result in an order to cease and desist and to be subject to penalties as provided for in Section 2150. additional information 0130-0036-AN

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE

ANNUAL REPORT OF RESEARCH FACILITY
(TYPE OR PRINT)

1. REGISTRATION NO. 11-R-0006 | CUSTOMER NO. 75 | FORM APPROVED OMB NO. 0579-0036

2. HEADQUARTERS RESEARCH FACILITY *(Name and Address, as registered with USDA, include Zip Code)*

UNIVERSITY OF MAINE
5717 CORBETT HALL
ROOM 420
ORONO, ME 04469
(207) 581-2768

3. REPORTING FACILITY (List all locations where animals were housed or used in actual research, testing, teaching, or experimentation, or held for these purposes. Attach additional sheets if necessary.)

FACILITY LOCATIONS*(sites)*

See Attached Listing One site for the University of Maine (address in #2 above), includes Small Animal Facility, Psychology Lab, and the Witter Center

*denotes animals in field studies, not housed in research facilities

REPORT OF ANIMALS USED BY OR UNDER CONTROL OF RESEARCH FACILITY *(Attach additional sheets if necessary or use APHIS FORM 7023A)*

A. Animals Covered By The Animal Welfare Regulations	B. Number of animals being bred, conditioned, or held for use in teaching, testing, experiments, research, or surgery but not yet used for such purposes.	C. Number of animals upon which teaching, research, experiments, or tests were conducted involving no pain, distress, or use of pain-relieving drugs.	D. Number of animals upon which experiments, teaching, research, surgery, or tests were conducted involving accompanying pain or distress to the animals and for which appropriate anesthetic, analgesic, or tranquilizing drugs were used.	E. Number of animals upon which teaching, experiments, research, surgery or tests were conducted involving accompanying pain or distress to the animals and for which the use of appropriate anesthetic, analgesic, or tranquilizing drugs would have adversely affected the procedures, results, or interpretation of the teaching, research, experiments, surgery, or tests. *(An explanation of the procedures producing pain or distress in these animals and the reasons such drugs were not used must be attached to this report)*	F. TOTAL NO. OF ANIMALS (Cols. C + D + E)
4. Dogs			2		2
5. Cats			6		6
6. Guinea Pigs					
7. Hamsters		12			12
8. Rabbits					
9. Non-Human Primates					
10. Sheep					
11. Pigs			6		6
12. Other Farm Animals					
Horses			15		15
13. Other Animals					
Seals*				39	39

ASSURANCE STATEMENTS

1) Professionally acceptable standards governing the care, treatment, and use of animals, including appropriate use of anesthetic, analgesic, and tranquilizing drugs, prior to, during, and following actual research, teaching, testing, surgery, or experimentation were followed by this research facility.

2) Each principal investigator has considered alternatives to painful procedures.

3) This facility is adhering to the standards and regulations under the Act, and it has required that exceptions to the standards and regulations be specified and explained by the principal investigator and approved by the Institutional Animal Care and Use Committee (IACUC). **A summary of all the exceptions is attached to this annual report.** In addition to identifying the IACUC-approved exceptions, this summary includes a brief explanation of the exceptions, as well as the species and number of animals affected.

4) The attending veterinarian for this research facility has appropriate authority to ensure the provision of adequate veterinary care and to oversee the adequacy of other aspects of animal care and use.

CERTIFICATION BY HEADQUARTERS RESEARCH FACILITY OFFICIAL
(Chief Executive Officer or Legally Responsible Institutional official)
I certify that the above is true, correct, and complete (7 U.S.C. Section 2143)

NAME & TITLE OF C.E.O. OR INSTITUTIONAL OFFICIAL *(Type or Print)* | DATE SIGNED 11/21/01

Oct 88), which is obsolete

PART 1 - HEADQUARTERS

0130-0036

This report is required by law (7 USC 2143). Failure to report according to the regulations can result in an order to cease and desist and to be subject to penalties as provided for in Section 2150.

See reverse side for additional information.

