

Mass. EA 32.2: P94/2



UNIVERSITY OF MASSACHUSETTS
COLLECTION
APR 12 1990
UNIVERSITY OF MASSACHUSETTS
MEDICAL CENTER

PROBLEM ANIMAL CONTROL HANDBOOK
(1st Edition)

MASSACHUSETTS DIVISION OF FISHERIES AND WILDLIFE
100 CAMBRIDGE STREET, BOSTON, MASS.
1989

893/247

PROBLEM ANIMAL CONTROL HANDBOOK

This handbook is intended as a guide for persons licensed as problem animal control agents in accordance with the Code of Massachusetts Regulations, 321 CMR 2.14. It is the initial draft of the handbook and, as such, is not necessarily definitive. Other sources, including, but not restricted to, those suggested below, may provide useful additional information.

Problem Animal Control Agents are licensed (issued permits) by the Massachusetts Division of Fisheries and Wildlife in accordance with provisions of G.L. c. 131, s. 4 and 321 CMR 2.14. The purposes of such licensing is to provide a lawful procedure for the control of vertebrate animals which are causing damage to property or interfering with the reasonable use of such property. Under some circumstances, landowners, members of their immediate families, or persons permanently employed by them may control or destroy problem animals without a permit (G.L. c. 131, s. 37). However, this may not be satisfactory due to the need for special training or equipment or the lack of time or ability on the part of the complainant. Problem Animal Control Agents, including municipal Animal Control Officers, can therefore provide such services, when properly licensed. No person, unless otherwise allowed by law, may control problem animals without such licensing from the Division of Fisheries and Wildlife.

Regulations:

The complete text of the Problem Animal Control regulations is found in the Code of Massachusetts Regulations (321 CMR 2.14), initially published in the Massachusetts Register in May 1989. Prior to 1989, licensing was also required but was governed by administrative policy. The current regulations set forth the purpose for the regulations, the scope of the permit requirement, the information and requirements necessary for application, procedures for administering abandoned and denied applications, criteria for issuance of the permit and for provisional permits, exemptions, examination and recertification requirements, procedures for revocation and non-renewal of permits, restrictions, record-keeping and reporting requirements, and other information. A copy of these regulations is enclosed with this handbook. Permittees must be familiar with all aspects of the regulations and must comply with them in conducting their animal control program.

Examination and Recertification Requirements:

In the past, problem animal control agents could obtain and renew their permits by applying and by being recommended by a District Wildlife Manager or an Environmental Police Officer. Under the formal regulations now in place, a new applicant must complete a written examination on biology, handling, capture techniques, animal welfare, diseases and parasites, statutes and regulations, and other appropriate subject matter before being granted a permit. In order to phase in existing permittees, persons who have held a problem animal control permit for three or more years may renew without completing the examination. Persons who have held such a

permit for more than one but less than three years may renew, but must take the examination within six months in order to retain the permit. In any case, all persons must retake an examination (recertify) every third year. In past years, there has been no fee either for taking the examination or for issuance of the permit. Such fees may be instituted in the future. Questions on the examination will be based on, but not be limited to, materials in this handbook. Municipal Animal Control Officers may be exempted from the examination and recertification requirements and the fees (if any) when the Director is satisfied that their training and experience warrants such exemption.

Control Philosophy:

The Problem Animal Control Agent has a divided responsibility. He or she has a responsibility to the client to solve the animal problem which the client has complained about. He also has a responsibility to the state and society to act lawfully and ethically. They also have a responsibility to the animals to act humanely. It is a challenging task to meet all these responsibilities all of the time. In many, if not most, instances, it is not the animal which is the problem, but rather the human. Humans have intruded their habitat into that of the animals, who have taken advantage of human artifacts for food and shelter. This exploitation of human resources by animals is usually considered to be a "problem" or a "nuisance" by those who encounter it. These problems are often real, and need to be resolved, but the actual problem is not the animal-- which is acting in accordance with its biological needs-- but the interaction between the animal and human. By eliminating the mechanisms which elicit those interactions, problems can often be mitigated or eliminated. In other words, prevent the problem from occurring-- by physical barriers, sanitary disposal of garbage, or by tolerating a low level of damage. Problem Animal Control Agents should, whenever possible, recommend and utilize exclusionary measures over lethal measures to control problem animals. On the other hand, when human health and safety, or that of domestic animals, is immediately threatened, or when a high level of severe damage is occurring, immediate and humane destruction of the animal may be warranted. Agents should advise their clients of those which can be utilized to prevent damage in the future and should be attentive to problems which might occur elsewhere nearby. It does little good-- to either the animals or to humans-- to merely shift damage from place to place.

Capture of Problem Animals:

Those means which are allowed for the taking of problem animals are specified in the regulations. In some instances, these include lethal means such as shooting or kill-type traps. In other instances, capture may be accomplished by holding devices such as live traps or nets. The animal's welfare should be considered and needless pain and suffering should be avoided. All capture devices have inherent conditions or contradictions which may limit their use and effectiveness and Problem Animal Control Agents must be familiar with those devices which they use. For example, cage or "box" traps may capture the animal harmlessly, but the animals may become dehydrated if the trap is left in the sun for long periods,

or the trap may be vandalized. Captured animals may also damage their teeth by gnawing at the mesh of wire traps. Be sure that you know your equipment and its limitations.

Disposal of Problem Animals:

In some instances, it will be necessary to kill problem animals, either because of the nature of the damage, or because the problem is caused by a sick or injured animal. It can be distressing to the agent or the client to have to kill animals and exclusionary means are preferred when possible and practical. When it is necessary to destroy animals, the method used should be as quick and painless as possible, depending on the urgency of the matter and the kind and size of animal involved. Keeping this in mind, suggested means of euthanasia include: shooting in the brain with a firearm or captive bolt pistol; chemical euthanasia by lethal injection; cervical dislocation (pigeons and smaller birds and mouse-sized animals); and drowning. Shooting should be done by trained personnel and with due regard for the safe discharge of firearms and state laws governing the same. Chemical injection should be done only by trained and properly licensed persons using pharmacological agents designed for humane euthanasia. Pertinent references include:

AVMA Panel on Euthanasia. 1986. Report of the AVMA panel on euthanasia. J. Amer. Vet. Med. Assoc. 188(3):252-268.

Institute for the Study of Animal Problems. 1978. Euthanasia of dogs and cats. An analysis of experience and current knowledge with recommendations for research. Humane Society of the United States, 47pp.

Sick, injured, and orphaned animals may be transferred to a licensed Wildlife Rehabilitator. Names and addresses of persons currently licensed as rehabilitators may be obtained from the Division's Boston office (address and telephone number below).

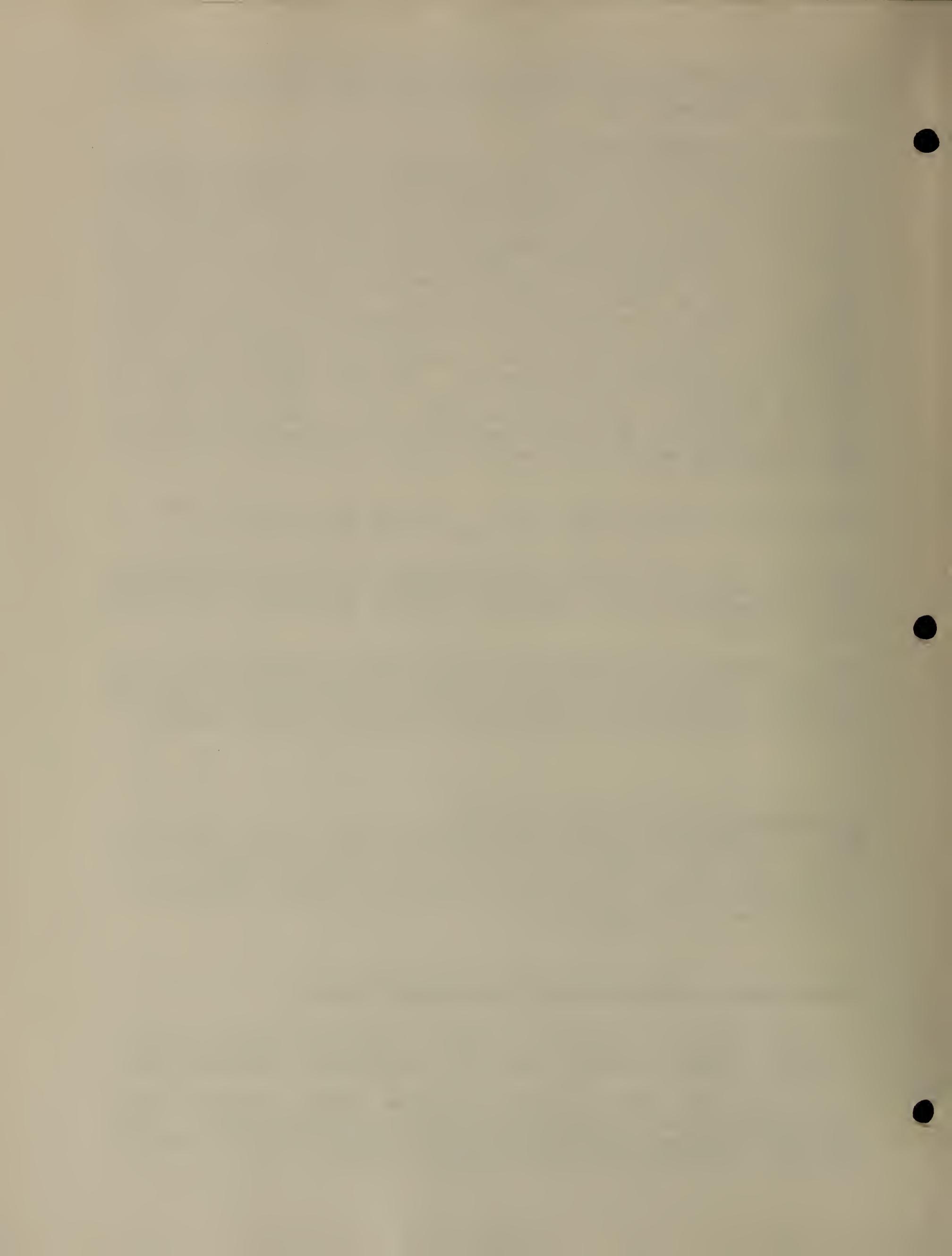
RECOMMENDATIONS FOR FURTHER READING:

Some of these are written in a popular style, while others are highly technical. Some are in-print and readily available, while others may only be obtained on the out-of-print market or on interlibrary loan. Other sources may have useful information; these below are recommended.

Animal Damage and Control and Capture Techniques:

Canadian Trappers' Federation. 1986. Canadian trappers' manual (4th ed.) Canad. Trappers' Fed., St. Catherine's, Ontario, 326pp.

De Almeida, M.H. 1987. Nuisance furbearer damage control in urban and suburban areas. Pages 996-1006 in M. Novak et al. (eds.) Wild furbearer management and conservation in North America. Ontario Ministry of Natural Resources, Toronto, 1150pp.



Hawthorne, D.W. 1980. Wildlife damage and control techniques. Pages 411-439 in S.D. Schemnitz (ed.) Wildlife management techniques manual (4th ed.). The Wildlife Society, Inc., Wash., D.C., 686pp.

Timm, R.M., ed. 1983. Prevention and control of wildlife damage. Great Plains Agricultural Council Wildlife Resources Committee and Nebraska Cooperative Extension Service, Univ. Nebraska, Lincoln, variously paged.

Also useful are the "Proceedings" of the Eastern Wildlife Damage Control Conference (1st, 1983; 2nd, 1985; 3rd, 1987). The 1st Conference is available from the Cornell Cooperative Extension Service, Cornell Univ., Ithaca, N.Y. The 2nd and 3rd are available from Alabama Coop. Ext. Service, Auburn Univ., Auburn, Ala.

Life Histories:

Bull, J. 1974. Birds of New York state. Doubleday/Natural History Press, New York, 655pp.

Chapman, J.A. and G.A. Feldhamer, eds. 1982. Wild mammals of North America. Biology, management, economics. Johns Hopkins Press, Baltimore, 1147pp.

DeGraaf, R.M. and D.D. Rudis. 1983. Amphibians and reptiles of New England. Habits and natural history. Univ. Mass. Press, Amherst, 83pp.

Godin, A.J. 1977. Wild mammals of New England. Johns Hopkins Press, Baltimore, Md., 304pp.

Novak, M., J.A. Baker, M.E. Obbard and B. Malloch. 1987. Wild furbearer management and conservation in North America. Ontario Ministry of Natural Resources, Toronto, 1150pp.

Terres, J.K., ed. 1982. The Audubon Society encyclopedia of North American birds. A.A. Knopf, New York, 1109pp.

Animal Diseases:

Davidson, W.R. and V.F. Nettles. 1988. Field manual of wildlife diseases in the southeastern United States. Southeastern Cooperative Wildlife Disease Study, Athens, Ga., 309pp.

Davis, J.W. and R.C. Anderson, eds. 1971. Parasitic diseases of wild mammals. Iowa State Univ. Press, Ames, 364pp.

Davis, J.W., R.C. Anderson, L. Karstad, and D.O. Trainer, eds. 1972. Infectious and parasitic diseases of wild birds. Iowa State Univ. Press, Ames, 344pp.

Davis, J.W., L.H. Karstad and D.O. Trainer, eds. 1981. Infectious diseases of wild mammals (2nd ed.) Iowa State Univ. Press, Ames, 446pp.

Friend, M., ed. 1987. Field guide to wildlife diseases. General field procedures and diseases of migratory birds. U.S. Fish and Wildl. Service, Wash., D.C., Resource Publ. 167, 225pp.

