hearing loss using this model in mice. Animals will be anesthetized with 87 mg/kg ketamine and 8.7 mg/kg xylazine to minimize animal stress during noise exposure and placed in a sound attenuating chamber for 2 hrs, during which time the animal will be exposed to a broad band noise stimulus at 110-120 dB. The body temperature of the mouse will be maintained at 37C with a heating pad, and depth of anesthesia will be monitored periodically via the toe-pinch reflex, and additional ketamine/xylazine mixture will be given if needed. The animal can be visually observed through a window on the front of the chamber. Control mice will be anesthetized and placed in acoustic chamber for an equal amount of time, but not exposed to the high intensity broad band noise stimulus (ambient sound intensity level = 60-65 dB).

3. Special Considerations: Multiple Major Survival Surgical Procedures

Multiple major survival surgical procedures on the same animal are not permitted unless the surgeries are related components of a particular study and the need and benefit for such procedures can be fully justified by the investigator. Presently, there are no protocols that have multiple major survival surgical procedures.

4. Special Considerations: Food and Fluid Regulation Procedures

Food and fluid regulation procedures are not permitted unless justified and approved by the IACUC.

Currently [redacted], [redacted], and [redacted] are approved by the IACUC: [redacted]

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[redacted]

5. Special Considerations: Other

Currently [redacted] is approved by the IACUC for alternative housing:

[redacted]

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[redacted]

Currently [redacted] is approved by the IACUC:
[redacted]

Currently [redacted] and [redacted] are approved by the IACUC for [redacted]:
[redacted]

[redacted] is approved by the IACUC for [redacted]:
[redacted]

Currently [redacted] is approved by the IACUC for [redacted].

II. LABORATORY ANIMAL HUSBANDRY

A. HOUSING

1. Caging or Housing System

The campus veterinarian reviews and approves the purchase of all cages to ensure they conform to USDA cage size requirements and the minimum space recommendations established by the *Guide*. Standard laboratory caging is provided

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for most species in accordance with accepted practice. The condition of caging systems is evaluated routinely by the animal technicians and the campus veterinarian. Repairs or replacements are made as required to maintain the equipment in good repair. For non-vivarium species, living enclosures meet the requirements of the USDA.

2. **Social Environment**

Vivarium animals are typically housed socially in accordance with approved IACUC protocols and SOPs. Zebrafish are group-housed (up to 5 fish / L of water). Marine mammals at [redacted] are provided with social housing (where possible) and daily interaction with humans and a variety of environmental enrichments, according to AWA requirements.

3. **Space Recommendations**

The following is a list of housing cages used at UC Santa Cruz by species, size, and construction material.

Animal	Cage/Tank Size	Material
Mice	8.75 x 12.125 x 6.395	Polypropylene clear polycarbonate
Rats and Squirrels	17 ¼" x 8 ½" x 8 ¼" **after July 25, 2013** 10" x 14" x 8 1/2 "12.125 x 16.00 x 9.00	Clear Polycarbonate
Zebrafish	Aquaneering Multi ZS660 Stand Alone Single-Sided Rack (6-Shelf) 60.0" Wide x 14.0" Deep x 92.0" Tall Tanks combinations can vary: 18 per row - 0.8 tanks with lids and baffles 20 per row - 1.4 liter tanks with lids and baffles 18 per row - 1.8 liter tanks with lids and baffles 12 per row - 2.8 liter tanks with lids and baffles 6 per row - 6.0 liter tanks with lids and baffles 6 per row - 9.5 liter tanks with lids and baffles	T-316L Stainless Steel construction with adjustable feet. Self-cleaning polycarbonate tanks.

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Amphibians and reptiles	Species-dependent [redacted] Greenhouse- Animals are kept in Greenhouse [redacted] at [redacted] (20'x30' sq. ft.) in individual plastic Kritter Keepers® (9.2 x 6 x 7 inches) [redacted] Cold Rooms- Animals are kept in [redacted] rooms [redacted], [redacted], and [redacted]. Adults are kept in tubs that are 14 by 6 inches, subadults are kept in 4 liter bowls and larvae are kept in 2 liter bowls. Each room is (6 feet x 5 feet). [redacted] Hot Room- Lizard eggs are incubated in [redacted] (6 feet x 5 feet). Eggs are kept in individual cups.	Consult with campus veterinarian
Birds	30" x 18" x 18"	wrought iron

Marine mammal pools meet USDA requirements for species housing; they are epoxy-coated seawater filled pools with surrounding dry resting area and perimeter fencing. These outdoor facilities were completely renovated in 2017 (main facility) or 2014 (satellite facility). Isolated quarantine pools are available. The table below lists pool dimensions and available dry resting area.

Building Name	Pool	Shape	Legnth	Width/Dia. 1	Width/Dia. 2	Depth 1	Depth 2	SqFT	Gallons	Assignment	Room Use/Type
[redacted]	[redacted]	Kidney	N/A	35	25	10	30	2,602	238,500	[redacted]	Research Lab
		Round	N/A	25	N/A	7	N/A	491	25,700		Research Lab
		Round	N/A	30	N/A	8	N/A	707	42,300		Research Lab
		Rectangle	10	4.9	N/A	5	N/A	49	1,496		
		Round	N/A	13.3	N/A	4	N/A	139	3,971		Research Lab
		Rectangle	10	14	N/A	4	N/A	140	4,189		Research Lab
		Rectangle	14.83	7.67	N/A	3.7	N/A	114	2,199		Research Lab
		Square	7.67	7.67	N/A	3.7	N/A	59	1,099		Research Lab
		Square	7.67	7.67	N/A	3.5	N/A	59	1,099		Research Lab
		Square	7.67	7.67	N/A	3.5	N/A	59	1,099		Research Lab
		Round	N/A	25		7	N/A	491	25,704		Research Lab
		Round	N/A	25		7	N/A	491	25,704		Research Lab
		Rectangle	14.83	10.00	N/A	4.33	N/A	148	4,189		Research Lab
		Rectangle	14.83	10.00	N/A	4.33	N/A	148	4,189		Research Lab

4. Activity

The need for supplementary or induced activity is evaluated by the campus veterinarian based on an understanding of species or breed temperament, professional judgment, and research requirements.