Interagency Report Control No. 0180-DOA-AN

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE

CONTINUATION SHEET FOR ANNUAL REPORT OF RESEARCH FACILITY

(TYPE OR PRINT)

1. REGISTRATION NO. 11-R-0006 | CUSTOMER NO. 75 | FORM APPROVED OMB NO. 0579-0036

2. HEADQUARTERS RESEARCH FACILITY *(Name and Address, as registered with USDA, include Zip Code)*

UNIVERSITY OF MAINE
5717 CORBETT HALL
ROOM 420
ORONO, ME 04469
(207) 581-2768

REPORT OF ANIMALS USED BY OR UNDER CONTROL OF RESEARCH FACILITY *(Attach additional sheets if necessary or use this form.)*

A. Animals Covered By The Animal Welfare Regulations	B. Number of animals being bred, conditioned, or held for use in teaching, testing, experiments, research, or surgery but not yet used for such purposes.	C. Number of animals upon which teaching, research, experiments, or tests were conducted involving no pain, distress, or use of pain-relieving drugs.	D. Number of animals upon which experiments, teaching, research, surgery, or tests were conducted involving accompanying pain or distress to the animals and for which appropriate anesthetic, analgesic, or tranquilizing drugs were used.	E. Number of animals upon which teaching, experiments, research, surgery or tests were conducted involving accompanying pain or distress to the animals and for which the use of appropriate anesthetic,analgesic, or tranquilizing drugs would have adversely affected the procedures, results, or interpretation of the teaching, research, experiments, surgery, or tests. *(An explanation of the procedures producing pain or distress in these animals and the reasons such drugs were not used must be attached to this report)*	F. TOTAL NO. OF ANIMALS (Cols. C + D + E)
		# Released	# Euthanized	# Found Dead in Trap	# Caught
Redbacked vole*		512		67	579
Deer mice*		265	6	5	276
Short-tail shrew*		250	2	142	394
Masked shrew*		80		135	215
Snowshoe hare*		124		4	128
Jumping mouse*		6	1	1	8
Smokey shrew*		1		4	5
Bog lemming*		1			1
Meadow vole*		55	37	5	97
Chipmunk*		52	1	4	57
Red squirrel*		37		11	48
Weasel*		14		1	15
Flying squirrel*		23			23
White-footed mice*		797			797

ASSURANCE STATEMENTS

1) Professionally acceptable standards governing the care, treatment, and use of animals, including appropriate use of anesthetic, analgesic, and tranquilizing drugs, prior to, during, and following actual research, teaching, testing, surgery, or experimentation were followed by this research facility.

2) Each principal investigator has considered alternatives to painful procedures.

3) This facility is adhering to the standards and regulations under the Act, and it has required that exceptions to the standards and regulations be specified and explained by the principal investigator and approved by the Institutional Animal Care and Use Committee (IACUC). **A summary of all the exceptions is attached to this annual report.** In addition to identifying the IACUC-approved exceptions, this summary includes a brief explanation of the exceptions, as well as the species and number of animals affected.

4) The attending veterinarian for this research facility has appropriate authority to ensure the provision of adequate veterinary care and to oversee the adequacy of other aspects of animal care and use.

CERTIFICATION BY HEADQUARTERS RESEARCH FACILITY OFFICIAL
(Chief Executive Officer or Legally Responsible Institutional official)
I certify that the above is true, correct, and complete (7 U.S.C. Section 2143)

SIGNATURE OF C.E.O. OR INSTITUTIONAL OFFICIAL	NAME & TITLE OF C.E.O. OR INSTITUTIONAL OFFICIAL *(Type or Print)*	DATE SIGNED
		11/2/01

M 18-23 (Oct 88), which is obsolete

PART 1 - HEADQUARTERS

University of Maine
Registration # 11-R-0006
Reporting of Exceptions
10/1/2000-09/30/2001

We have included this project as an exception based on our interpretation of the USDA's Reportable IACUC-Approved Exceptions. If we have misinterpreted this Policy, please let us know by contacting the Office of Research and Sponsored Programs (207/581-1498).