Remarks:

This handbook only contains a brief summary of information necessary and useful to the Problem Animal Control Agent. If you have questions or comments, please direct them to the Division of Fisheries and Wildlife. Issuance of permits is handled through the Permit Section, Division of Fisheries and Wildlife, 100 Cambridge Street, Leverett Saltonstall Building, Boston, MA 02202 (617-727-3151). Technical questions should be directed to the Division of Fisheries and Wildlife, Field Headquarters, 1 Rabbit Hill Road, Westborough, MA 01581 (508-366-4479, 617-727-2864).

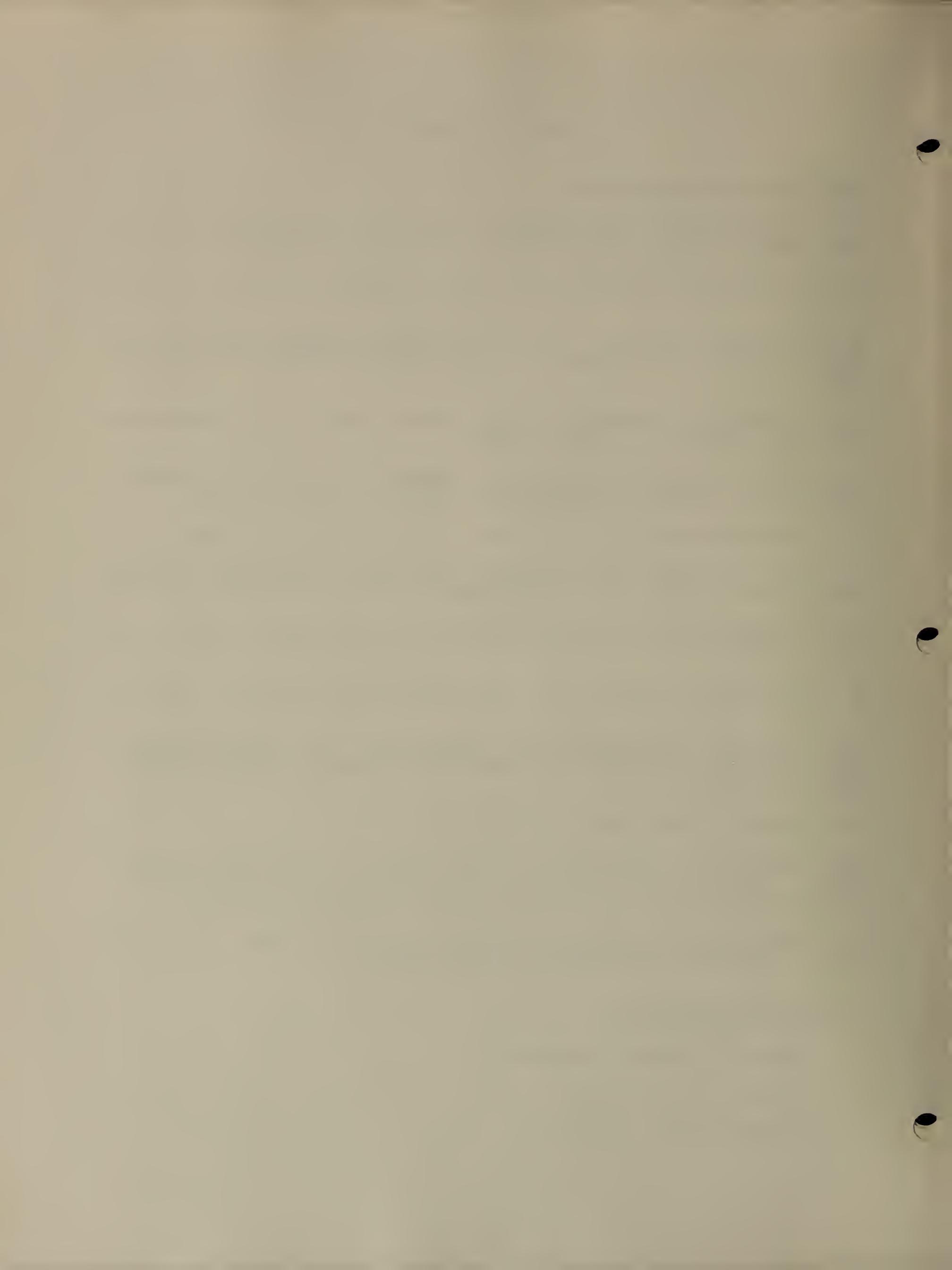
TABLE OF CONTENTS

Statutes and Regulations:

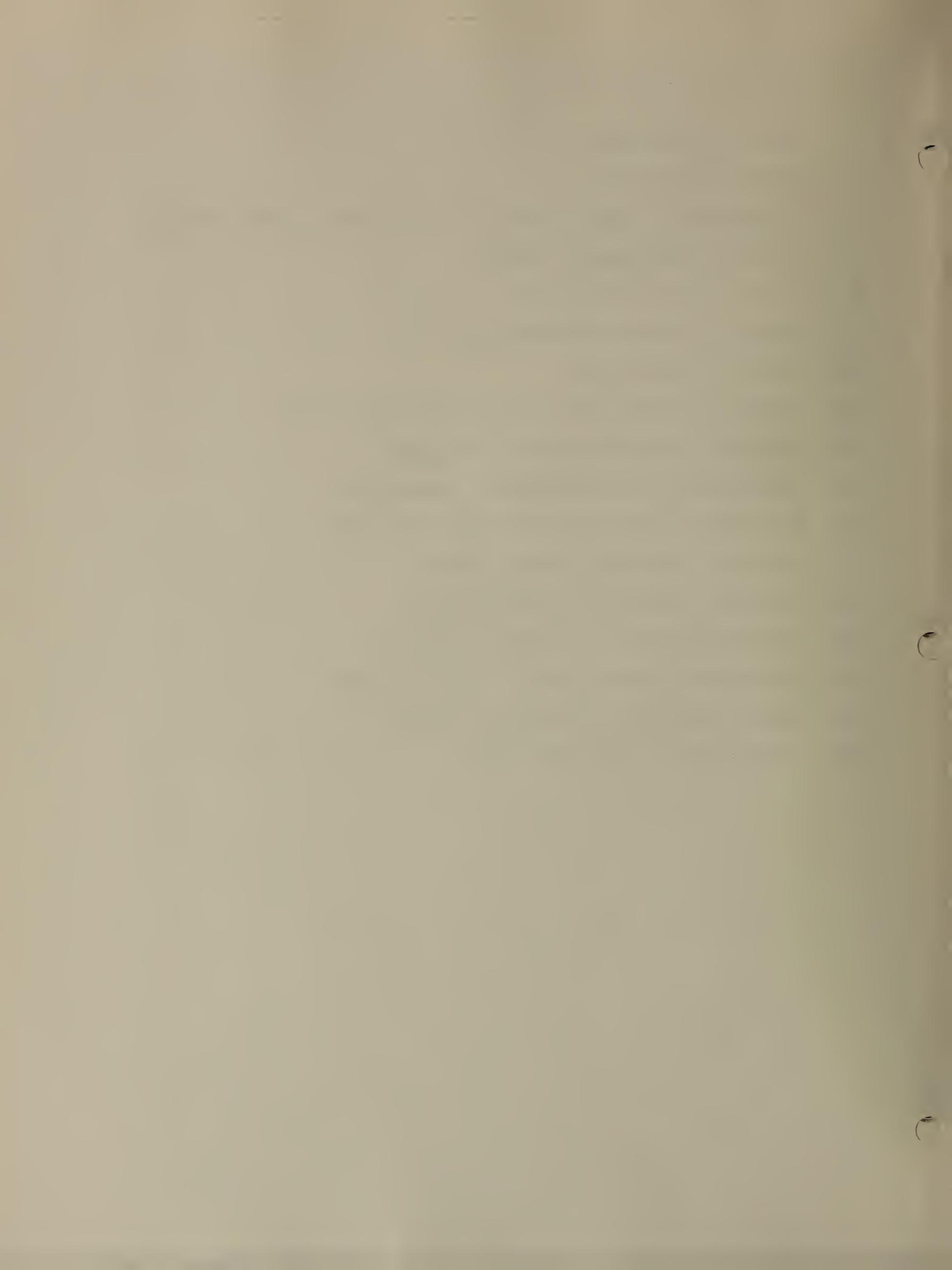
1. Prevention of defilement by gulls or terns of waters used for domestic water supply. (M.G.L. c. 111, s. 174A).
2. Destruction or control of foxes or rodents. (M.G.L. c. 128, s. 8A).
3. Killing, hunting, etc., of birds or mammals upon land by owner, tenant, etc.; permit to trap; reports. (M.G.L. c. 131, s. 37).
4. Permits for trapping certain birds; rules, etc.; inspection of traps. (M.G.L. c. 131, s. 38).
5. Use of poison in killing mammals or birds forbidden; exceptions; permits; regulations. (M.G.L. c. 131, s. 43).
6. Registration, etc., of traps. (M.G.L. c. 131, s. 80).
7. Use of steel jaw leghold trap and certain other devices restricted. (M.G.L. c. 131, s. 80A).
8. Extermination of English sparrow and starling. (M.G.L. c. 131, s. 83).
9. Placing of poison, etc., for control of rats, etc. (M.G.L. c. 270, s. 3A).
10. Artificial propagation and maintenance of birds, mammals, reptiles, and amphibians (extract only--abandoned applications). 321 CMR 2.12(8).
11. Problem animal control. (321 CMR 2.14).
12. Hunting and trapping of certain mammals. [321 CMR 3.02(5)].
NOTE: there may be changes to this regulation as of July 1989. Contact the Division of Fisheries and Wildlife for details.
13. State list of endangered wildlife and wild plants. (321 CMR 8.01. (extract-- vertebrate wildlife only).

Leaflets and Brochures:

1. Control of English Sparrows
2. Control of Starlings
3. Vagrant Pigeon Control



4. Control of Opossums
5. Control of Moles
6. A Homeowner's Guide to Massachusetts Bats and Bat Problems
7. Control of Cottontail Rabbits
8. Control of Tree Squirrels
9. Control of Rats and House Mice
10. Control of Porcupines
11. Control of Animal Odors with Neutroleum Alpha
12. Wildlife in Massachusetts-- Chipmunk
13. Controlling Wildlife Damage-- Woodchuck
14. Wildlife in Massachusetts-- Gray Squirrel
15. Wildlife in Massachusetts-- Muskrat
16. Wildlife in Massachusetts-- Raccoon
17. Controlling Wildlife Damage-- Raccoon
18. Wildlife in Massachusetts-- Striped Skunk
19. Controlling Wildlife Damage-- Skunk
20. If You Care-- Leave Them There



321 CMR 2.12

Rules and Regulations relative to the Artificial Propagation
of Birds, Mammals, Reptiles, and Amphibians

(8) Abandoned Applications. Upon receipt of an incomplete application, an improperly executed application, or an insufficient fee, the applicant shall be notified of the deficiency. If the applicant fails to supply the requested information, pay the required fee or otherwise fails to correct the deficiency within sixty (60) days following the date of notification, the application shall be considered abandoned and shall be returned to the applicant.

Extracted from: Code of Massachusetts Regulations, 321 CMR, pages 9-16, as most recently compiled on 12-31-86, and as amended in the Massachusetts Register, issue #562, dated 8-7-87.

Regulatory Authority: M.G.L. c. 131, s. 23.

321 CMR: Division of Fisheries and Wildlife

321 CMR is hereby amended by adding the following new section.

2.14 Problem Animal Control.

(1) Purpose. The purpose of 321 CMR 2.14 is to control problem animals. In accordance with M.G.L. c. 131, s. 4, problem animal control agents may harass, take, and destroy, or may release or liberate as stipulated in 321 CMR 2.14(23), such problem animals as are set forth in 321 CMR 2.14(23). Problem animal control agents may also disturb, remove, or destroy dens, lodges, burrows, or nests of such problem animals on property of such persons as who have engaged the services of the problem animal control agent. Nothing in 321 CMR 2.14 shall allow or be construed to allow the propagation of wildlife contrary to 321 CMR 2.12 or the rehabilitation of wildlife contrary to 321 CMR 2.13.

(2) Definitions. For the purposes of 321 CMR 2.14 and unless the context requires otherwise, the following words or phrases shall have the following meanings:

Control: to harass, take, or destroy, or attempt to harass, take, or destroy; placing, setting, and tending of traps and similar capture devices; disturbing, removing, or destroying, or attempting to disturb, remove, or destroy dens, lodges, burrows, or nests; and to possess, transport, or liberate or attempt to possess, transport, or liberate problem animals.

Director: the Director of the Massachusetts Division of Fisheries and Wildlife or his agent, with principal offices at 100 Cambridge Street, Leverett Saltonstall Building, Room 1902, Boston, Massachusetts 02202.

Division: the Massachusetts Division of Fisheries and Wildlife, 100 Cambridge Street, Leverett Saltonstall Building, Boston, Mass. 02202 (telephone 617-727-3151).

Employees of a Municipal Entity: shall include permanent or provisional full-time or part-time paid employees whose principal duty is that of animal control, but shall not include consultant or contract employees or volunteers or employees whose principal duty is not that of animal control.

Environmental Police Officer: the Director of the Division of Law Enforcement, deputy directors of enforcement, chiefs of enforcement, deputy chiefs of enforcement, environmental police officers, and such other enforcement officers of the Division of Law Enforcement as may be appointed pursuant to M.G.L. c. 21, s. 6.

Municipal Entity: towns and cities incorporated as political subdivisions of the Commonwealth of Massachusetts.

Person: any individual, partnership, profit or non-profit corporation, firm, business or other commercial or non-commercial entity, club, organization or association.