B. ANIMAL ENVIRONMENT

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1. **Microenvironments and Macroenvironments**

   Microenvironments are considered when selecting caging/tank systems and assigning animal housing space.

2. **Temperature**

   Temperature for [redacted] Animal Facility, [redacted] Laboratories, and the [redacted] Building are monitored centrally by Campus Facilities. Temperatures for the [redacted] vivarium are monitored by the [redacted] building and vivarium system monitor computers. Temperatures in the bird rooms at [redacted] Laboratories are monitored by campus facilities. Marine mammals housed at [redacted] are maintained in ambient outdoor conditions, and ambient pool temperature varies from 10 to 20 degrees C. Pools can be heated as appropriate. Temperature of [redacted] Greenhouse is monitored by campus facilities. Lizards additionally have heat lamps on timers that can be turned on and off when necessary. Temperature of [redacted] cold rooms are programmed and monitored by Campus Facilities. Room [redacted] - 21 C (Range of 20-22 is acceptable), Room [redacted] - 18 C (Range of 17-19 is acceptable), Room [redacted] - 15 C (Range of 14-16 is acceptable). Temperature of [redacted] hot room is programmed and monitored by Campus Facilities. Room [redacted] - 28 C (Range of 27-29 is acceptable).

3. **Ventilation**

   Ventilation for [redacted] Animal Facility and the [redacted] Building is controlled by Campus Facilities; ventilation is regulated to 10-15 air changes per hour. Animals are maintained out-of-doors at [redacted] under natural ventilation and lighting conditions. Ventilation for the birds in the [redacted] Laboratory building is monitored by campus facilities and the bird rooms use an air handler separate from other rooms on the floor. Ventilation for [redacted] Greenhouse hot room and cold rooms is monitored by campus facilities, there is a brand-new ventilation system in the [redacted].

4. **Illumination**

   Electronically time-controlled lighting systems are used in the [redacted] vivarium to provide species-appropriate lighting cycles. Lighting is controlled by the building lighting computer which is controlled by campus facilities personnel at the request of the vivarium manager. Most are on at 6:00 a.m. and off at 6:00 p.m., providing 12 hours of light and 12 hours of dark, unless otherwise specified by an investigator. The [redacted] has a light timer set on a 12/12 cycle. The birds in [redacted] experience a 12/12 light cycle that is controlled locally by light timers installed in each room. Animals at [redacted] are housed outdoors in natural light. For [redacted] Greenhouse- Animals will receive natural lighting in the greenhouse but additionally have heat lamps on timers. For [redacted] Cold and Hot Rooms- Animals receive light from fluorescent ceiling lights that are set on timers from 7 am to 7pm.

5. **Noise**

   Cage washing and refuse disposal are carried out in areas separate from animal housing. Noise is minimized as much as possible.

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C. FOOD

ENVIGO Teklad (formerly Harlan Feed Co.) supplies foods for the [redacted] and the [redacted] Animal Facility. Mice receive 2920X Irradiated Teklad Global Soy Protein-Free Extruded Rodent Diet. Bags are stored on raised pallets to prevent moisture and spoilage. Food in immediate use is kept in a plastic container lined with a plastic liner. Food is always handled with clean gloves. Food must be used 6 months from the manufacture date. Food is received and stored in the BioMed vivarium food and bedding room. For zebrafish, feeding timeline is specified by Dr. [redacted] and includes no feeding between 0-5dpf, rotifers between 6-20 dpf, and artemia for all fish > 14 dpf. Diets can be supplemented with dry flake food (TetraMin or equivalent) for fish >30 dpf, this is optional but can promote increased growth for breeding purposes. Fish are fed twice daily on weekdays, and once on weekends. Food amounts vary depending on number of fish and size of tank: enough food is added such that all fish can eat, and nearly all food is eaten within 5-10 minutes. Uneaten food is removed, as excess food promotes bacterial and algal growth. If rotifers are unavailable, Sera food or Golden pearls or paramecium are used as a substitute. If live artemia is unavailable, fish are fed with flake food. Birds are provided with two-day of canary seed (Volkman Avian Science canary seed) in plastic feeding cups and completely replaced very third day. Bags are stored in closed but ventilated (to prevent moisture-caused spoilage), clear plastic containers that are raised above the floor inside each of bird rooms. Acquisition and expiration dates are clearly labeled on each seed bag. Seed must be used with 6 months of acquisition date. Seed is handled using a plastic scoop and clean gloves. Food dishes are sanitized through submersion in a 10% bleach solution weekly. Previously frozen, freshly thawed seafood is used to feed marine mammals at [redacted]. Fish is stored offsite at a cold storage facility, and several months of fish are kept at [redacted] in a -20-degree C freezer on site. All food preparation is in accordance with the USDA publication: "Handling Fish Fed to Fish Eating Animals, a Manual of Standard Operating Procedures," June 1998. At [redacted] Greenhouse- Lizards are given water every other day as they do not need much and fed daily a mix of meal worms, wax worms or crickets. For [redacted] Cold Rooms- Salamanders live in water and it is changed every day for larva and every other day for adults. Food is administered daily to larvae (brine shrimp) and every other day to adults (pellet diet). For [redacted] Hot Room – Eggs do not need to be fed, but substrate moisture is checked and changed weekly.