Approved Study Allowing Exceptions to the Standards and Regulations Under the Act:

The protocol entitled, "Role of NMDA-type Glutamate Receptors in Circadian Phase Shifting by Dark Pulses in Hamsters," was approved on May 21, 2001. Approved number of Syrian hamsters: 24; number used during this reporting period: 12. The following paragraphs summarize the goals/significance and the procedures of the experiment, as provided by the principal investigator and approved by the IACUC.

"A number of environmental and pharmacological stimuli have been shown to induce phase shifts of free-running circadian activity rhythms in Syrian hamsters. These stimuli must reach the circadian pacemaker, known to be located in a hypothalamic structure called the suprachiasmatic nucleus (SCN), through one or more of its neural input pathways. In a previous protocol, which led directly to two recent publications (*J. Biol. Rhythms*, 15, 491-500, 2000; *Physiol. & Behav.*, in press, 2001), we investigated the phase shifting effects of so-called "dark pulses," that is, brief periods of darkness interrupting otherwise continuous light. Previous studies from other laboratories had concluded that dark pulses phase-shift the hamster circadian pacemaker indirectly, by inducing locomotor activity, rather than through visual input pathways. This conclusion was based largely on the ability of brief periods of physical restraint (confinement to a small holding box) to block dark pulse-induced phase shifts. In contrast to these earlier studies, we found that restraint fails to block dark pulse-induced phase shifts at certain times within the circadian cycle (e.g., during subjective night), indicating that dark pulses work through different underlying neural mechanisms at different times of day. We hypothesized that dark pulse-induced phase shifting is mediated by induced activity during the subjective day (i.e., the normal rest time for nocturnal hamsters) and by visual input pathways during the subjective night (i.e., the hamster's normal active time). In the present protocol, we plan to determine whether dark pulse-induced phase shifts are mediated by the neurotransmitter glutamate, acting through a particular class of glutamate receptor, the NMDA-type GLU receptor. Previous studies from several labs have shown that the glutamate/NMDA system is importantly involved in mediating the effects of light pulses on the hamster circadian pacemaker, and that the NMDA receptor antagonist MK-801 blocks the phase shifting effects of light pulses. Thus, the hypothesis outlined above suggests that MK-801 might be expected to block the phase shifting effects of dark pulses during subjective night, but not during subjective day. The present study is designed to test this hypothesis directly."

"Animals will be house individually in running-wheel cages. Food and water will be freely available. Animals will be housed in continuous moderate-intensity light (100 lux, substantially below typical room lighting). At approximately 10 day intervals, animals will be treated with either of three treatments: (1) MK-801, 5.0 mg/kg, ip, followed 30 minutes later by a 15-minute dark pulse; (2) saline, equated to MK-801 for volume (0.2 ml/100 g b.w.), followed

30 minutes later by a 15-minute dark pulse; or (3) MK-801 alone. A given animal will receive these treatments in quasi-random order at one of two times, either mid-subjective day (i.e., about 6 hours prior to expected onset of locomotor activity), or early subjective night (i.e., at around the time of expected locomotor activity onset). Previous work has shown that dark pulses evoke reliable phase shifts at both these times, but are blocked by restraint only at mid-day, and not at early night."

Column E Explanation

This form is intended as an aid to completing the Column E explanation. It is not an official form and its use is voluntary. Names, addresses, protocols, veterinary care programs, and the like, are not required as part of an explanation. A Column E explanation must be written so as to be understood by lay persons as well as scientists.