Problem Animals: non-domesticated reptiles, birds, and mammals the actions of which have or are endangering the life and health of humans or domestic animals; damaging the property of a person except grass or other natural vegetation growing without cultivation and which is not harvested or otherwise put to material use by the owner or tenant thereof; obstructing the reasonable and comfortable use of property by the

owner or tenant thereof and which cannot be abated in another fashion; or otherwise producing such material annoyance, inconvenience, and discomfort that can reasonably be presumed to result in damage or hurt to persons or their property.

Problem Animal Control Agent or Permittee: a person who has been issued a permit in accordance with the provisions of 321 CMR 2.14 for the control of problem animals including but not limited to those persons exempted from the permit requirement pursuant to 321 CMR 2.14(18).

Problem Animal Control Permit: a permit which shall have been issued by the Division pursuant to 321 CMR 2.14, including a provisional problem animal control permit and such equivalent permit as may have been issued by the Division prior to the publication of 321 CMR 2.14 in the Massachusetts Register.

Site of Capture means the parcel of land on which the problem animal was captured and which is owned or leased by the person who controlled the problem animal or who engaged a problem animal control agent to effect such control.

(3) Scope of Permit Requirement. No person, except as otherwise authorized by state or federal law or as exempted in 321 CMR 2.14(18) shall control problem animals without complying with provisions of 321 CMR 2.14.

(4) Application. A person seeking a problem animal control permit shall complete a written application on forms supplied by the Director. Completed applications shall be addressed to the Permit Section of the Division.

(5) Information and Requirements for Application. All initial permit applications shall contain the following information.

(a) the applicant's name, address, and telephone number where he or she can be reached between the hours of 9:00 A.M. to 5:00 P.M.;

(b) the applicant's date of birth;

(c) in the event the applicant is a corporation, partnership, firm, business or other commercial entity, club, organization, or association, either public or private, the name, address, telephone number and date of birth of the president, director, head, or principal officer;

(d) the name, address, and date of birth of subpermittees, if any;

(e) a description of the geographical location or locations wherein the applicant desires to control problem animals;

(f) the license number and class of the applicant's trapping license, if required;

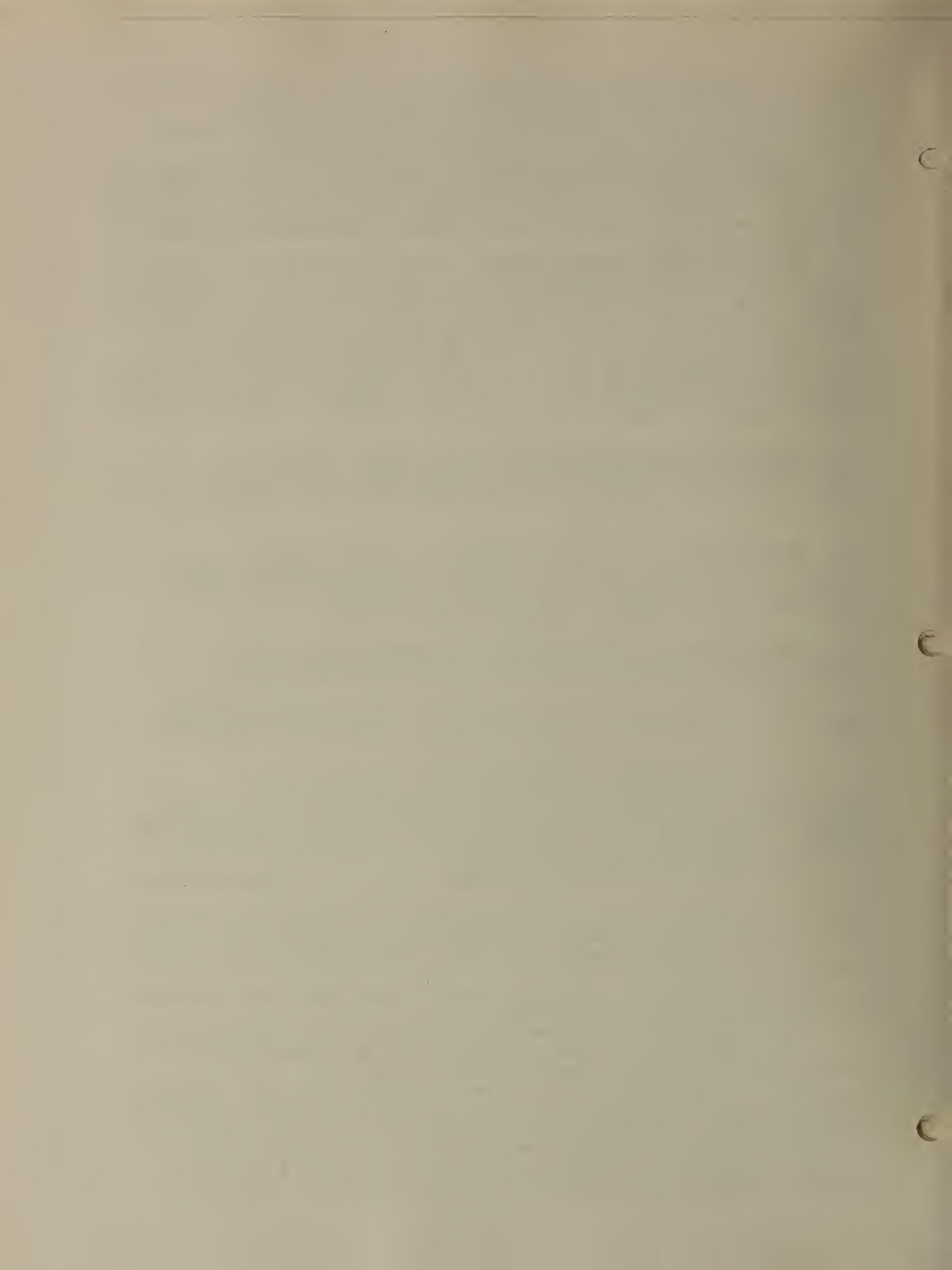
(g) the license number and class of the applicant's hunting or sporting license, if required;

(h) the applicant's trap registration number, if required;

(i) the license number and class of the subpermittee's hunting, sporting, and trapping licenses, if any;

(j) the signature of the Division District Wildlife Manager(s) in whose District(s) the applicant desires to control problem animals, provided that such signature shall not be required for applications submitted by employees of a municipal entity;

(k) in instances where the permittee charges a fee or otherwise receives consideration for his services, a signed



affidavit that the applicant has to the best of his knowledge paid all state taxes as required by the Massachusetts Department of Revenue;

(l) the date the application was executed;

(m) the applicant's signature, executed under the pains and penalties of perjury;

(n) the signature(s) of any subpermittee(s), executed under the pains and penalties of perjury; and

(o) any letters of recommendation for the intended activity.

(6) Renewal Applications. Information for renewal applications shall include that information set forth in 321 CMR 2.14(5) (a), (c), (d), (f), (g), (i), (k), (l), (m), and (n).

(7) Agreement. All permits issued pursuant to 321 CMR 2.14 shall be signed by the permittee. Such signature shall constitute:

(a) an agreement by the permittee to fully comply with all relevant provisions of law including but not limited to M.G.L. c. 131, 321 CMR, and all applicable conditions and restrictions of the license; and

(b) liability agreement.

(8) Qualifications. In order to qualify for a problem animal control permit, a person shall:

(a) be at least 18 years of age domiciled in the Commonwealth of Massachusetts;

(b) pass a written examination as stipulated in 321 CMR 2.14(19) administered by the Director or his authorized agent, except as provided for in 321 CMR 2.14(18) and 2.14(21);

(c) possess a current and valid Massachusetts trapping license as provided in M.G.L. c. 131, s. 11;

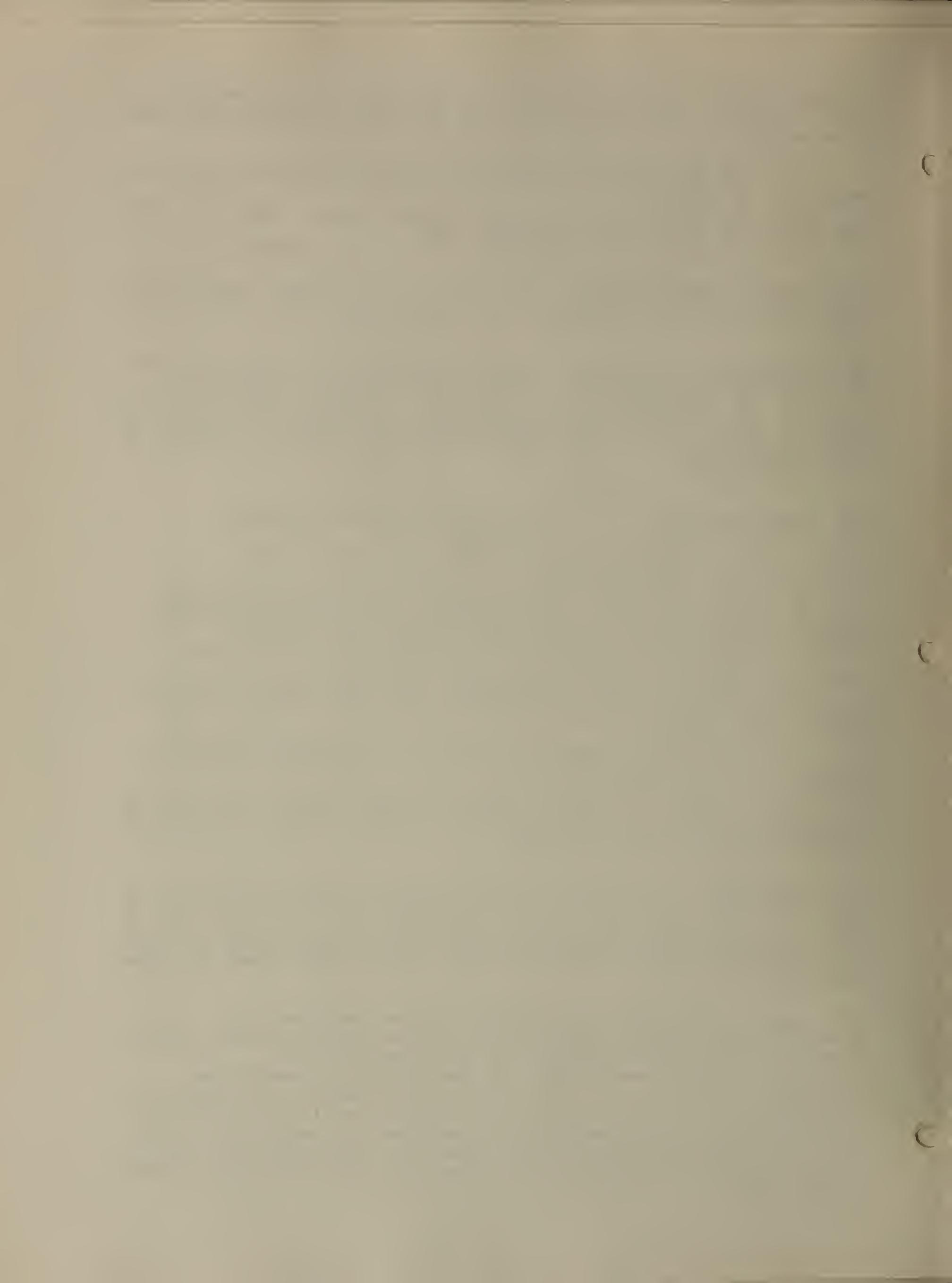
(d) register, tag, and identify all traps used on land of another in accordance with provisions of M.G.L. c. 131, s. 80, and 321 CMR 3.02(5);

(e) when taking animals by means of a firearm, possess a current and valid Massachusetts hunting or sporting license as provided in M.G.L. c. 131, s. 11;

(f) be able to provide problem animal control services in the geographical area for which the applicant seeks a permit to the satisfaction of the Director.

(9) Exception. The provisions of 321 CMR 2.14(8)(b) through (f) shall not apply to employees of a municipal entity acting as an agent for such municipal entity, provided that all traps used by such employees shall be tagged with a metal tag bearing the name and principal address of the municipal entity whose agent is using the trap.

(10) Fees. A fee shall be charged for the issuance of a problem animal control permit and a written problem animal control permit examination. The amount of the fees shall be determined by the commissioner of administration under the provisions of M.G.L. c. 7, s. 3B, unless otherwise determined by the Legislature. No fee shall be charged for the issuance of a problem animal control permit to an employee of a municipal entity, when such employee is acting as agent for such municipal entity. No fee shall be charged for a subpermittee of a problem animal control agent.



(11) Abandoned Applications. Incomplete or improperly executed applications shall be treated as provided in 321 CMR 2.12(8).

(12) Denial. Applications for a problem animal control permit shall, unless otherwise provided, be denied when:

(a) the applicant has within five years preceding the date of application been assessed a civil or administrative penalty for, or has been convicted of a violation of any provision of M.G.L. c. 131, or of any provision of M.G.L. c. 266 or c. 272 involving cruelty to animals, or of any provision of 321 CMR, or of any federal statute or regulation which is related to the activity for which the permit is sought;

(b) the applicant has failed to disclose material information or has made false statements as to any fact in connection with the application;

(c) the applicant has failed to submit the required fee with the application, unless the applicant is exempt from such fee as provided in 321 CMR 2.14(10), or unless no fee has been established;

(d) the applicant fails to fulfill the examination requirement established by 321 CMR 2.14(19);

(e) the applicant fails to fulfill the recertification requirement established by 321 CMR 2.14(20).

