

HUMBOLDT STATE UNIVERSITY  
**INSTITUTIONAL ANIMAL CARE AND USE**  
 PROTOCOL ROUTING SLIP

FEB 10 2015

College of Natural Resources & Sciences  
 Humboldt State University

The attached protocol for the humane care and use of live vertebrate animals was submitted on 2/10/15 by Tim Mulligan for FISH690  
 (date) (faculty project leader) (course # if appropriate)

Check whether the work described in this protocol will be supported by funding administered by the  
 ( ) HSU Foundation, ( ) another administrative unit -list \_\_\_\_\_, or (x) will be unfunded.

Animals used for this project will be housed in the following facilities (please check all that apply):

- ( ) Animal Rooms; ( ) Fish Hatchery; ( ) Game Pens; ( ) Telonicher Marine Lab;
- ( ) Natural History Museum; (x) Other, specify site and room Halibut carcasses will be sampled at local docks, then returned to the respective angler.

Person / phone number (or e-mail) to contact: Miki Takada / 858-472-4938 / mtt106@humboldt.edu

Project Title: Age/Growth and Reproductive Status of Pacific Halibut in Northern California and Southern Oregon

◆ **ROUTE FIRST TO THE CHAIR OF THE IACUC** BRING THIS FORM TO THE COLLEGE OF NATURAL RESOURCES AND SCIENCES (RM. 101 IN THE FORESTRY BUILDING). Please allow ten working days for review of proposals to conduct minimally invasive procedures and an excess of one month for review of proposals to conduct invasive procedures; note that these time periods are minimal and assume that no revisions will be necessary prior to approval. ALWAYS VERIFY APPROVAL (OFFICE OF THE CHAIR OF THE IACUC; 826-3256) BEFORE STARTING YOUR PROJECT.

THE REMAINDER OF THIS PAGE IS FOR THE USE OF THE INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE

Date 1<sup>st</sup> Received 2/10/2015 REVIEW No. 14/15.F.51-E

- E- Procedures are exempt from full IACUC review because they are purely observational, non-invasive, and produce no perceptible discomfort or they concern only the use of tissues from dead animals. To be considered exempt, tissues from dead animals must be obtained from animals euthanized or otherwise killed by means, and for purposes, unrelated to the proposed project. The procedure may be approved by the Chair one additional member of the IACUC.
- ( ) A- Procedures will be minimally invasive or produce relatively little discomfort. Protocols may involve, bleeding, injections, minimal sampling, anesthesia or humane euthanasia without prior invasive manipulation. The procedure may be approved by the Chair and two additional members of the IACUC. Project topics will be reviewed by the IACUC at the next scheduled meeting.
- ( ) B- Procedures will involve prolonged manipulation or be invasive. Protocols may involve surgical or other stimuli inducing pain or distress, but all pain or distress will be mitigated with appropriate anesthetics or analgesics. The procedure may be initially approved by the Chair, the Campus Veterinarian and one additional member of the IACUC. Protocols will be reviewed by the IACUC at the next scheduled meeting.
- ( ) C- Procedures will be invasive and may cause prolonged physiological or psychological stress. Pain, considerable distress, or discomfort may be induced and not mitigated by anesthesia or adequate analgesia (e.g. LD50 experiments, long-term food or water deprivation, etc.). These protocols will be reviewed thoroughly by the IACUC prior to commencement of the project.



Margaret A. Beach 4/21/15  
 Signature, IACUC Member Date

Approved ( ) Denied

[Signature] 4-22-15  
 Signature, IACUC Member Date

Approved ( ) Denied

\_\_\_\_\_  
 Signature, IACUC Chair Date

( ) Approved ( ) Denied

**Final Committee Decision. All protocols must be approved prior to the start of research.**

cc: ( ) Project Leader, ( ) Animal Facility Supervisor, ( ) Department Chair

## PROTOCOL FOR THE HUMANE CARE AND USE OF LIVE VERTEBRATE ANIMALS

Federal animal welfare regulations require that an Institutional Animal Care and Use Committee (IACUC) review and approve all activities involving the use of vertebrate animals prior to their initiation. This includes any animals used for the development of experimental methodologies, instructional purposes, research, etc. Approved protocols for ongoing and recurrent activities must be reviewed by the IACUC on an annual basis. However, extensions and amendments requiring an abbreviated application process may be granted for a total of three consecutive years. Compliance with animal welfare regulations is mandatory and is the responsibility of all individuals (including faculty and students) who choose to work with live vertebrate animals.

To avoid the proliferation of submissions, please provide generic descriptions (including multiple routes of compound administrations, minor procedural variations, similar laboratory exercises from a single course, routine exercises used in several courses, etc). When multiple vertebrate species are to be used, please clearly describe all procedures, and all variations thereof, to be used with each individual species.