D. BEDDING

ENVIGO Teklad (formerly Harlan Feed Co.) provides 1/4-inch corncob (Product #7097), which is combined in our facility with Certified Diamond Dry Cellulose Bedding (Product #7070C) for use in the [redacted] animal facility and the [redacted] animal facility. Bedding is stored on raised pallets in the food storage room. [redacted]: Bird cages are lined with white butcher paper to collect droppings. These liners are changed every two days. [redacted]: Beach sand is provided for elephant seals during appropriate molting season. Adequate haul-out sites are provided for all pinnipeds. Fish tank provides adequate space and appropriate hiding areas. For [redacted] Greenhouse- Pregnant female lizards are kept on a mixture of soil/sand/peat moss that is about 4 inches deep which is a good substrate for females to nest and lay their eggs. Females are kept ~2 weeks to lay and we do not change the substrate in that time as to avoid disturbing them as they dig their nests. Adult males when kept are on the same mixture of substrate but only 1-2 inches deep. For [redacted] Cold Rooms- Salamanders live in water and it is changed every day for larva and every other day for adults. Adults are kept in plastic tubs that are 14 by 6 inches, sub-adults are kept in 4-liter bowls and larvae are kept

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in 2-liter bowls. Water comes from the RO/DI tap and is treated with essential salts. For [redacted] Hot Room – Egg substrate is changed weekly.

E. WATER

Most caging in [redacted] utilizes automatic watering on the rack. The water is RO water that is chlorinated. Backup water is by HydroPac water pouches utilizing 0.2 micron filtered and chlorinated water in the pouches or in traditional water bottles. [redacted] utilizes the backup water system in mouse housing cages. See Food section for water for [redacted] animals. The birds in [redacted] labs are supplied daily with fresh filtered tap water in plastic feeding cups. Water cups are disinfected through submersion in a 10% bleach solution weekly.

F. SANITATION

1. Cleanliness

a. Room Sanitation.

The [redacted] and [redacted] animal facility, rooms are cleaned with sanitizing, industrial strength quaternary compounds when cages are changed. For zebrafish, cleaners allowed by the Aquaneering manufacturer are used. [redacted]: Food-prep rooms are cleaned and sanitized daily. Animal living enclosures are checked and hosed out daily, and thoroughly disinfected once per week during pool cleaning. [redacted]: The floors of all rooms are swept and washed weekly. Surfaces exposed to food preparation are sanitized following use and counters are disinfected weekly. Trash is disposed weekly. For [redacted] Greenhouse and [redacted] Hot/Cold Rooms- Rooms are swept and trash is taken out weekly, cages before use are sanitized with a dilute bleach solution and dried thoroughly. Any other items used for animals are also sanitized and cleaned with a dilute bleach solution.

b. Cage or Pen Litter Changing Frequency.

[redacted] and [redacted]: Rodents get clean litter weekly, or as needed. [redacted] bird cage liners are changed every 2-3 days. [redacted]: Pool water is constantly replaced by fresh sea water in a semi-closed system. Fresh sea water turnover time is 24-36 hours. See Room Sanitation for [redacted] animals.

c. Cage Washing Frequency/Procedures.

[redacted]: Pools are emptied, cleaned and disinfected approximately weekly, except for the chlorinated pools which may have a longer cleaning interval. The [redacted] animal facility and the [redacted] animal facility process all dirty cages on a daily basis. Dirty bedding is removed, cages are washed and sanitized, filled with bedding and autoclaved. For zebrafish, all tanks will be inspected daily for algae levels. The frequency of cleaning is based on the discretion of the [redacted] Lab, not set at a specific time interval. Tanks near the room lights typically require more frequent cleaning then those farther from the light source. No detergents will be allowed on the tanks, as these are often extremely toxic to fish. Mechanical disruption is generally sufficient for removing algae, however bleach may be used with extreme care in cases when more stringent decontamination is needed. Cleaning

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will be done only bey personnel authorized by the [redacted] Lab to prevent accidental introduction of substances that are toxic to aquatic animals (including those not acutely toxic to mammals, such as soap). [redacted]: Bird cages, including perches, food cups, and dropping drays are cleaned weekly and sanitized with a 10% bleach solution. See Room Sanitation for [redacted] animals.

d. Wash Temperature and Microbiologic Monitoring.
The [redacted] building and the [redacted] vivarium, tunnel and cage washers is set to maintain wash and rinse cycle at 180°F.

e. Corridor Support Area Cleaning and Procedures.
[redacted] and [redacted]: Swept and mopped daily with industrial-strength quaternary compound (Coverage Plus, Steris Corporation). [redacted]: Decks and adjacent areas are hosed daily. [redacted]: Hallways are swept and washed bi-weekly. For [redacted] Greenhouse and [redacted] Hot/Cold Rooms- Rooms are swept and trash is taken out weekly, cages before use are sanitized with a dilute bleach solution and dried thoroughly. Any other items used for animals are also sanitized and cleaned with a dilute bleach solution.