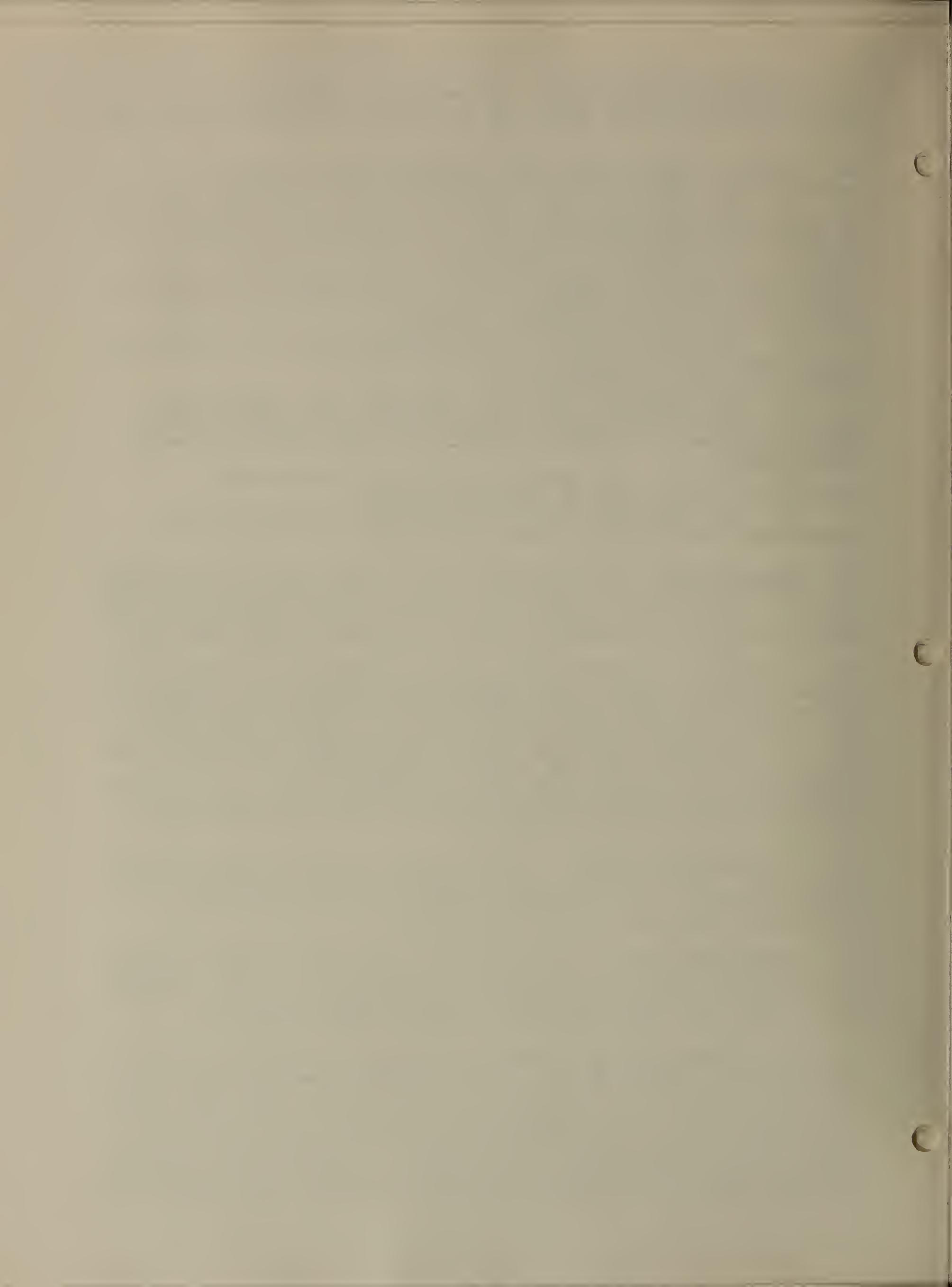
(13) Subpermittees. The provisions of 321 CMR 2.14(12)(a) through (e) shall apply to subpermittees. The denial of a subpermittee shall not necessarily result in denial of the remainder of the application, in the absence of false statements by the applicant.

(14) Permit. A problem animal control permit may be issued to a person based on his or her demonstrated experience, letters of recommendation, successful completion of a written examination, the recommendation of the Division District Wildlife Manager(s) in the area where the permittee intends to exercise the permit, and other provisions of 321 CMR 2.14. In making his recommendation, the District Wildlife Manager shall consult with an Environmental Police Officer in whose region the permittee intends to control problem animals.

(15) Provisional Permit. A provisional problem animal control permit may, at the discretion of the Director, be issued to an applicant before the successful completion of the written examination, pursuant to 321 CMR 2.14(17).

(16) Expiration Date. The expiration date for a problem animal control permit shall be midnight of December 31 in the calendar year. The expiration date for a provisional problem animal control permit shall not exceed 180 days from the date of issuance.

(17) Provisional Status. Upon receipt of a properly executed application, a person who has held a problem animal control permit for at least one (1) full calendar year, but for less than three (3) full calendar years, immediately prior to the publication date of 321 CMR 2.14 in the Massachusetts Register may be granted a provisional problem animal control permit. A provisional problem animal control permit shall authorize the permittee to carry out all activities of a problem animal control agent until such time



as the applicant takes the written examination. Such examination shall be taken within 180 days following the issuance of a provisional problem animal control permit. A person may hold a provisional problem animal control permit for a period not to exceed 180 days. A person who, having passed the written examination and been issued a problem animal control permit, shall not subsequently be issued a provisional problem animal control permit. A provisional problem animal control permit held by any person who fails the written examination shall automatically be void. A person who has not held a problem animal control permit for at least one (1) full calendar year immediately prior to the publication of 321 CMR 2.14 in the Massachusetts Register shall not be grandfathered or granted provisional status.

(18) Exemptions. Employees of a municipal entity when appointed or otherwise authorized by the Board of Selectmen or the Mayor to act as problem animal control agents for the municipal entity in which they are employed, shall be exempt from the examination and recertification requirements stipulated in 321 CMR 2.14(19) and 2.14(20), when, in his judgement, the Director shall have determined that the training and experience of such employees, including completion of any requirements mandated by the Department of Personnel Administration, shall be sufficient to warrant such exemption. In addition, such employees shall further be exempt from the permit requirements stipulated in 321 CMR 2.14(14) in the following circumstances:

(a) when acting as an agent for the municipal entity, on land owned or leased by such municipal entity, in accordance with M.G.L. c. 131, s. 37;

(b) for the control of English (house) sparrows, starlings; and pigeons (rock doves) in accordance with M.G.L. c. 131, s. 83;

(c) for the destruction and control of rats, mice, and woodchucks, and such other vertebrates as may be unprotected by law, when authorized by the Department of Food and Agriculture in order to protect food supplies, agricultural produce, growing crops, livestock, manufactured goods and buildings, and to safeguard the public health, in accordance with M.G.L. c. 128, s. 8A;

(d) for the destruction of gulls and terns in order to preserve the purity and prevent the pollution of the waters of a reservoir, pond, and stream used for domestic water supply, provided that all necessary permits, authorizations, or requirements pursuant to M.G.L. c. 111, s. 174A and applicable federal law shall be complied with;

(e) for the immediate protection of human life and limb, and to take, possess, transport, and destroy problem animals, notwithstanding the restrictions in 321 CMR 2.14(23), which, having bitten or injured a human or a domestic animal shall, in the opinion of a licensed physician of the Board of Health of a municipal entity or the Massachusetts Department of Public Health, be examined, tested, or analyzed for a communicable or infectious disease, parasite, infection, or intoxication.

(19) Examination Requirements.

(a) Except as provided for in 321 CMR 2.14(18) and 2.14(21), applicants for a problem animal control permit shall successfully complete a written examination relating to biology, handling, capture techniques, animal welfare, diseases and parasites,

statutes and regulations, and such other appropriate subject matter as shall be determined by the Director. A grade of 80 percent or higher shall constitute successful passage of the examination. An applicant who fails may not be eligible to retake the examination until two (2) months or more from the date of the failed examination.

(b) The maximum duration of a provisional problem animal control permit shall be 180 days. If the written examination is not passed within the above stated time, the applicant shall no longer be authorized to control problem animals until such time as the written examination is successfully completed.

(20) Periodic Recertification. Except as provided for in 321 CMR 2.14(18), a permittee shall be required to retake a written examination at least once within the three (3) consecutive twelve-month periods immediately following the successful completion of the initial examination, or the most recent re-examination, as the case may be. Successful completion of a training course in problem animal control including training in the control of wild vertebrates by the U.S. Fish and Wildlife Service or the U.S. Animal and Plant Health Inspection Service, or by such other organizations as shall be approved by the Director, may be substituted for the required re-examination.

(21) Grandfather Clause. All persons who have held a valid problem animal control permit for three (3) or more consecutive calendar years immediately prior to the publication of 321 CMR 2.14 in the Massachusetts Register shall be exempted from the written examination requirement set forth in 321 CMR 2.14(19). However, such persons shall not be exempt from the recertification requirements stipulated by 321 CMR 2.14(20).

(22) Revocation and Non-renewal. A problem animal control permit may be revoked by the Director at any time upon evidence of failure to comply with the conditions of the permit or of 321 CMR 2.14. Such evidence regarding the activities of the permittee shall form the basis of an adjudicatory proceeding pursuant to M.G.L. c. 30A, s. 13, M.G.L. c. 131, s. 32, and 801 CMR 1.00 prior to permit revocation.

(23) Restrictions.

(a) A problem animal control permit shall authorize the permittee to control problem animals of the following species or groups of species: snapping turtle, starling, pigeon (rock dove), house (English) sparrow, opossum, moles, bats except those species listed in 321 CMR 8.01, cottontail rabbits, European rabbit, chipmunk, gray squirrel, red squirrel, flying squirrels, woodchuck, muskrat, rats, mice, and voles except those species listed in 321 CMR 8.01, porcupine, raccoon, weasels (Mustela erminea and M. frenata), red and gray fox, and striped skunk. The Director may authorize individual permittees to control problem animals of other species or groups of species at such times and in such locations as he shall determine. Notwithstanding the provisions of 321 CMR 2.14(23)(a), employees of a municipal entity holding a valid problem animal control permit may control all problem animals except white-tailed deer, moose, black bear, migratory birds, and species listed in 321 CMR 8.01.

(b) Problem animals which are captured alive shall be disposed of by destruction in a humane manner, immediate liberation at the site of capture, or, in the case of a sick or injured animal, by transferral to a wildlife rehabilitator authorized under 321 CMR 2.13.

(c) Problem animals, or their carcasses or parts thereof, shall not be retained by the permittee, sold, bartered, or exchanged for consideration, provided that in the event the trapping or hunting season for the particular species is open and the permittee has a valid hunting, sporting, or trapping license, as the case may be, and takes the animal in such a location where hunting or trapping is otherwise lawful, then the permittee may retain the carcass or parts thereof, provided that any tagging requirements or other conditions of 321 CMR shall be complied with.

(d) Permittees shall fully describe to the client the nature of the animal problem, the control methods to be used to alleviate the problem, and shall further advise clients as to those means and practices which the client may employ in the future to avoid a recurrence of problem animal complaints. Where possible and practical, permittees shall employ or recommend exclusionary means in preference to lethal means for the control of problem animals.

(e) Permittees may control or attempt to control problem animals by means of cage or box traps; steel-jaw leghold traps or padded-jaw traps when set in accordance with provisions of M.G.L. c. 131, s. 80A, and 321 CMR 3.02(5); Conibear-type and other body-gripping traps when set in accordance with 321 CMR 3.02(5), provided that such traps may also be set inside a dwelling or other building in use with the permission of the owner or occupant thereof; common mouse or rat snap traps; body-gripping or piercing mole traps; shooting with a firearm when done in accordance with provisions of M.G.L. c. 131, c. 140, and c. 269; hand nets or noose poles; fumigant cartridges for the control of woodchucks; and anticoagulant rodenticides for the control of rats, mice, and voles when not in conflict with M.G.L. c. 131, s. 43 and M.G.L. c. 270, s. 3A. The Director may authorize the chemical immobilization of problem animals by employees of a municipal entity, provided that such persons satisfy the Director as to their training and experience in such chemical immobilization and provided further that such persons are otherwise authorized in accordance with M.G.L. c. 94C and applicable federal law.

(f) Permittees may employ subpermittees to assist in problem animal control, provided that subpermittees are listed on the permit application and that subpermittees have a trapping, hunting, or sporting license if harassing, taking, or destroying problem animals. Subpermittees shall be required to take the written examination and shall comply with the recertification requirements. Traps used in common by two or more permittees or subpermittees shall be registered as property of a partnership in accordance with M.G.L. c. 131, s. 80. Permittees shall be responsible for the actions of subpermittees and the actions of subpermittees shall be construed as those of the permittee for purposes of 321 CMR 2.14(22).

(24) Costs. Any costs, charges, or fees, or other expenses involved with problem animal control exercised by the permittee shall be the responsibility of the permittee. The permittee shall not charge the Division or the Commonwealth for any such

costs.

(25) Record Keeping Requirements. All permittees must keep records on all problem animal complaints investigated or handled by them. Records shall include, but not be limited to, date(s) the complaint was investigated or handled, name and address of the complainant, species of animal(s) involved in the complaint, and disposition of the complaint. Records shall be available for inspection by an Environmental Police Officer or officials of the Division at any reasonable time.

(26) Reporting Requirements. An annual report shall be filed with the Permit Section of the Division at the address given in 321 CMR 2.14(2) at the end of each calendar year. Such report shall be filed no later than January 31 for the preceding calendar year. The report shall be on forms provided by the Director and shall report full details on the number of problem animal complaints acted on including, but not limited to: total number of complaints responded to; species of animal involved; number of individual animals taken, destroyed, or surrendered; disposition of animals taken; and such other information as the Director may require. Failure to submit such annual report or failure to provide required information or the making of false statements shall be cause for suspension, revocation, or non-renewal of the permit.

(27) Compliance with Other Laws. Issuance of a problem animal control permit under 321 CMR 2.14 shall not exempt the permittee from compliance with the provisions of any other local, state, or federal law.

REGULATORY AUTHORITY: 321 CMR 2.14, M.G.L. c. 131, s. 4.