1. Registration Number: 11-R-0006

2. Number of animals and Species (common name) used in this study:

	# Caught	# Found Dead	# Euthanized	# Released
Red backed vole	320	54	0	266
Deer mouse	276	5	6	265
Short-tailed shrew	360*	116	2	242
Masked shrew	214*	135	0	79
Snowshoe hare	128	4	0	124
Non-target species:				
Jumping mouse	8	1	1	6
Smokey shrew	5*	4	0	1
Bog lemming	1	0	0	1
Meadow vole	1	0	0	1
Chipmunk	49*	4	1	44
Red squirrel	23*	8	0	15
Weasel	14*	1	0	13

*species not ear tagged, so # caught refers to # of captures, not # of individuals

4. Explain the procedure producing pain and/or distress.

Animals are live trapped and released at the capture site. Although traps were covered with moss and leaves to minimize exposure and disturbance and contain cotton balls as nesting materials, animals were found dead or had to be humanely euthanized. Animals found dead are reported in Column E of the report, as they presumably suffered.

5. Provide scientific justification why pain and/or distress could not be relieved. State methods or means used to determine that pain and/or distress relief would interfere with test results. (For Federally mandated testing, see Item 6 below)

N/A. This study is to examine the effects of pre-commercial thinning (PCT) on vegetation and wildlife by sampling vegetation, hare, and small mammals in PCT-treated and non-PCT-treated stands of various ages. Animals are captured in live traps and are aged, sexed, and examined for ecoparasites. A small ear tag is affixed to hares, mice, and voles at the capture site. Handling takes less than 2 minutes and chemical restraint is not necessary. The investigator noted that other surveys have documented <2% mortality of captured mice and voles. He also noted that shrews have high metabolic rates and a substantial number of shrews die in traps. The IACUC will review these numbers.

6. What, if any, federal regulations require this procedure? Cite the agency, the code of Federal Regulations (CFR) title number and the specific section number (e.g., APHIS, 9 CFR 113.102):

N/A

Agency _____ CFR _____

Column E Explanation

This form is intended as an aid to completing the Column E explanation. It is not an official form and its use is voluntary. Names, addresses, protocols, veterinary care programs, and the like, are not required as part of an explanation. A Column E explanation must be written so as to be understood by lay persons as well as scientists.

1. Registration Number: 11-R-0006

2. Number of animals and Species (common name) used in this study:

	# Caught	# Found Dead	# Euthanized	# Released
Masked shrew	1	0	0	1
Short-tailed shrew	28	22	0	6
Chipmunk	8	0	0	8
Red squirrel	25	3	0	22
Flying squirrel	23	0	0	23
White-footed mouse	781	0	0	781
Red backed vole	259	13	0	246
Meadow vole	4	0	0	4
Weasel	1	0	0	1

4. Explain the procedure producing pain and/or distress.

Animals are live trapped and released at capture site. A cotton nestlet is placed in each trap to occupy their time and to provide insulation. Sufficient food is placed in each trap for animals to maintain metabolism. Each trap is covered by a cedar shingle to keep the trap dry in wet weather and to keep direct sunlight off the trap. Despite these procedures, incidental mortality was expected by the investigator. Animals found dead are reported in Column E of the report, as they presumably suffered.

5. Provide scientific justification why pain and/or distress could not be relieved. State methods or means used to determine that pain and/or distress relief would interfere with test results. (For Federally mandated testing, see Item 6 below)

N/A. Objectives of the study are to document population changes over a long period of time, to document habitat use, and document the effects of forest harvesting on populations and habitat use. Animals are marked, sexed, aged, weighed, and sometimes measured. They are also examined for ticks and other parasites. Animals are marked (ear tags, PIT tags, marker), so that individuals can be recognized, which is an essential component of mark/recapture studies. Investigator indicated that over the past three years, mortality rate was 12.5 individuals per 8 day trapping session (5.49% of captures). The IACUC will review these numbers.

6. What, if any, federal regulations require this procedure? Cite the agency, the code of Federal Regulations (CFR) title number and the specific section number (e.g., APHIS, 9 CFR 113.102):

N/A

Agency _____ CFR _____

Column E Explanation

This form is intended as an aid to completing the Column E explanation. It is not an official form and its use is voluntary. Names, addresses, protocols, veterinary care programs, and the like, are not required as part of an explanation. A Column E explanation must be written so as to be understood by lay persons as well as scientists.