2. Waste Disposal

a. Bedding/Litter and Refuse.
[redacted] and [redacted]: utilize a chain-driven, disposal unit in which the dirty bedding is transported to a compactor/dumpster. [redacted]: refuse is disposed of in a Garbage Can/Dumpster System. [redacted]: cage liners are collected in each room's garbage can is removed weekly and disposed of in the dumpster system. [redacted] Greenhouse and Hot Rooms: The bedding (soil/sand/peat moss mixture) is trashed as they are all-natural compostable components. Carcasses are placed in individual bags, labeled and placed in the freezer. Hazardous waste is disposed of according to the protocol around said hazardous waste (glass in sharps etc.). [redacted] Cold Rooms: The dirty water is disposed down the sink as it is all-natural components. Carcasses are placed in individual bags, labeled and placed in the freezer. Hazardous waste is disposed of according to the protocol around said hazardous waste (glass in sharps etc.).

b. Animal Carcasses.
[redacted] and [redacted]: Carcasses are bagged or boxed, stored in freezer and removed as necessary by [redacted] CA (831) [redacted], coordinated by EH&S. [redacted]: Carcasses are buried at the local landfill by special arrangement. Small quantities of fish may be disposed of as municipal waste. [redacted] bird carcasses are bagged and stored frozen within lab. [redacted]: Carcasses are frozen in individual plastic bags and kept in the freezer in the [redacted] Lab Room #[redacted].

c. Hazardous Wastes.
Use of radionuclides in animals is reviewed by both IACUC and overseen by EH&S Radiation Safety Committee. [redacted] picks up sharps and hazardous waste. MS-222 is used in accordance with approved IACUC SOP.

3. Vermin

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Campus Facilities is responsible for vermin control. Vermin control has been instituted in the vivarium as deemed necessary by the Animal Care Facility (ACF) Manager.

G. IDENTIFICATION AND RECORDS

The [redacted] and [redacted]: Animals are identified by means of cage cards listing PI, species, sex, arrival date, and age on arrival. Identification within the cage is up to the PI (some use ear clip for rodents). A daily maintenance sheet is kept for each PI with the number of cages per room and notations regarding sick animals, feed, water, etc. For zebrafish, Animals will be identified based on the tank (no individual mark or tag will be used on individual fish. Tanks will be labeled with the Source, stock number, Type of fish (in cross, out cross – genotype); Male / Female (if known, fish cannot be sexed until 3 months), date of birth, number of fish; Name and contact info for investigator, Animal Protocol Number; Breeding history (if applicable). [redacted]: Each bird is banded with a unique color combination and individuals within each cage are described on cage cards listing PI, IACUC permit number, the species, sex (if known) and identifying color combination of the bird(s) within. A daily maintenance sheet is kept outside each bird room with the number of cages per room, notations regarding sick animals, and marks denoting the cleaning, food, and water schedule. [redacted]: Individual chart kept for each animal; in addition, cage cards accompany each animal. [redacted] Greenhouse and Hot Room: Animals have individual cage cards according to the IACUC's policy. Animal maintenance sheets are updated daily. [redacted] Cold Rooms: Given the multiplicity of small Tupperware containers used in raising amphibians, a compromise was worked out on the identification of cohorts of immature amphibians being raised—compromise involves identification of a tray or shelve holding the many immature members of amphibian cohort. Animal maintenance sheets are updated daily.

H. EMERGENCY, WEEKEND AND HOLIDAY CARE

All animals in the Vivarium are observed and attended to daily, including weekends and holidays, by trained personnel, for signs of illness, injury or abnormal behavior. Investigator maintained animals are also checked and attended daily.

Veterinary care and consultation is available at all times, with vet staff on call 24 hours/day, 7 days/week.

III. VETERINARY CARE

A. PREVENTIVE MEDICINE

1. Animal Procurement

All animals are lawfully acquired. Purchased animals are obtained through registered commercial vendors. Permits are obtained from appropriate state or federal agencies for observation, collecting or holding of wild animals. Sources for animals are identified in each protocol.

2. Quarantine and Stabilization

If possible, incoming animals are separated from existing animals for quarantine. The [redacted] Animal Facility has a dedicated quarantine facility for rodents (also utilized by the [redacted] facility). For zebrafish: All animal shipments will

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be monitored for water quality, acclimated to the quarantine tank temperature, then transferred to clean standing water tanks separate from the zebrafish exchange system. Quarantine will take place on a dedicated rack located in the main facility. Animals will be monitored daily for key health and behavioral features. Quarantine water will be exchanged on a daily basis by siphoning out one third of the water, removing solids from the bottom of the tank, and re-filling with tank system water. Water quality analysis shall be performed before exchange, on the introduced tank water, and after exchange. After the two-week quarantine period, animals showing signs of health or behavioral dysfunction will not be transferred to the zebrafish system. All quarantine tanks must be sterilized with bleach after use. Adult animals will undergo a minimum two-week quarantine period upon receipt if received from a trusted source that is able to provide known health status, otherwise, animals may be subject to longer quarantine. Introduction of any adult fish to the circulating system will require approval from Dr. [redacted] prior to introduction to the system, regardless of quarantine duration. Embryos: New fish may be added to the system without explicit approval from [redacted] Dr. [redacted] if they were received as embryos (or mated in house) AND embryos have been surface sanitized with bleach (35mg/L for 5 min) AND larvae have developed normally over the first 14 days. [redacted]: Incoming birds are kept in a separate room with the same temperature and light settings as the resident individuals and may be kept in pairs within cages if acquired from the same location (our species are social, housing in pair reduces stress). Birds will be given a 2-week acclimatization period before use in experiments. Any individuals appearing sick or injured will be moved into an individual cage and monitored daily. The campus veterinary will be notified. The [redacted] utilizes available pools that are optimally separated from pools housing resident marine mammals. Fish use available tank space for quarantine. [redacted] Greenhouse: Stabilization is not required for the lizards as they are all captured in the same area and individually housed in sterile cages in comfortable temperatures similar to their natural environment. If a lizard is sick it is placed in an area separate from others and monitored and campus vet is made aware. [redacted] Cold Rooms: When animals come in, they are kept at in individual tubs at their preferred temperature for a few days. After adjustment, their temperatures are slowly raised or lowered to the desired temperature. If a salamander is sick it is placed in an area separate from others and monitored and campus vet is made aware.