321 CMR: DIVISION OF FISHERIES AND WILDLIFE.

321 CMR 3.00: HUNTING.

3.02: Hunting, Particular Game.

(5) Hunting and Trapping of Certain Mammals. In accordance with the authority vested in me by M.G.L. c. 131, s.5, and subject to the regulations hereinafter prescribed, I hereby declare an annual open season for the hunting and trapping of mammals as follows:

(a) Opossum and raccoon may be hunted, except as provided in M.G.L. c. 131, s. 70, and except as provided by 321 CMR 3.02(4), with or without the use of dogs, from October 1 to the following January 31, both dates inclusive, except that raccoon and opossum may be taken by trapping only during that season when deer may be legally taken by means of a shotgun.

(b) During the period from sunset of one day to sunset of the following day, a person shall not hunt or take by hunting more than three raccoons, nor shall two or more persons hunting in one party kill or take more than six raccoons.

(c) A person shall not remove or attempt to remove a raccoon from any hole in the ground, stone wall, from within any ledge, or from under any stone, or from any hole in any log or tree.

(d) In the foregoing provisions, the word "hunt" in all its moods and tenses shall be construed so as to exclude the use of traps.

(e) Mink, muskrat, raccoon, opossum, fox, skunk and weasel may be taken by trapping throughout the Commonwealth from November 1 to the following last day of February, both dates inclusive.

(f) Beaver may be trapped in all counties of the Commonwealth from November 15 to the following last day of February, all dates inclusive; otter may be trapped in all counties of the Commonwealth from November 1 to the following December 15, all dates inclusive; bobcat (wildcat) may be trapped in all counties and all portions of counties of the Commonwealth west of Route 31 from November 1 to the following December 31, both dates inclusive; and fisher may be trapped from November 1 to the following November 30, all dates inclusive provided that the pelts of all beaver, otter, fisher and bobcat (wildcat) taken shall not be sold, retained by the trapper, or otherwise disposed of until they are first brought to a designated representative of the Division of Fisheries and Wildlife and tagged with an official tag by said representative. The entire carcass (exclusive of the pelt) of all otter and bobcat taken shall be surrendered to the Division of Fisheries and Wildlife before the pelt will be tagged provided that the Director may allow the optional surrender of otter carcasses from otters trapped in Dukes county only. The head of all fisher taken shall be surrendered to the Division of Fisheries and Wildlife before the pelt will be tagged. Tags shall be non-transferable and shall be valid only for the pelt or animal to which applied by a designated Division of Fisheries and Wildlife representative. All pelts must be tagged within two working days after the closing day of the open season. Working days are defined as the

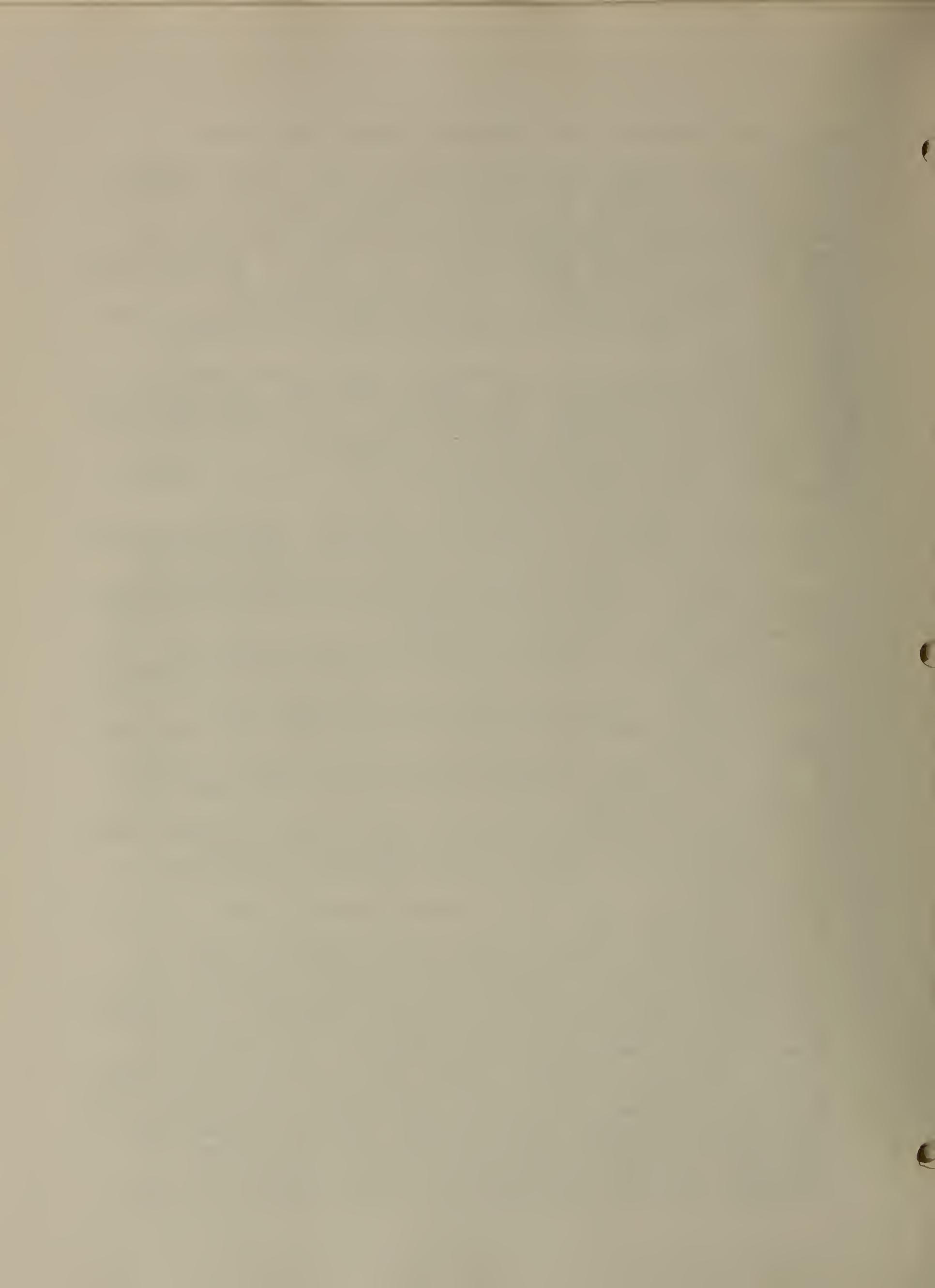
days Monday through Friday inclusive, except legal state holidays.

(g) No green coyote, gray wolf, bobcat, lynx, fisher, marten, river otter, or beaver pelt, regardless of origin, shall be sold or exchanged or offered for sale or exchange within the Commonwealth unless said pelt bears an official tag, seal, or stamp issued or applied by the state, province, or country within which said coyote, gray wolf, bobcat, lynx, fisher, marten, river otter, or beaver was taken, or by another governmental jurisdiction empowered to tag, seal, or stamp such pelts. Such tag, seal, or stamp shall be identifiable as to the issuing jurisdiction.

(h) All mammals not herein mentioned except other mammals specifically protected by other laws or rules and regulations in M.G.L. c.131 may be trapped from November 1 to the following last day of February, both dates inclusive, and subject to existing laws may be hunted from January 1 to December 31.

(i) Except as otherwise provided in M.G.L. c.131, as amended, it shall be unlawful for any person:

1. To have in his possession the green pelt of any fur-bearing mammal or any part of such pelt except during the open season for such mammal and for ten days thereafter.
2. To possess or have under his control a trap on land of another where furbearing mammals might be found between March 1 of any year and six o'clock ante-meridian on the following November first, both dates inclusive.
3. At any time to possess or have under his control an unregistered trap on land of another where furbearing mammals might be found.
4. To possess or have under his control unless duly authorized as provided in 321 CMR 3.02(5)(i)13 the registered trap of another.
5. To trap on land of another posted as provided in M.G.L. c. 131, s. 36 without the written consent of the owner or occupant of such land.
6. To trap in a public way, cart road, or path commonly used as a passageway for human beings or domestic animals.
7. To trap within ten feet of the waterline of a muskrat or beaver house.
8. To tear open, disturb or destroy a muskrat house, beaver house, or beaver dam.
9. To trap with a steel or jaw trap or dead-fall trap or a "stop-thief" trap with a spread or opening of more than six (6) inches; or with a choke trap; or with a trap with teeth on one or more jaws; or with a trap of the "conibear" type unless such trap is completely submerged in water and has a spread when set not exceeding four and one-half (4 1/2) inches; or with a trap with two sets of jaws either of which has a spread of more than six (6) inches; or with a trap capable of taking more than one mammal at a time; except that from November 1 to the following November 14, all dates inclusive, mammals may be taken by a "conibear" type trap with a spread when set not exceeding seven (7) inches if such trap is completely submerged in water; and except that from November 15 to the



following December 15, all dates inclusive, mammals may be taken in a "conibear" type trap of any size if such trap is completely submerged in water or in steel jaw traps having a jaw spread of not more than seven and one-half (7 1/2) inches; and except that during the period from December 16 to the following last day of February, all dates inclusive, beaver may be taken from December 16 to the following January 15, all dates inclusive, in a "conibear" type trap of any size if such trap is completely submerged in water or in a steel jaw trap having a spread of not more than seven and one-half (7 1/2) inches, and may be taken from January 16 to the following last day of February, all dates inclusive, only in steel jaw traps having a spread of not more than seven and one-half (7 1/2) inches. Nothing in this clause shall be deemed to prohibit the use of a stop-loss trap, so-called, having a moveable arm attached, the purpose of which being to prevent an animal caught therein from gnawing his foot or leg. For the purpose of this clause, in determining the jaw spread of a trap, it shall be measured midway across the open jaws at right angles to the hinges from the extreme outside edges.

10. To trap before six o'clock ante-meridian on the opening day of any trapping season.

11. To fail to visit at least once in each calendar day between the hours of four o'clock ante-meridian and ten o'clock post-meridian, all traps by him staked out, set, used, tended, placed, or maintained except that under the ice sets for beaver shall be visited at least once in each forty-eight hour period.

12. To destroy, mutilate, or spring the trap of another.

13. To take any furbearing mammal or predator from the trap of another unless he has on his person a specific written authorization to do so, signed by the owner of such trap. The owner of traps may give such authorization to any person licensed to trap under this chapter for a period not to exceed one week from the day he himself last tended his traps provided that notice of the giving of such authorization including the name and trapping license number of the person so authorized shall be given to the district Environmental Police Officer and to the Director within twenty-four hours after the same has been given.

14. To set, use, place, locate, tend, or maintain a trap not bearing on a metal tag the name, town of residence and trap registration number of the person and persons using the same in a manner that it shall be legible at all times; and said registration number shall be permanently embedded or marked in the traps with letters and figures not less than 1/8 inches high and in such a manner that it shall be legible at all times.

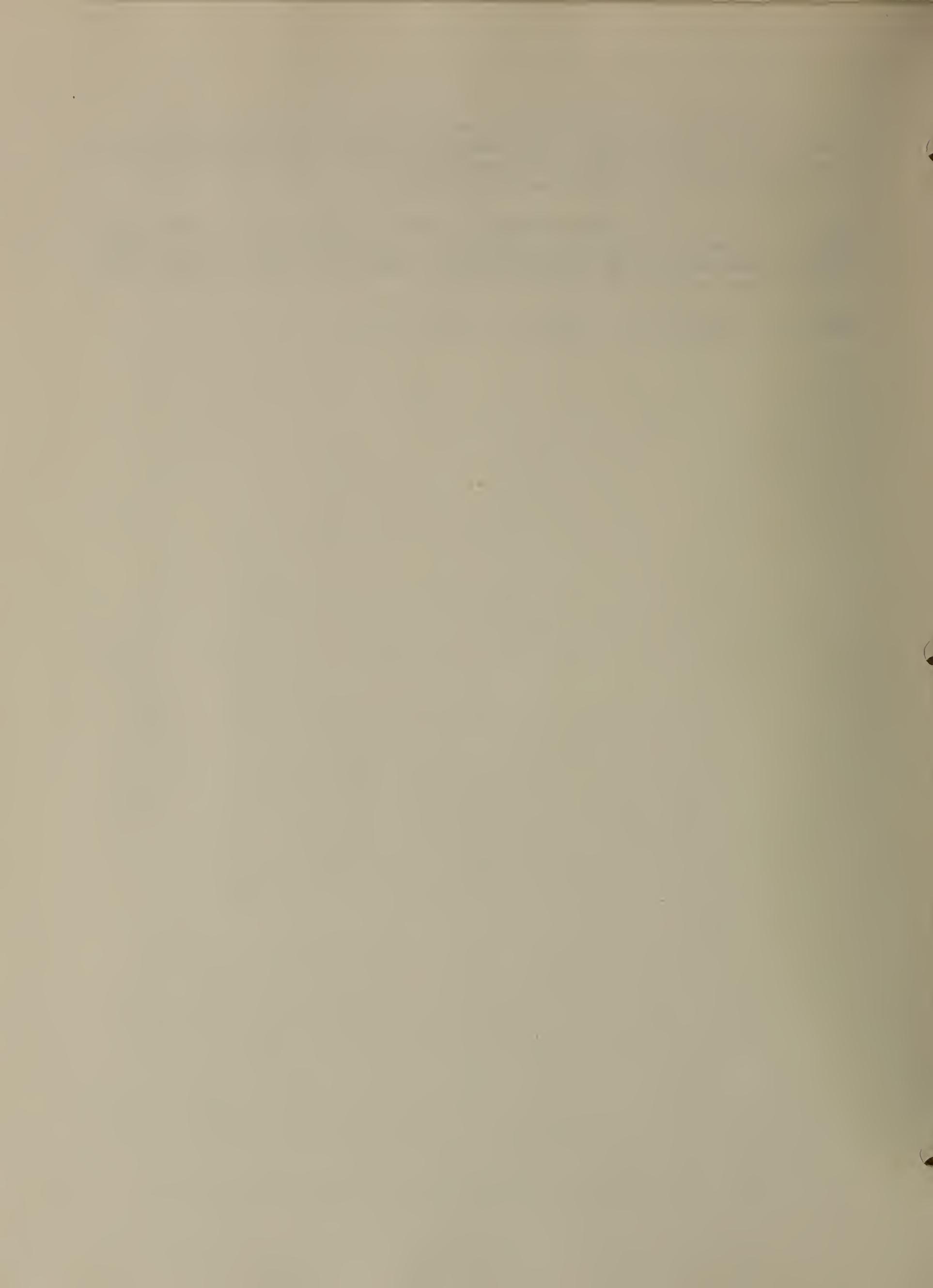
15. Any trap set in violation of law shall be forfeited to Commonwealth by any officer empowered to enforce this chapter and shall be disposed of by the Director in the best interest of the Commonwealth.