Once completed, signed, and dated, please submit your protocols to the Chair of the IACUC, Dean of the College of Natural Resources and Sciences, Forestry Bldg, Room 101. All protocols should be submitted on the most recent version of the forms. For your convenience, protocol forms are available in several software formats from the Chair of the IACUC, from several department offices and stockrooms, and they can be downloaded from the IACUC web page (<http://www.humboldt.edu/~iacuc>). You can expedite the review process by following these formatting rules: avoid changing the format of the routing slip unless minor reformatting is necessary to keep it to a single page; leave an extra blank line between your answers and the questions; leave questions in bold-face type; type your answers in regular (non-bold) type; and format the final signature page so that it begins with the final question. Please contact the Campus Veterinarian, Dr. Richard Brown, (by phone-826-3320, or e-mail- [RNB2@humboldt.edu](mailto:RNB2@humboldt.edu)) with questions concerning protocol preparation and submission.

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**1. Course Number (if applicable).**

**Project Title** (note that this title must match the title shown on the routing slip).  
Age/Growth and Reproductive Status of Pacific Halibut in Northern California and Southern Oregon

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**2. Responsible Faculty Member: Instructor, Principal Investigator or Project Director.**

**Name** Tim Mulligan

**Department** Fisheries

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**3. Names of others involved in animal use activity and their qualifications to perform the procedures indicated.**

Miki Takada, Fisheries graduate student

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**4. Proposed starting date (the starting date cannot precede date of approval, and note that *all* protocols must be renewed or extended annually).** The Annual Protocol Review Form must be approved on or before the anniversary of the approval date to indicate termination of the

project or to request extension of the dates of approval; annual review is automatic and you no longer need to submit an end date.

5/1/15

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- 5. Scientific name, common name, and characteristics of all species to be used. List multiple species separately to explain variation in use. For field studies, please list all target species, species listed as protected, threatened, or endangered by the USFWS or the state in which the work will be conducted, and any non-target species that are likely to be impacted.**

Latin binomial	Common name	Sex	Age or Weight Range
Hippoglossus stenolepis	Pacific halibut	Both	All

Characteristics: the body of the Pacific halibut is elongate, rather slender, diamond shaped, and compressed. The head is elongate and the mouth is large. Both eyes are on the right side of the body. The color of the body is dark brown to black with fine mottling on the eyed side and white on the blind side. The Pacific halibut can be distinguished from the California halibut by looking at the end of the jaw. In the Pacific halibut, it extends to the front edge of the eye, while in the California halibut, it extends beyond the eye (CDFW website, <http://www.dfg.ca.gov/marine/mspcont8.asp>).

No protection status.

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- 6. Number of animals to be used. Explain why a smaller number would not allow you to meet your objectives (please provide clarification if based on statistical reasoning). If this is a field project, and you cannot predict the exact number of animals to be sampled, please give your best estimate and an explanation of the variables that will determine your sample size. Write N/A if this protocol covers only the transportation, use, and/or storage of carcasses or tissues.**

<100 Pacific halibut carcasses will be sampled for this study. The larger the sample size, the better we can estimate size and growth trends. The sample size will depend entirely on recreational anglers catch and their willingness to allow me to sample their fish carcasses.

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- 7. Source of the animals (or tissues) to be used or the study area(s) for field studies. For transportation, storage, and use of tissues from carcasses, explain the circumstances of death. If this information is unknown, provide the name and contact information for the person or company from which the samples are to be obtained.**

The halibut, caught by recreational fishermen, will arrive at the docks dead. I will collect the otoliths, a small genetic sample (fin clip), length, weight, and assess gonad maturity from each fish then promptly return to the angler.

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- 8. If live animals are to be maintained in captivity for greater than 12 hours, explain where and how the animals will be housed and who will be responsible for their daily care. If no animals will be maintained in captivity, please clearly state that to be the case. Write N/A if this protocol covers only the transportation, use, and/or storage of carcasses or tissues.**

N/A

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- 9. Provide a non-technical description of the proposed goals, general methods, and the**

**educational or scientific objectives that the proposed use is designed to meet.**

Fish carcasses will be measured (fork length), weighed, assessed for gonad maturity, otoliths will be removed, and a genetic sample will be taken.

Preliminary characterization of the relationships between (a) age and length, (b) length and weight, and (c) oocyte length and maturity for Pacific halibut landed off Humboldt County, California and Coos Bay, Oregon, are the primary objectives of this study.

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- 10. Provide a complete and detailed description of all procedures to be performed involving live vertebrate animals.** Your response should address the handling and restraint of non-anesthetized animals; deprivation of food or water for a period that is atypical for this species; use of chemical or biological agents; the drawing of blood; the use of anesthetics, analgesics, sedatives or tranquilizers; surgical procedures; exposure to radioactive materials, known carcinogens, or highly toxic substances; and any post-operative procedures. Write N/A if this protocol covers only the transportation, use, and/or storage of carcasses or tissues.

No live vertebrate animals will be used in this study.