3. **Separation by Species, Source, and Health Status**
   Animals used in biomedical research are separated by species in separately ventilated rooms and by health state when recorded.

B. SURVEILLANCE, DIAGNOSIS, TREATMENT, AND CONTROL OF DISEASE

All animals are observed daily for signs of illness, injury or abnormal behavior. A veterinarian is on call at all times to respond to animal health problems. Veterinary care is provided either by the campus veterinarian or by other licensed veterinarians. Diagnosis, treatment, and disease control follow current accepted practice.

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C. ANESTHESIA AND ANALGESIA

All proposed uses of anesthetics and analgesics are described in animal use protocols, which are reviewed and approved by the attending veterinarian and IACUC prior to being implemented.

D. SURGERY AND POSTSURGICAL CARE

The [redacted] Animal Facility has a dedicated surgery area with separate animal preparation rooms for USDA covered animals and for any rodent surgery when requested by the PI. Survival surgery on rats and mice may be performed in procedure rooms in either biosafety cabinets or laminar flow units or in spaces prepared for rodent surgery, such as the [redacted] facility.

E. EUTHANASIA

Campus euthanasia guidelines follow those established by the American Veterinary Medical Association's Panel on Euthanasia (2020). Justification for any techniques that deviate from these guidelines must be fully documented and approved by the campus veterinarian and the IACUC.

DESCRIPTION OF THE ANIMAL FACILITIES

Vertebrate animals used in research and teaching at UC Santa Cruz are housed mainly in one of two animal facilities: The [redacted] Facility on the central campus and the [redacted] Campus, (including [redacted], [redacted], [redacted], [redacted], [redacted] Building & Greenhouses) a [redacted] campus site. Some mice are held in [redacted] Hall. Following are separate descriptions and evaluations of the animal sites:

I. [redacted] ANIMAL FACILITY

Located on the [redacted] floor of the new [redacted] building, the [redacted] vivarium consists of 18,000 ft.² total with 13,500 assignable square feet.

[redacted].

[redacted]

Dirty cages and materials start their processing at the [redacted] end of the facility by entering the [redacted]. In this location, the cages are emptied into an automatic bedding removal system, after which, they enter the tunnel washer to be automatically washed and disinfected by the 185° final rinse. The dirty racks themselves are sent through the walk-in rack washer to be likewise washed and disinfected by the 185° final rinse. The now clean cages and racks pass through to the clean washroom, where the cages are bedded in the automatic bedding dispenser. They are then stacked on the rack in preparation for autoclaving. There are two walk-in autoclaves and one vapor hydrogen peroxide chamber connecting the clean cage wash from the clean rack storage. All

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materials are sterilized as they pass through one of two chambers. Materials waiting use are kept clean rack storage area. From here they can be distributed up the common hallway airlocks to the animal holding suites.

New animals entering the facility must pass through [redacted]. Animals from trusted vendors can be immediately processed and distributed to the animal holding rooms. All other animals are unpacked into cages and placed into quarantine cubicles in the animal receiving room. There are four cubicles which can accommodate four simultaneous quarantines.

All people entering the facility must enter by way of the airlocks in the [redacted] rooms. Protective clothing is required after passage through the air shower.

The [redacted] suite in the vivarium is the [redacted] facility. There are two procedure rooms in this suite to facilitate the creation of the transgenic mice. In this suite, there is also a large animal holding room.

For zebrafish, 8 GPM Recirculation System includes No Maintenance Fluidized Bed Biofilter, Carbon Finish Filter with High Output UV Sterilizer, and 800-Watt Digitally Controlled Heater. Aquaneering Multi-Phase Filtration – Stand Alone Systems are self-contained and do not require a central filtration system. The Aquaneering system employs a four-stage filtration system to provide the cleanest recirculated water in the industry.
1. The first stage is a Dacron pad particulate filter or stainless-steel reusable screen, trapping particles greater than 10 microns, and can be easily removed for washing or disposal.
2. Water is then pumped into the fluidized bed biological filter. High pressure water, from the quiet, reliable submerged pump, is forced into the bottom of the fluidized bed, suspending and mixing the filter media to prevent channeling and insure full utilization of the entire surface area. This unique filtration design provides over 4000 sq. ft. of surface area on which biological conversion of harmful ammonia can occur. With 10 times more surface area than the industry standard, the Aquaneering aquatics system boasts undetectable levels of ammonia and waste content.
3 . Water then flows into the second sump chamber, which contains a microprocessor controlled, 1000-watt heater to maintain a comfortable environment throughout the rack. Dual carbon filters lay submerged in the second sump chamber, and a dedicated submersible pump draws water through and pressurizes the rack supply lines.
4. On the main supply line is an in-line UV sterilizer lamp that provides a minimum of 100,000 microwatts/second/cm² at our flow rate of 6 water changes per hour.
Timed water exchange is 10% per day (automatic); water temperature 28C (24 – 30C acceptable); room Temp 26C (24 – 29C acceptable).
The water exchange system constantly samples water quality levels (temp, pH, salinity) and reports to a web monitoring system every 30 minutes. If the system levels fall outside of acceptable ranges, responsible personnel are automatically notified. At a minimum, these alarms will be sent to [redacted], and has already been configured by UCSC IT. In addition, the water quality will be manually checked on a daily basis for pH, conductivity, temperature and at least twice weekly for ammonia, nitrites, and nitrates. If any water quality standards are not met, the system is recalibrated and dosing adjusted. Fish are are transferred to an unused tank whose water quality falls within proper water quality standards. See section II.a.3 for tank sizes.