(j) If any part, section, or subdivision of these rules and regulations or the application thereof shall be held invalid,

unconstitutional, or inoperative as to any particular person, persons, or conditions, the remainder thereof of the application of any such part, section, or subdivision to other persons and conditions shall not be affected thereby.

Source: Code of Massachusetts Regulations, 321 CMR, pages 28-30, as most recently compiled on 12-31-86, and as most recently amended in the Massachusetts Register, issue number 562, as published on 8-7-87.

Regulatory Authority: M.G.L. c. 131, s. 5.



321 CMR: ENDANGERED WILDLIFE AND WILD PLANTS.

321 CMR 8.00: STATE LIST OF ENDANGERED WILDLIFE AND WILD PLANTS.
8.01: State List of Endangered Wildlife and Wild Plants.

In accordance with the authority of M.G.L. c. 131, s. 4, clause 13A, as recently amended by Chapter 572 of the Acts of 1980, the following rules and regulations relative to the establishment of the Commonwealth's list of threatened and endangered species are established.

(1) The following definitions shall apply:

Endangered Species: any species of wildlife or wild plant which is in danger of extinction throughout all or a significant portion of its range including, but not limited to, species listed from time to time as "endangered" under the provisions of the Federal Endangered Species Act of 1973, as amended. Any reproductively viable native species of wildlife or wild plant which has been documented by biological research and inventory to be in danger of extirpation from the Commonwealth shall be included.

Threatened Species: any species of wildlife or wild plant which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range including, but not limited to, species listed from time to time as "threatened" under the provisions of the Federal Endangered Species Act of 1973, as amended. Any reproductively viable native species of wildlife or wild plant which has been documented by biological research and inventory to be rare or declining within the Commonwealth which is likely to become endangered in the Commonwealth in the foreseeable future shall be included.

Species of Special Concern: any native wildlife or wild plant species which has been documented by biological research and inventory to be suffering a decline that could threaten the species in the Commonwealth if allowed to continue unchecked, or that occurs in such small numbers or with such a restricted distribution or specialized habitat requirements that it could easily become threatened within the Commonwealth.

(2) Notwithstanding the provisions of 321 CMR 8.01(1), (4) and (5) hereof, the Commonwealth's list of threatened and endangered species shall include all species so listed on the United States List of Threatened and Endangered Wildlife and Wild Plants as most recently amended and published in the Federal Register by the United States Fish and Wildlife Service.

(3) The official Massachusetts List of endangered, threatened, and special concern vertebrate species follows:

(a). ENDANGERED.

*Shortnose Sturgeon	<u>Acipenser brevirostrum</u>
Lake Chub	<u>Couesius plumbeus</u>
Northern Redbelly Dace	<u>Phoxinus eos</u>
Bog Turtle	<u>Clemmys muhlenbergii</u>
*Plymouth Redbelly Turtle	<u>Pseudemys rubriventris bangsi</u>
*Hawksbill	<u>Eretmochelys imbricata</u>
*Atlantic Ridley	<u>Lepidochelys kempi</u>
*Leatherback	<u>Dermodochelys coriacea</u>
Copperhead	<u>Agkistrodon contortrix</u>
Timber Rattlesnake	<u>Crotalus horridus</u>
*Bald Eagle	<u>Haliaeetus leucocephalus</u>
*Peregrine Falcon	<u>Falco peregrinus</u>
*Roseate Tern	<u>Sterna dougallii</u>
Upland Sandpiper	<u>Bartramia longicauda</u>
*Eskimo Curlew	<u>Numenius borealis</u>
Short-eared Owl	<u>Asio flammeus</u>
Sedge Wren	<u>Cistothorus platensis</u>
Loggerhead Shrike	<u>Lanius ludovicianus</u>
Henslow's Sparrow	<u>Ammodramus henslowii</u>
*Indiana Myotis	<u>Myotis sodalis</u>
*Sperm Whale	<u>Physeter catodon</u>
*Fin Whale	<u>Balaenoptera physalus</u>
*Sei Whale	<u>Balaenoptera borealis</u>
*Blue Whale	<u>Balaenoptera musculus</u>
*Humpback Whale	<u>Megaptera novaeangliae</u>
*Black Right Whale	<u>Balaena glacialis</u>

* Indicates species or subspecies that are currently listed as "endangered" by the U.S. Department of the Interior.

(b). THREATENED.

American Brook Lamprey	<u>Lampetra appendix</u>
Threespine Stickleback (trimorphic freshwater population)	<u>Gasterosteus aculeatus</u>
Marbled Salamander	<u>Ambystoma opacum</u>
Eastern Spadefoot	<u>Scaphiopus holbrookii</u>
Blanding's Turtle	<u>Emydoidea blandingii</u>
Diamondback Terrapin	<u>Malaclemmys terrapin</u>
**Green Turtle	<u>Chelonia mydas</u>
**Loggerhead	<u>Caretta caretta</u>
Pied-billed Grebe	<u>Podilymbus podiceps</u>
Leach's Storm-petrel	<u>Oceanodroma leucorhoa</u>
Least Bittern	<u>Ixobrychus exilis</u>
Northern Harrier	<u>Circus cyaneus</u>
King Rail	<u>Rallus elegans</u>
**Piping Plover	<u>Charadrius melodus</u>
Golden-winged Warbler	<u>Vermivora chrysoptera</u>

** Indicates species that are currently listed as "threatened" by the U.S. Department of the Interior.

(c). SPECIES OF SPECIAL CONCERN.

Burbot	<u>Lota lota</u>
Longnose Sucker	<u>Catostomus catostomus</u>
Eastern Silvery Minnow	<u>Hybognathus regius</u>
Jefferson Salamander	<u>Ambystoma jeffersonianum</u>
Blue-spotted Salamander	<u>Ambystoma laterale</u>
Silvery Salamander	<u>Ambystoma platineum</u>
Tremblay's Salamander	<u>Ambystoma tremblayi</u>
Four-toed Salamander	<u>Hemidactylium scutatum</u>
Spring Salamander	<u>Gyrinophilus porphyriticus</u>
Spotted Turtle	<u>Clemmys guttata</u>
Wood Turtle	<u>Clemmys insculpta</u>
Eastern Box Turtle	<u>Terrapene carolina</u>
Common Loon	<u>Gavia immer</u>
American Bittern	<u>Botaurus lentiginosus</u>
Osprey	<u>Pandion haliaetus</u>
Sharp-shinned Hawk	<u>Accipiter striatus</u>
Cooper's Hawk	<u>Accipiter cooperii</u>
Common Moorhen	<u>Gallinula chloropus</u>
Common Tern	<u>Sterna hirundo</u>
Arctic Tern	<u>Sterna paradisaea</u>
Least Tern	<u>Sterna antillarum</u>
Common Barn-owl	<u>Tyto alba</u>
Long-eared Owl	<u>Asio otus</u>
Northern Parula	<u>Parula americana</u>
Blackpoll Warbler	<u>Dendroica striata</u>
Mourning Warbler	<u>Oporornis philadelphia</u>
Grasshopper Sparrow	<u>Ammodramus savannarum</u>
Rock Shrew	<u>Sorex dispar</u>
Water Shrew	<u>Sorex palustris</u>
Small-footed Myotis	<u>Myotis leibii</u>
Southern Bog Lemming	<u>Synaptomys cooperi</u>
Gray Seal	<u>Halichoerus grypus</u>

Source: Code of Massachusetts Regulations, 321 CMR, pages 59-65, as most recently compiled on 12-31-86 and as amended in the Massachusetts Register, issue #577 (published 03-04-88).

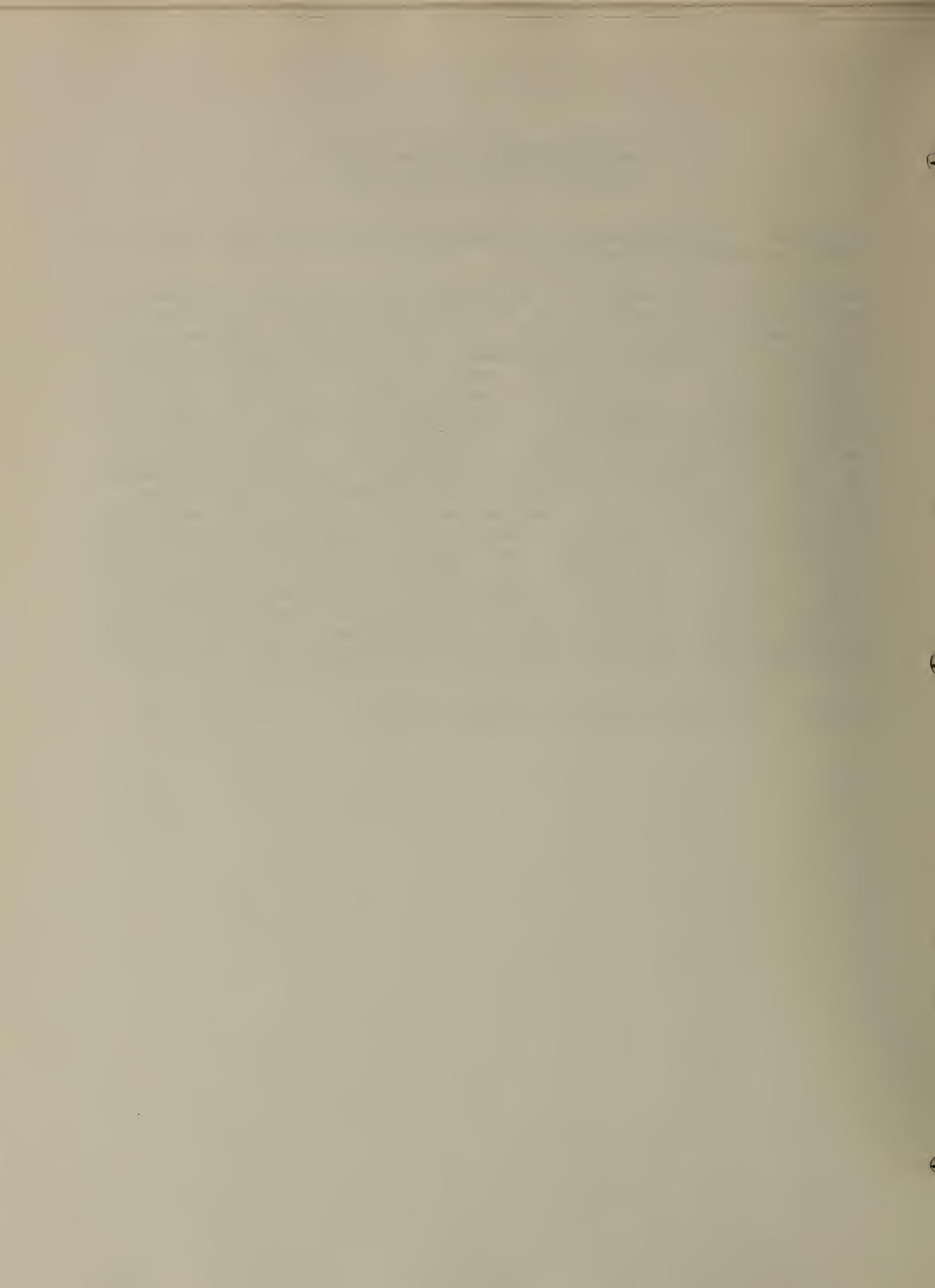
Regulatory Authority: M.G.L. c. 131, s. 4, clause 13A.

MASSACHUSETTS GENERAL LAWS
CHAPTER 111, SECTION 174A.

111:174A. Prevention of Defilement by Gulls or Terns of Waters Used for Domestic Water Supply.

Section 174A. In order to preserve the purity and prevent the pollution of the waters of any reservoir, pond, and stream used for domestic water supply, by the watershed system of the division of watershed management of the metropolitan district commission, or by a town, water supply or fire and water district, public institution or water company, said division, the public board or commission, or the governing board in case of a water company, having control of such waters may authorize one or more of its employees, so far as permissible under federal law, to take such reasonable means and use such appliances and weapons as, in the judgement of such public board or commission, or governing board, as the case may be, will prevent the defilement of said waters by gulls or terns, any provision of chapter one hundred and thirty-one to the contrary notwithstanding. Every such division, public board or commission and governing board shall keep an accurate account of all birds killed by its employees under authority of this section and submit such account to the director of the division of fisheries and wildlife of the department of fisheries, wildlife and recreational vehicles at such times and covering such periods as he may prescribe.

Source: 1986 GLM, volume 6, pages 471-472.



MASSACHUSETTS GENERAL LAWS
CHAPTER 128, SECTION 8A

128:8A. Destruction or Control of Foxes and Rodents.