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- 11. Will any of these procedures cause pain or distress (other than that necessitated by collection, injection, and otherwise mild, momentary discomforts)?** If so, please explain. Write N/A if this protocol covers only the transportation, use, and/or storage of carcasses or tissues.

N/A

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- 12. For researchers, explain how you determined that this protocol does not unnecessarily duplicate previously published observations or experiments (cite the type of literature searches as well as any other resources used). For instructors, explain the value of the lesson that merits using live animals.** Write N/A if this protocol covers only the transportation, use, and/or storage of carcasses or tissues.

N/A

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- 13. Provide alternative procedures that were considered and rejected as well as a brief explanation of why the alternative procedures were rejected.** Write N/A if this protocol covers only the transportation, use, and/or storage of carcasses or tissues.

N/A

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- 14. Identify serious human health risks (expected exposures to disease agents, toxic chemicals used, dangerous environmental conditions, etc.) to which any participants might be exposed during the routine performance of the duties proposed herein, and describe steps taken to mitigate those risks.**

No serious human health risks involved. Protective gloves, goggles, and appropriate tools will be used when removing otoliths and taking tissue samples. Tissue samples will be placed in ethanol for storage.

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- 15. Describe the fate of the animals upon completion of the protocol. Include the procedure**


**for euthanasia (if chemical, include drug, route, and dosage) and the method of verification (whether necessary as an experimental termination or in the case of unanticipated, accidental injury).** Note (1) that you must justify the scientific necessity for any variations from the established guidelines for euthanasia (2000 Report of the AVMA Panel on Euthanasia as published in the Journal of the American Veterinary Medical Association, 2001, 218(5): 669-696 or its replacement in the Code of Federal Regulations), (2) that you must report unexpected deaths to the IACUC as soon as possible to consider options, and (3) that you may write N/A only if this protocol covers only the transportation, use, and/or storage of carcasses or tissues.

Halibut will be dead when I receive them for sampling. After sampling has been completed, halibut will be returned to the angler who caught it.

16. I certify that the above information is accurate and complete, that I have read and agree to abide by the "Principles for the Utilization and Care of Vertebrate Animals Used in Testing, Research, and Training at HSU," that I will make copies of these principles and other pertinent guidelines available to those persons who work under my supervision, and that deviations from this protocol, including any unanticipated injuries or death of animals, will be reported to the IACUC. Further, my level of supervision will be such that these procedures will be carried out in a humane and a scientifically acceptable manner as described herein. I understand that, as the research supervisor, I take responsibility for the conduct of anyone working under this approved protocol, and I will supervise the research to ensure that no work is conducted that is not covered herein or in a separate approved protocol. I am aware that my research might require permits from federal and/or state agencies that regulate the harassment, capture, transport, captive maintenance, handling and manipulation of live vertebrate animals, and I have marked all boxes pertaining to the relevant laws (and state permits) governing the species used in my research. I certify that my research will be conducted in accordance with all relevant federal and state laws.

I am aware that the following Acts apply to my study (check all that may apply):

- Animal Welfare Act
- State of California Fish and Game Commission (Title 14) - Scientific Collecting Permit(s)
- Endangered Species Act
- Fishery Conservation and Management Act
- Lacey Act
- Marine Mammal Protection Act
- Convention on International Trade in Endangered Species of Wild Fauna and Flora
- Other: please list \_\_\_\_\_

  
 \_\_\_\_\_  
 Signature, Responsible Faculty Member      Date      10 Feb 2015

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**Review by the IACUC Attending Veterinarian (if necessary):**

\_\_\_\_\_  
 Signature, HSU Veterinarian      Date      ( ) Approved      ( ) Denied  
 Explanation of denial:

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**All protocols must be approved prior to the start of research.**

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Lorraine Taggart &lt;llt1@humboldt.edu&gt;

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**review of IACUC Protocol No. 14/15.F.51-E**

2 messages

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**Peggy Wilzbach** <wilzbach@humboldt.edu>  
To: Timothy Mulligan <Timothy.Mulligan@humboldt.edu>  
Cc: Lorraine Taggart <Lorraine.Taggart@humboldt.edu>

Thu, Feb 19, 2015 at 9:26 AM

Dear Tim:

I and another IACUC committee member have reviewed your IACUC application for the project titled "Age/Growth and Reproductive Status of Pacific Halibut in Northern California and Southern Oregon", assigned as Protocol No. 14/15.F.51-E. We are in agreement that it satisfactorily addresses each of the questions and does not require revision. It will be approved as soon as the paperwork is processed in the Dean's office.

Peggy

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**Timothy J. Mulligan** <Timothy.Mulligan@humboldt.edu>  
Reply-To: Timothy.Mulligan@humboldt.edu  
To: Peggy Wilzbach <wilzbach@humboldt.edu>  
Cc: Lorraine Taggart <Lorraine.Taggart@humboldt.edu>

Thu, Feb 19, 2015 at 9:58 AM

THANKS, Peggy.

Tim

[Quoted text hidden]

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