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A. [redacted] ROOMS

	CFM	N-S length	E-W length	Height	CFM	Turnover rate/hr.
holding room [redacted]	701	13.1	14.6	9	701	24
holding room [redacted]	487	13.3	20.1	9	487	12
holding room [redacted]	645	19.8	14.6	9	645	15
holding room [redacted]	647	19.8	15.1	9	647	14
holding room [redacted]	642	19.8	14.8	9	642	15
holding room [redacted]	679	14.6	13.7	9	679	23
holding room [redacted]	454	13.7	15.0	9	454	15
holding room [redacted]	455	13.7	14.9	9	455	15
holding room [redacted]	650	20.0	15.1	9	650	14
holding room [redacted]	651	20.0	15.1	9	651	14
holding room [redacted]	667	20.0	14.8	9	667	15
holding room [redacted]	378	13.5	15.0	9	378	12
holding room [redacted]	304	13.5	15.0	9	304	10
holding room [redacted]	304	13.7	14.7	9	304	10
holding room [redacted]	500	21.8	14.7	9	500	10
holding room [redacted]	502	22.1	15.2	9	502	10
holding room [redacted]	495	22.3	14.8	9	495	10
CIRM INJ	431	12.5	14.1	9	431	16
CIRM ART	549	12.5	20.0	9	549	15
CIRM HOLDING	719	11.7	39.6	9	719	10
Surgery prep		9.8	17.5	9		0
Surgery		13.1	17.5	9		0
Necropsy		23.6	13.8	9		0
Dirty cages wash		24.3	27.1	9		0
Clean cage wash		24.2	26.9	9		0
Clean rack storage		24.1	27.5	9		0
Bedding storage		22.8	13.7	9		0

B. [redacted] ANIMAL NUMBERS

1. 1467 cages X 5 mice avg. per cage = 7335 mice, 153 rats, 5 squirrels
2. 183 zebrafish with a short transfer to Dr. [redacted] house in Santa Cruz, CA for an emergency fire evacuation from 8/20-9/1.

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II. [redacted] ANIMAL FACILITY-[redacted]

One small animal room has been dedicated to hold mice in ventilated cages racks on the bottom floor of the [redacted] lab building. This room does not have direct access to the building hallway. It is located within a locked lab that is temperature and light controlled, and houses one ventilated cage rack. It contains approximately 15 cages of mice, which, for research needs, requires access to the 2-photon microscope on that floor.

Animals that are housed in this facility stay within the facility. Care is provided by vivarium staff. There is no stated maximum stay in this facility, as some research mice live here for extended periods, but no breeding is allowed.

A. [redacted] ROOMS

Room [redacted]: 218 assignable square feet (animal holding room)
Room [redacted]: 224 assignable square feet (non-surgical procedure lab)

B. [redacted] ANIMAL NUMBERS in [redacted]

37 cages X 5 mice avg. per cage = 185 mice

III. [redacted] FACILITY

[redacted] lends itself to a few rooms of researcher-maintained fish, mice, or birds. If rodents are held in the facility, they are maintained by the [redacted] vivarium animal techs.

A. [redacted] ROOMS

Rooms [redacted], [redacted], [redacted]: individual rooms are 10 x 13 square feet (animal holding and procedure rooms)

B. [redacted] ANIMAL NUMBERS

8 *Serinus canaria* and then 0 *Serinus canaria* as of July 2020

IV. [redacted] ANIMAL ([redacted]) FACILITIES

[redacted] is located approximately [redacted] miles from the main campus at the [redacted] campus overlooking Monterey Bay. This unique marine facility houses marine mammals (sea lions, seals, dolphins, and sea otters) and some fish and eels. Following is a description of rooms and tanks at the facility

A. [redacted] BUILDINGS/ROOMS

1. **<u>Procedure Room(s)</u>**: Two rooms, totaling 500 sq. feet
   - Construction materials (walls, floors, ceilings): concrete
   - Drainage provided by sewer
   - Ventilation source: doors
   - Light source: fluorescent
   - Major equipment: freeze-dryer
   - Use for type of procedures: surgical, general purpose, sleep study
2. **<u>Food Preparation Room(s)</u>**: Diet preparation room and freezer, 320 sq. feet
   - Construction material: epoxy-covered concrete floor, stainless steel sinks and

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counters, and sealed plastic walls and ceiling
- Drainage: sewer/septic tank
- Temperature control: ambient
- Ventilation: screened windows/ceiling fan

3. **Veterinary Office**: 80 square feet

4. **Additional Buildings/Rooms**:
[redacted] Lab, [redacted] Building [redacted] & [redacted], houses 15-25 gallon tanks for fish & eels.
Interpretive Center; [redacted] Administrative Offices, PI Offices and indoor Laboratory Spaces not used for animals,

5. **Tanks/Pens**:
Marine enclosures are filled with natural seawater that is recirculated through a sand filtration system. Average recirculation
rate is 700 GPM; complete turnover time for all three tanks is approximately 3.6 hours. Minimum water temperature can be held above 60°F in any season.