Section 8A. In order to protect the food supplies, agricultural produce, growing crops, live stock, manufactured goods and buildings, and to safeguard the public health, the commissioner may investigate the life and habits of, and may take necessary measures to destroy or to control, foxes, and rats, mice, woodchucks, and such other rodents not protected by law, as may from time to time be determined by him to be detrimental to one or more of such purposes. In performing such duties he may, by himself or by his authorized agent, with the consent of the owner or tenant, enter upon private premises for any of such purposes at any reasonable time. In order to carry out this section, the commissioner may enter into co-operative arrangements with the United States or any agency thereof, with any department, board or commission of this commonwealth or any political subdivision thereof, or with any association, corporation or individual owning, occupying or possessing any property within the commonwealth. Section forty-three of chapter one hundred and thirty-one shall not apply to the destruction of rodents under this section. Nothing herein shall be construed to authorize the destruction or control of foxes by the use of poison.

Source: 1986 GLM, volume 7, page 340.

MASSACHUSETTS GENERAL LAWS
CHAPTER 131, SECTION 37

131:37. Killing, Hunting, etc., of Birds or Mammals upon Land by Owner, Tenant, etc.: Permit to Trap; Reports.

Section 37. An owner or tenant of land or, if authorized by such owner or tenant, any member of his immediate family or person permanently employed thereon, may, upon such land:--

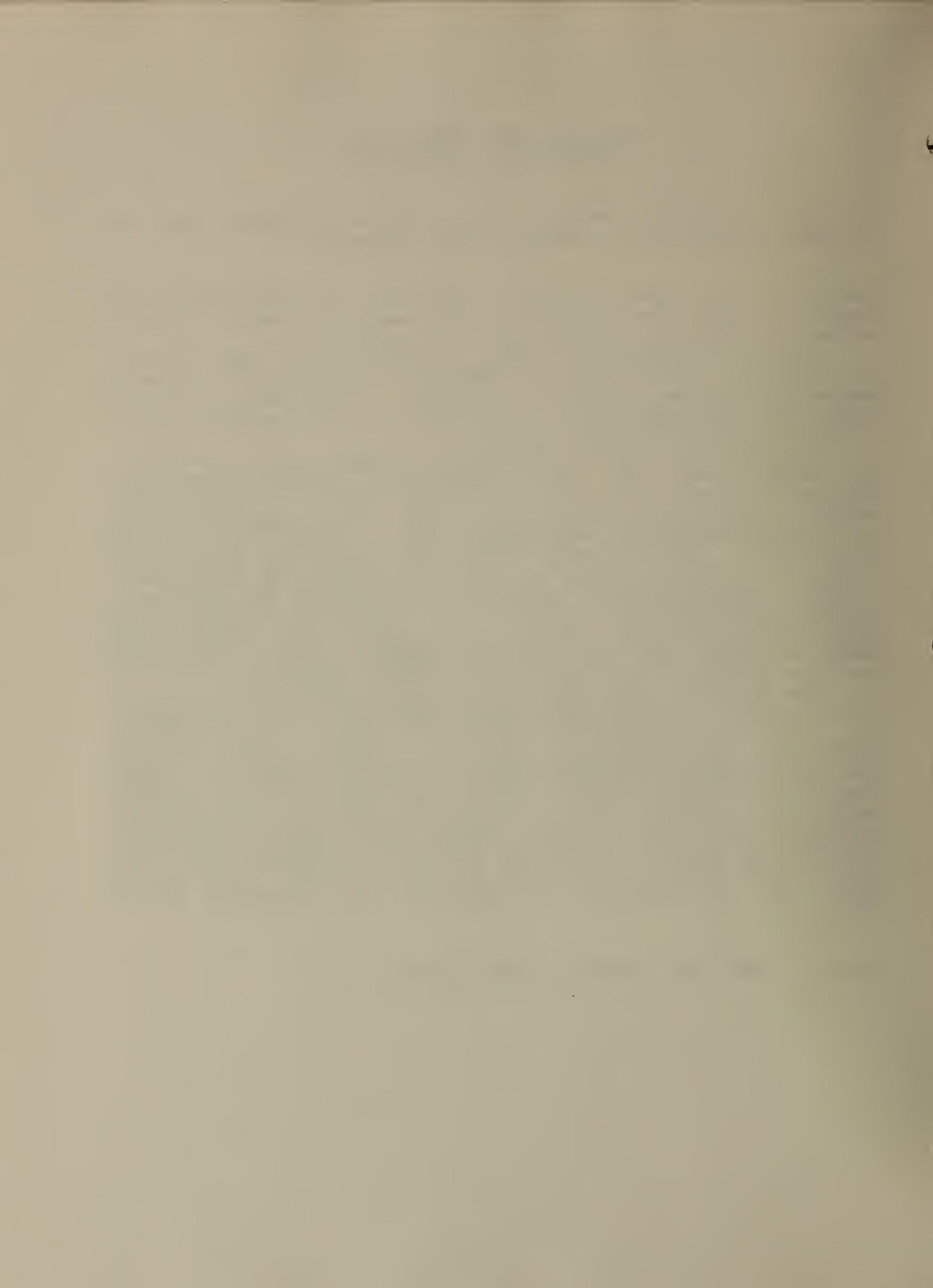
(1) kill or attempt to kill, by means other than poisoning or trapping, any wild bird damaging his property, including domesticated animals, poultry and game on game-rearing farms or preserves, provided that such killing is not contrary to any federal law, rule or regulation.

(2) hunt or take by other means, except by poison or snare, any mammal which he finds damaging his property except grass growing on uncultivated land. No such owner or tenant shall authorize any person, other than a member of his immediate family or a person permanently employed by him, to place traps for the protection of said property other than during the open season, unless such owner or tenant has first obtained from the director a permit authorizing him to do so, which permit the director is hereby authorized to issue in his discretion, unless such authorized person holds a trapping license. All deer so killed shall be turned over to any environmental police officer and shall be disposed of by the director of law enforcement.

The following written reports shall be sent to the director by such owner or tenant acting under authority of this section:--

(a) upon the taking of pheasant, ruffed grouse, hares or rabbits, or the wounding or killing of a deer, a report stating the time and place, kind and number of birds or mammals so taken, wounded or killed, within twenty-four hours of such taking, wounding, or killing; (b) upon the taking of any other birds or mammals, a report on or before January thirty-first of each year, stating the number and kinds of birds or mammals taken under authority of this section during the previous year. This section shall not be construed to limit any other provisions of this chapter.

Source: 1986 GLM, volume 7, pages 528-529.



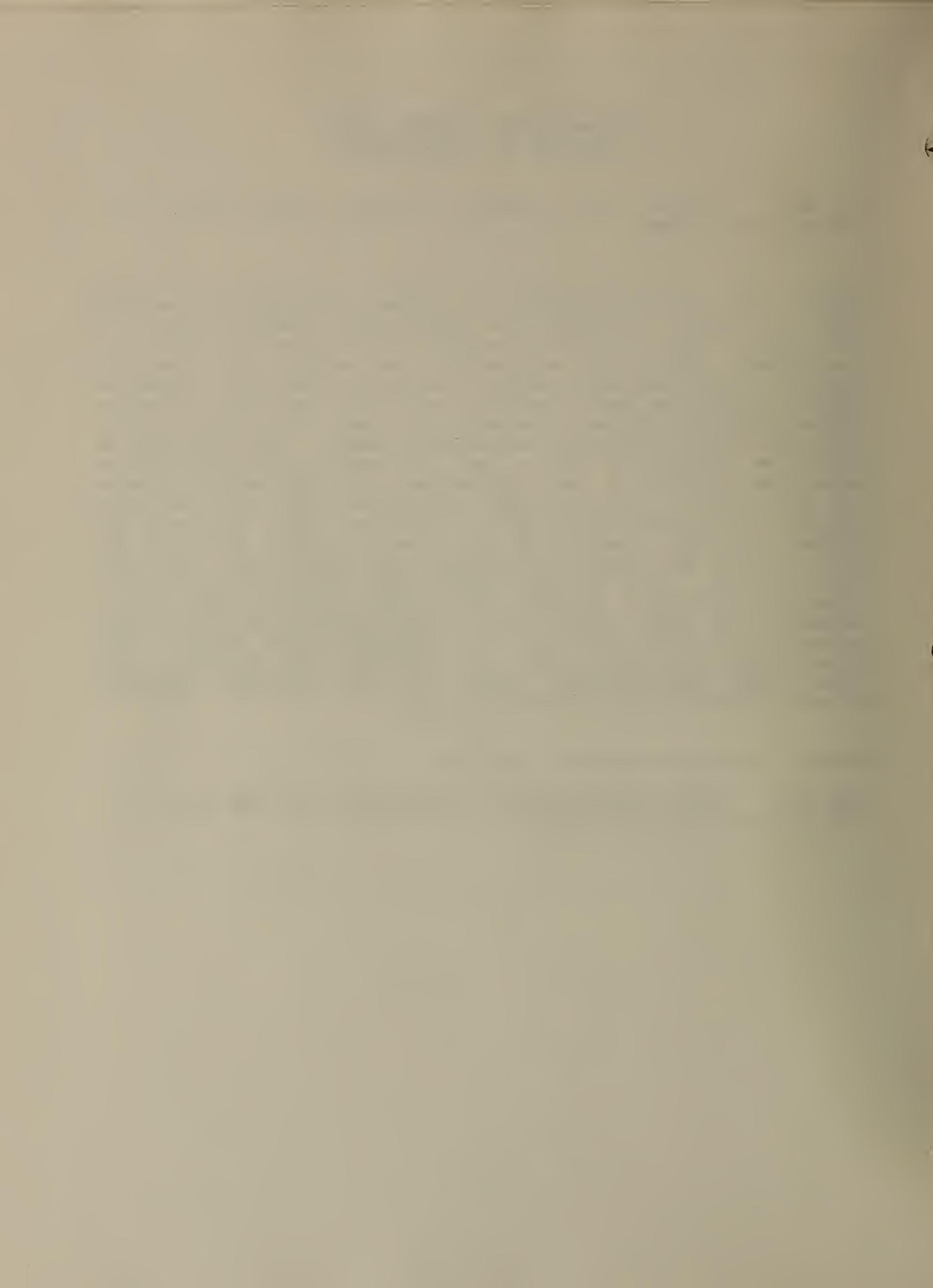
MASSACHUSETTS GENERAL LAWS
CHAPTER 131, SECTION 38

131:38. Permits for Trapping Certain Birds; Rules, etc.:
Inspection of Traps.

Section 38. Notwithstanding any other provision of law, the director may, upon application of a farmer, as defined in section one A of chapter one hundred and twenty-eight, grant a permit to trap live, and thereafter destroy, birds that are destroying agricultural crops or endangering the health of livestock, poultry or fur bearing animals. Each applicant shall state the type of trap to be used, the location of each such trap and the period within which he intends to use such trap, and such other information as the director may deem necessary. Each application shall be accompanied by a fee, the amount of which shall be determined annually by the commissioner of administration under the provision of section three B of chapter seven for the filing thereof. The farmer shall mark each trap with his name and address and the number of the permit issued to him by the director, and the farmer or his agent shall check each such trap twice daily. The director shall issue rules and regulations relative to the type of traps and kinds of birds which may be trapped, and such other rules and regulations as he may deem necessary for the protection of song and game birds. The director and his agents may, for the purpose of inspecting such traps, enter upon and pass through or over private lands and property whether or not covered by water.

Source: 1986 GLM, volume 7, page 529.

See Also: Code of Massachusetts Regulations, 321 CMR 2.09,
"Trapping of Birds by Farmers".



MASSACHUSETTS GENERAL LAWS
CHAPTER 131, SECTION 43

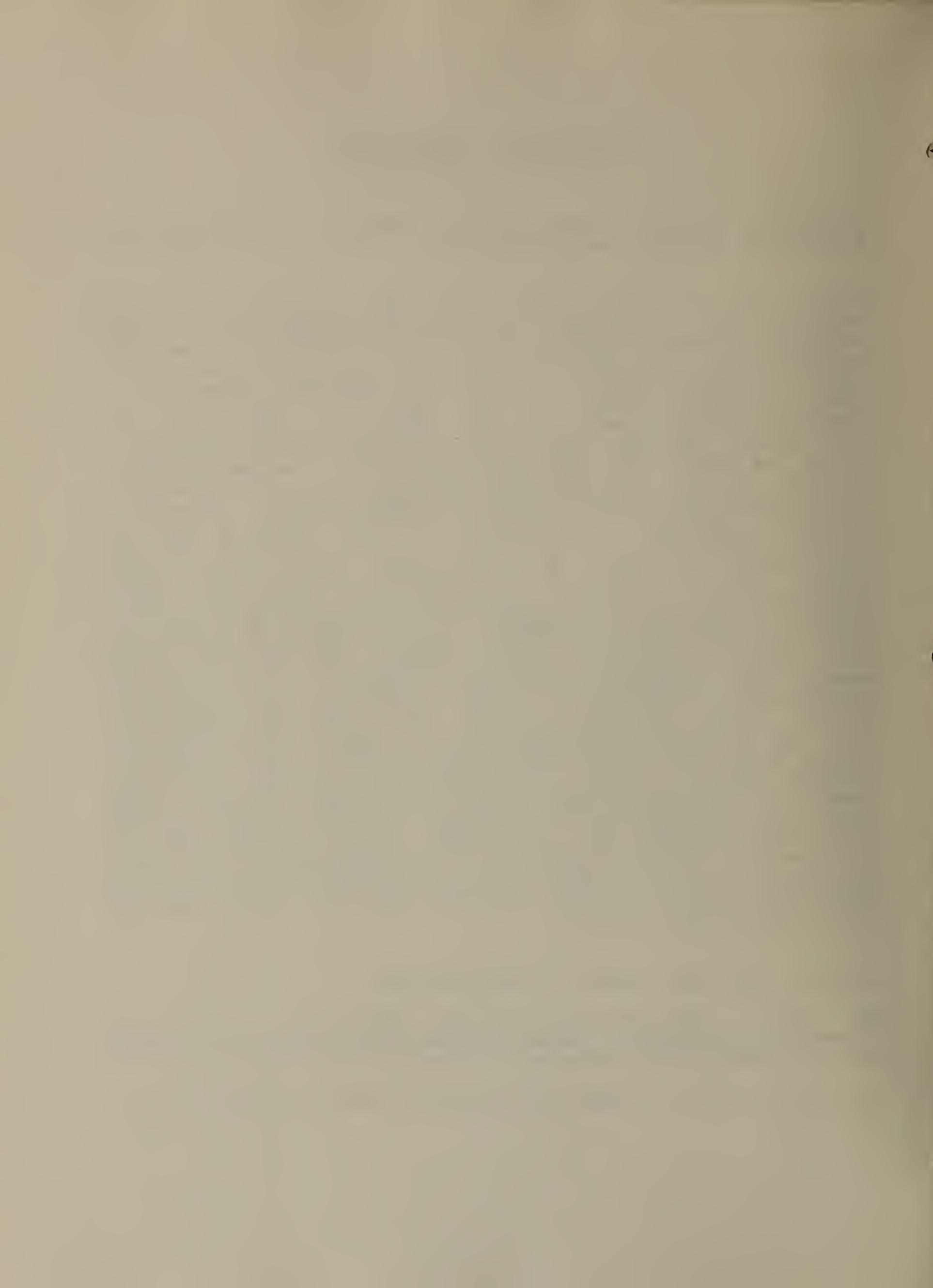
131:43. Use of Poisons in Killing Mammals or Birds Forbidden; Exceptions; Permits; Regulations, etc.