1. Registration Number: 11-R-0006

2. Number of animals and Species (common name) used in this study:

	# Caught	# Found Dead	# Euthanized	# Released
Meadow vole	92	5	37	50
Short-tailed shrew	6	4	0	2
White-footed mouse	16	0	0	16

4. Explain the procedure producing pain and/or distress.

Animals are live trapped. Target species is the meadow vole. Adult voles are euthanized for detailed morphological skull measurements and genetic analysis of populations. Traps contain food, cotton wool for nesting material, and are covered with leaves and twigs to prevent overheating, but some incidental mortality occurs. Animals found dead are reported in Column E of the report, as they presumably suffered.

5. Provide scientific justification why pain and/or distress could not be relieved. State methods or means used to determine that pain and/or distress relief would interfere with test results. (For Federally mandated testing, see Item 6 below)

N/A. The nine animals found dead were incidental mortality. The IACUC will review these numbers.

6. What, if any, federal regulations require this procedure? Cite the agency, the code of Federal Regulations (CFR) title number and the specific section number (e.g., APHIS, 9 CFR 113.102):

N/A

Agency _____ CFR _____

Column E Explanation

This form is intended as an aid to completing the Column E explanation. It is not an official form and its use is voluntary. Names, addresses, protocols, veterinary care programs, and the like, are not required as part of an explanation. A Column E explanation must be written so as to be understood by lay persons as well as scientists.

1. Registration Number: 11-R-0006

2. Number of animals and Species (common name) used in this study:

   39 Seals

4. Explain the procedure producing pain and/or distress.

   Harbor seals are captured by entanglement in gillnets placed near the haulout sites. When seals become entangled in the net, they twist and come to the surface. The entangled seal is pulled into a boat, cut free from the gillnet and placed in a hoop net constructed with a rubber hose and 1 cm mesh soft nylon webbing. Seals are physically restrained in the hoop net during handling and tagging. Seals are given an external examination including mass, standard length, girth, sex, age class, and notation of any external scars, wounds, or parasites. Approximately 30 cc of blood is drawn from the extradural intervertebral vein. Seals are marked using a cattle ear tag, with a VHF transmitter attached, on the hind flipper. A 0.7 cm diameter punch is taken from the left rear flipper for genetic studies and the cattle tag is clipped in place through this hole. A biopsy sample of blubber is taken from the individual's side near the pelvis (does not involve muscle layers or the body cavity). The area is first frozen with a small injection of lidocane hydrochloride (Xylocaine) before application of a 0.6 cm diameter biopsy punch. Seals are released immediately after tagging and biopsy.

5. Provide scientific justification why pain and/or distress could not be relieved. State methods or means used to determine that pain and/or distress relief would interfere with test results. (For Federally mandated testing, see Item 6 below)

Investigator follows handling procedures described in *Marine Mammals Ashore: A Field Guide for Strandings, 1993*, Geraci and Lounsbury. Geraci and Lounsbury recommend physical restraint rather than chemical immobilization. They recommend not drugging seals, but monitoring for hyperthermia. Investigators bathe the seals with water periodically to minimize risk of hyperthermia. By not drugging the seals, they can be released immediately after handling, reducing the length of stress. This activity is conducted under a permit issued by the National Marine Fisheries Service under the Marine Mammal Protection Act. Personnel from the National Marine Fisheries Service, USDC, and the Maine Department of Inland Fisheries and Wildlife are also involved in this study.

NOTE: One seal that was caught during this time period died. It was caught below the surface and drowned. It was deep and another seal was above it near the surface. The other seal was removed from the net without incident. The death occurred on April 17, 2001 and was reported to the IACUC on April 20, 2001. The investigator initiated more stringent inspection of the net after this death.

6. What, if any, federal regulations require this procedure? Cite the agency, the code of Federal Regulations (CFR) title number and the specific section number (e.g., APHIS, 9 CFR 113.102):

N/A

Agency _____ CFR _____