All tanks are routinely cleaned by brush and water vacuum or drained and scrubbed with hypochlorite solution. Chlorine residuals are monitored daily in chlorinated tanks. Coliform bacteria counts are taken weekly in all tanks. See section II.a.3 for pool sizes.

6. **Buildings/Rooms Other:**
Additional pool space and food preparation facilities for pinnipeds and sea otters may be used at the [redacted] ([redacted]) facility at the [redacted] site which is considered a satellite facility of the main marine lab. Four 20-foot round; above ground fiberglass pools and two 14-foot diameter pools are potentially in use. There is also a circular 30' diameter pool with 7' depth. All pools are surrounded by decking and fencing. The fish kitchen and freezer at the [redacted] facility are being utilized for storing and preparing the otter food.

B. [redacted] ANIMAL NUMBERS

1. 1 California sea lion, *Zalophus californianus* housed at [redacted] with a short transfer to The Marine Mammal Center in Sausalito for an emergency fire evacuation from 8/21-9/10.
2. 1 Harbor seal, *Phoca vitulina* housed at [redacted] with a short transfer to The Marine Mammal Center in Sausalito for an emergency fire evacuation on 8/21.
3. 2 Bearded seals, *Erignathus barbatus*, housed at [redacted] (including 1 being housed at CDFW for some months) with a short transfer to The Marine Mammal Center in Sausalito for an emergency fire evacuation from 8/21-9/2.
4. 1 Ringed seal, *Pusa hispida* housed at [redacted] with a short transfer to The Marine Mammal Center in Sausalito for an emergency fire evacuation from 8/21-9/10.
5. 1 Hawaiian monk seal, *Neomonachus schauinslandi* housed at [redacted] with a short transfer to SeaWorld San Diego** for an emergency fire evacuation on 8/21. Transfer back to Santa Cruz has not yet occurred.

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6. 2 Bottlenose dolphins, *Tursiops truncatus truncatus* housed at [redacted] with a short transfer to SeaWorld San Diego** for an emergency fire evacuation on 8/21. Transfer back to Santa Cruz has not yet occurred.
7. 1 Moluccan cockatoo, *Cacatua moluccensis* housed at [redacted] with a short transfer to [redacted] house in Santa Cruz for an emergency fire evacuation from 8/21-8/29.
8. 1 Umbrella cockatoo, *Cacatua alba* housed at [redacted] with a short transfer to [redacted] house in Santa Cruz for an emergency fire evacuation from 8/21-8/29.
9. 1 Sulfur crested cockatoo, *Cactua galleria eleonora* housed at [redacted] with a short transfer to [redacted] house in Santa Cruz for an emergency fire evacuation from 8/21-8/29.
10. 1 Cockatiel, *Nymphicus hollandicus* housed at [redacted] with a short transfer to [redacted] house in Santa Cruz for an emergency fire evacuation from 8/21-8/29.
11. Fish, 14 eels in [redacted]
12. Fish, sharks, and display of a cephalopod in [redacted] Center

V. [redacted] BUILDING/GREENHOUSE FACILITIES

The [redacted] Building has temperature-controlled rooms that can be utilized to house fish or amphibians. The outdoor greenhouses associated with the [redacted] Building sometimes house fish and reptiles.

A. [redacted] ROOMS/[redacted] GREENHOUSES

Rooms [redacted], [redacted], [redacted], [redacted] ([redacted]), [redacted] ([redacted]), [redacted] ([redacted]), [redacted] ([redacted]), lab [redacted]: 1380 assignable square feet (animal holding and procedure room)
Greenhouse [redacted], Greenhouse [redacted]: each greenhouse 600 square feet (animal holding room)
[redacted] lab with 50 X 300-gallon outdoor pools, holds mosquito fish

B. [redacted] ANIMAL NUMBERS

1. 350 adult *Uta stansburiana* (only in field, never brought to lab)
2. 18 *Dicamptodon ensatus* juveniles
3. 10 *Ensatina eschscholtzii* adults
4. 50 adult *Ambystoma mexacanum*
5. 2,000 hatchling *Amybstoma mexacanum*
6. 2 *Amybstoma mavortium*
7. 80 *Ambystoma macrodactylum*
8. 20 *Dicamptodon tenebrous* (juveniles)
9. 50 *Ambystoma gracile* (juveniles) located in the [redacted] in [redacted]
11. Fish of unknown quantity

EVALUATION OF PROGRAM

This section provides a detailed evaluation of the animal care and use program the University of California, Santa Cruz during the period covered in this semi-annual report

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I. INSTITUTIONAL POLICIES

A. MONITORING THE CARE AND USE OF ANIMALS Unremarkable
B. VETERINARY CARE Unremarkable
C. PERSONNEL QUALIFICATIONS Unremarkable
D. PERSONAL HYGIENE Unremarkable
E. OCCUPATIONAL HEALTH Unremarkable
F. ANIMALS EXPERIMENTATION INVOLVING HAZARDOUS AGENTS Unremarkable
G. SPECIAL CONSIDERATIONS: RESTRAINTS AND MULTIPLE SURGERY Unremarkable

II. LABORATORY ANIMAL HUSBANDRY

A. HOUSING Unremarkable
B. ANIMAL ENVIRONMENT Unremarkable
C. FOOD Unremarkable
D. BEDDING Unremarkable
E. WATER Unremarkable
F. SANITATION Unremarkable
G. IDENTIFICATION AND RECORDS Unremarkable
H. EMERGENCY, WEEKEND AND HOLIDAY CARE Unremarkable

III. VETERINARY CARE

A. PREVENTATIVE MEDICINE Unremarkable
B. SURVEILLANCE, DIAGNOSIS, TREATMENT, AND CONTROL OF DISEASE Unremarkable
C. ANESTHESIA AND ANALGESIA Unremarkable
D. SURGERY AND POSTSURGICAL CARE Unremarkable
E. EUTHANASIA Unremarkable

EVALUATION OF ANIMAL FACILITIES

This section provides a detailed evaluation of the animal facilities overseen by the University of California, Santa Cruz during the period covered in this semi-annual report.

I. BIOMED ANIMAL FACILITY

A. PHYSICAL RELATIONSHIP OF ANIMAL FACILITIES TO LABORATORIES
Unremarkable

B. FUNCTIONAL AREAS
Unremarkable

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C. CONSTRUCTION GUIDELINES

Construction materials in [redacted] are up to *Guide* standards and facilitate sanitation requirements. Building materials are durable and moisture-proof.

D. ASEPTIC SURGERY

Unremarkable

II. [redacted] ANIMAL FACILITY

A. PHYSICAL RELATIONSHIP OF ANIMAL FACILITIES TO LABORATORIES

Unremarkable

B. FUNCTIONAL AREAS

Unremarkable

C. CONSTRUCTION GUIDELINES

Construction materials in [redacted] are up to *Guide* standards and facilitate sanitation requirements. Building materials are durable and moisture-proof.

D. ASEPTIC SURGERY

Unremarkable

III. THIMANN FACILITIES

A. PHYSICAL RELATIONSHIP OF ANIMAL FACILITIES TO LABORATORIES

Unremarkable

B. FUNCTIONAL AREAS Unremarkable

C. CONSTRUCTION GUIDELINES

Construction materials in [redacted] are up to *Guide* standards and facilitate sanitation requirements. Building materials are durable and moisture-proof.

IV. [redacted] FACILITIES

A. PHYSICAL RELATIONSHIP OF ANIMAL FACILITIES TO LABORATORIES

Unremarkable

B. FUNCTIONAL AREAS Unremarkable

C. CONSTRUCTION GUIDELINES

Construction materials used at [redacted] cannot be evaluated by *Guide* standards; they have been found to be adequate by experts specializing in the species housed there.

D. ASEPTIC SURGERY Unremarkable

V. [redacted]/GREENHOUSE FACILITIES

A. PHYSICAL RELATIONSHIP OF ANIMAL FACILITIES TO LABORATORIES

Unremarkable

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B. CONSTRUCTION GUIDELINES

Construction materials used in CBB are up to *Guide* standards and facilitate sanitation requirements. Building materials are durable and moisture-proof.

C. FUNCTIONAL AREAS Unremarkable

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DEFICIENCIES

I. MAJOR DEFICIENCIES

A. [redacted] FACILITY none
B. [redacted] FACILITY none
C. [redacted] FACILITY none
D. [redacted] FACILITY none
E. [redacted] BUILDING & GREENHOUSES FACILITIES none

II. MINOR DEFICIENCIES

Date Inspected	Building	Room #	Finding/Note	Corrected on Site? (Y/N)	Deficiency - Minor or Major/Significant	Explicit plan for correction	Assigned Correction Date
September 15, 2020	[redacted]	[redacted]	2 carbon canisters needed initial start weight and date	N	minor	*carbon canisters to have initial start weight and date marked on the canister	December 4, 2020
March 11, 2020	[redacted] pools		Q1 pool shade cloth needs to be re-installed	N	minor	*facilities to fix and notify iacuc@ucsc.edu when fixed	December 4, 2020
September 15, 2020	[redacted]	[redacted]	anesthesia filter that was not dated	Y	minor		
September 15, 2020	[redacted]	[redacted]	confusing labels on buprenorphine bottles	Y	minor		
September 14, 2020	[redacted]	[redacted]	couple of cages did not have the right number of mice on the card	Y	minor		

Notes:

Correspondence September 22, 2020—UCSC IACUC member [redacted] and Attending Veterinarian Dave Casper were at The [redacted] Center ([redacted]) during emergency fire evacuation and

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Dr. Casper discussed IACUC inspection with [redacted] Attending Veterinarian Dr. [redacted]. There are not IACUC issues identified during the visit and discussion with Dr. [redacted]

*Correspondence September 25, 2020—[redacted] and [redacted] facilities are closed down. The Attending Veterinarian has communicated with the facilities people at both facilities and interviewed them as to the state of their facilities. They confirm that the facilities are functional but unused. Both facilities are closed to their own staff.

**The IACUC viewed videos provided by SeaWorld at the October 2, 2020 meeting.

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SIGNATURES I have read and understood this report:

DocuSigned by: [redacted]

Dave Feldheim, Chair, Institutional Animal Care and Use Committee

DocuSigned by: [redacted]

[redacted], Vice Chair, Institutional Animal Care and Use Committee

[redacted]	DocuSigned by: [redacted]
[redacted]	
Dave Casper	DocuSigned by: [redacted]
[redacted]	DocuSigned by: [redacted]
[redacted]	DocuSigned by: [redacted]
[redacted]	DocuSigned by: [redacted]
[redacted]	DocuSigned by: [redacted]
[redacted]	DocuSigned by: [redacted]
[redacted]	DocuSigned by: [redacted]

DocuSigned by: [redacted]

Scott Brandt, Vice Chancellor, Office of Research

10/20/2020

Date

In satisfaction of Section 231(c) of the final rule of the Animal Welfare Act, this report was approved by *The Institutional Animal Care and Use Committee (IACUC)* on *October 2, 2020* and submitted to the *Institutional Official* on 10/20/2020

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