Section 43. A person shall not place poison in any form whatsoever for the purpose of killing any mammal or bird except pursuant to a permit issued under the provisions of this section; provided, that this section shall not prohibit any person from placing in his orchard or in or near his dwelling house, barn or other buildings poison for the purpose of destroying rats, woodchucks or other pests of like nature, or from placing with like intent under the surface of his lands carbon disulphide in any of its form or any other poison applied in an manner similar to that in which carbon disulphide is applied. The director is hereby authorized to make rules and regulations and, pursuant to the terms thereof, to issue permits to the owners or agents of forest plantations or orchards to place poison for the extermination of rats, mice and other pests of like nature therein and to employees of municipal, state and federal governments and to others found by the director to be qualified persons to place poison elsewhere, for the control of animals and birds, in connection with public health, wood tick suppression and control, propagation and protection of wild birds and mammals, and purposes of a similar nature, or to place poison within an area specified in such permit for the purpose of killing birds which may lawfully be killed under federal and state law and which are present in such area in such numbers as in the opinion of the director to constitute a public nuisance or endanger health or safety. Possession of the raw fur of any mammal or the dead body of any bird killed by poison, except rats, mice, woodchucks or other pests of like nature, shall be prima facie evidence that the person having such possession has violated this section unless he is an employee of the federal government or an employee of the commonwealth or a political subdivision thereof to whom a permit has been issued under the provisions of this section.

Source: 1986 GLM, volume 7, pages 549-550.

See Also: Code of Massachusetts Regulations, 321 CMR 2.10, "Issuance of Permits to Expose Poisons for the Control of Mammal and Bird Species Not Protected by Federal or State Statutes".

See Also: M.G.L. c. 132B, "Massachusetts Pesticide Control Act".



MASSACHUSETTS GENERAL LAWS
CHAPTER 131, SECTION 80

131:80. Registration, etc., of Traps.

Section 80. A person shall not place, set, maintain, possess, or tend on the land of another, any trap, unless the same is registered in accordance with the provisions of this section. For the purpose of providing for the registration and identification of traps, the director shall provide application forms, renewal forms, registration certificates and other forms necessary for the registration of traps as hereinafter provided. The director shall require the applicant for registration or renewal to supply necessary information and shall charge a fee for the original certificate, which shall be valid for two years unless suspended or revoked, and a fee for a renewal for a similar period of time, the amounts of which shall be determined annually by the commissioner of administration under the provision of section three B of chapter seven, which shall cover and apply to all traps then and thereafter owned by the applicant. The director shall provide by regulation, approved by the fisheries and wildlife board, that the registration number of any certificate issued by him and the name of the owner of a trap be affixed to each trap.

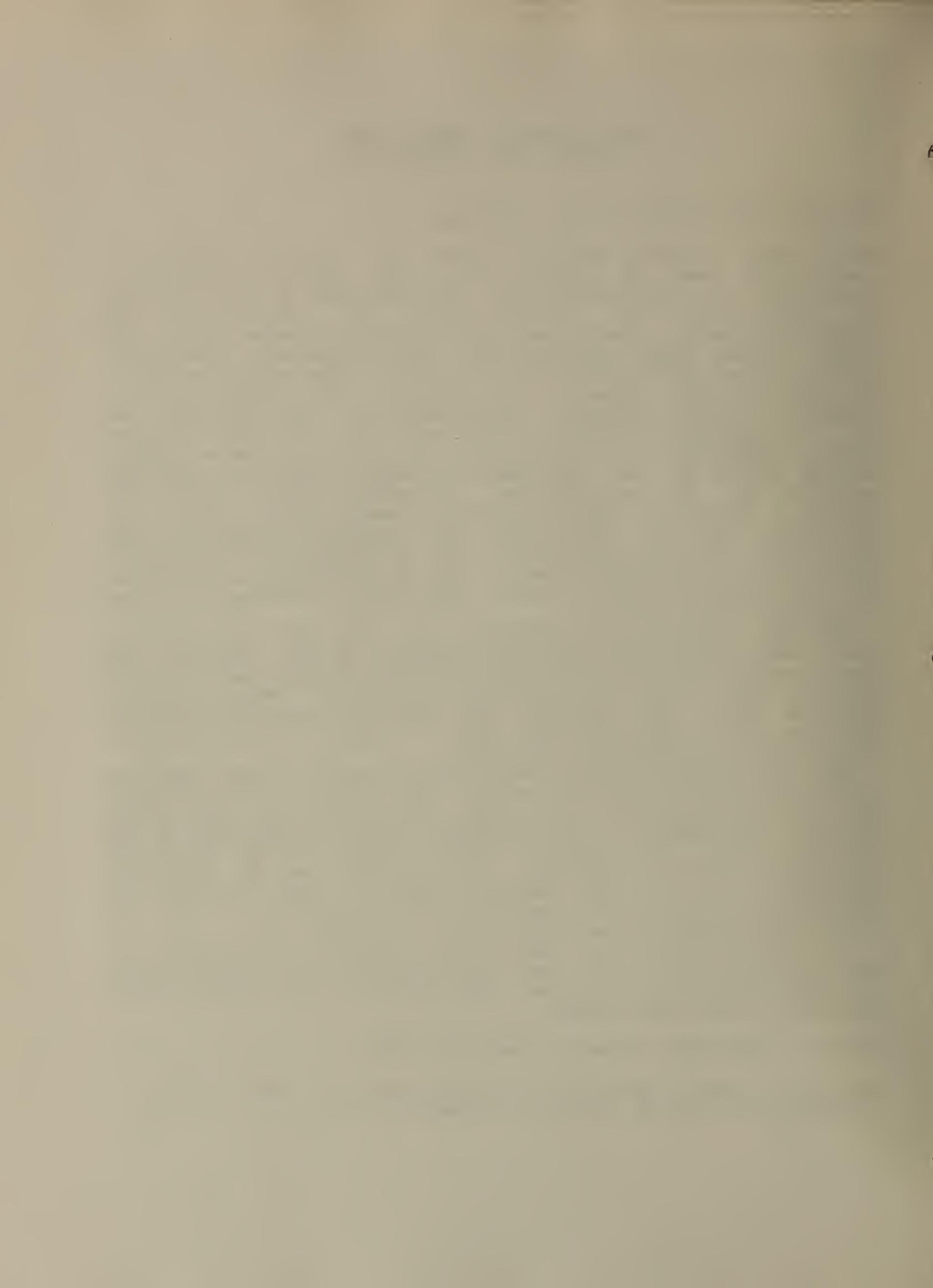
Upon the sale of any registered trap, the owner and purchaser shall send a joint notice of such transfer to the director, and thereupon the seller's registered number, as appearing upon each trap so transferred, shall have the letter "T" added to it to indicate that said transfer has been so registered with the director, and in addition the buyer's registration number shall forthwith be stamped upon each trap.

Upon the request of two or more persons, stating that they have entered into a partnership and are willing that all members of the partnership shall trap with the registered traps of any partner, each member of the partnership shall be furnished by the director with a special certification, written upon his registration certificate, that he is authorized to use traps belonging to the other members thereof, and it shall be unnecessary for any trap used by such partnership to bear any registration number other than that of its owner.

The director shall from time to time furnish to the director of law enforcement a list of all holders of registration certificates issued hereunder, including the registration number assigned to each such holder.

Source: 1986 GLM, volume, 7, pages 561-562.

See Also: Code of Massachusetts Regulations, 321 CMR 3.02(5), "Hunting and Trapping of Certain Mammals".



MASSACHUSETTS GENERAL LAWS
CHAPTER 131, SECTION 80A

131:80A. Use of Steel Jaw Leghold Trap and Certain Other Devices Restricted.

Section 80A. No person shall use, set, place or maintain any steel jaw leghold trap on land for the capture of fur-bearing mammals except in or under buildings owned, leased or rented by him. The steel jaw leghold trap may be used for the capture of fur-bearing mammals in water only if set in such a manner that all reasonable care is taken to insure that the mammal dies by drowning in a minimum length of time. No other device which is set in such a manner that it will knowingly cause continued suffering to such a mammal caught therein, or which is not designed to kill such a mammal at once or take it alive unhurt shall be used; provided, however, that a person or his duly authorized agent may apply to the director for a special permit to use such traps, other than the steel jaw leghold trap, on property owned by such person. Issuance of such special permits shall be governed by rules and regulations adopted by the director pursuant to chapter thirty A. Such rules and regulations shall include, but not be limited to provisions relative to the following:--

(1) . The applicant or his agent shall apply to the director in writing and shall state that there exists on his property an animal problem which cannot reasonably be abated by the use of traps other than those prohibited by this section, not including the steel jaw leghold trap. If the director determines that such an animal problem exists which cannot reasonably be abated by the use of traps other than those prohibited by this section, not including the steel jaw leghold trap, he may authorize for a period not exceeding ninety days the use, setting, placing or maintenance of such traps during which time the procedures for obtaining a special permit, as set forth in the rules and regulations adopted pursuant to this section, shall be complied with.

Whoever violates any provision of this section, or of any rule or regulation made under the authority thereof, shall be punished by a fine of not less than fifty nor more than one hundred dollars, or by imprisonment for not more than thirty days, or by both such fine and imprisonment.

Source: 1986 GLM, volume 7, pages 562-563.

MASSACHUSETTS GENERAL LAWS
CHAPTER 131, SECTION 83

131:83. Extermination of English Sparrow and Starling.

Section 83. Officers in charge of public buildings in cities and such officers as the selectmen designate and appoint in towns may take such reasonable means and use such appliances, except poison, as in their judgement will effectively exterminate English sparrows and starlings in such cities and towns, but nothing herein shall authorize an officer to enter on private property without the consent of the owner or occupant thereof. A person shall not willfully resist such officers while engaged in such duties or knowingly interfere with the means used by them for such purpose.

Source: 1986 GLM, volume 7, page 564.

MASSACHUSETTS GENERAL LAWS
CHAPTER 270, SECTION 3A

270:3A. Placing of Poison, etc., for Control of Rats, etc.

Section 3A. Whoever negligently or maliciously places any poison or poisoned food for the control of rats, mice or other rodents in any place where it may cause injury to any human being or domestic animal shall be punished by a fine of twenty-five dollars. The officers charged with the enforcement of the laws relating to fish, birds and mammals under chapter one hundred and thirty-one shall take cognizance of violations of this section and enforce the provisions thereof, and they shall have all powers necessary therefor.

Source: 1986 GLM, volume 11, page 690.

COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES AND WILDLIFE

CONTROL OF ENGLISH SPARROWS

The English or house sparrow, an exotic bird introduced from Europe in the 1800's, has adapted itself to life throughout the United States and Canada. They actually belong to the weaver finch family, although they are commonly called "sparrows". Although their activities are mainly beneficial, they have several habits that are objectionable to humans and they need occasional control to protect human health and property. They also compete for nesting space with several native birds. To selectively control English sparrows, it is necessary to understand their behavior and to distinguish them from native sparrows, which are protected by law.

Life History and Habits

English sparrows prefer openings or hollows for nesting and will use any sort of a nesting box, cavity or opening in buildings. Normally, nest building and egg laying begins in early spring-- March and April in the northern United States and somewhat earlier in the south. A clutch normally consists of four to eight evenly speckled eggs that hatch in 13-14 days. They produce several broods each season and use the same nesting hole over and over again. Generally, these sparrows are gregarious. They nest, roost, and feed together in large flocks.

The English sparrow, like our own sparrows and finches, is primarily a seed eater and supplements its diet with insects. It is one of a few birds which will eat the Japanese beetle.

Eliminating Nests and Roosts

English sparrow populations can be greatly reduced by destroying nests and eggs at two week intervals during the spring and summer. A long pole with a hook fastened to one end can be used to tear down nests under eaves, rafters, and similar places. The elimination of nesting and roosting sites may be the best permanent solution to the problem. To prevent a recurring infestation, it may be necessary to remove all or part of the vines from certain buildings. Copings and ledges of some buildings may be blocked with wood or sheet metal strips placed at an angle to eliminate the roosting space.

Screening

Steeple, towers, poultry houses, barn lofts, and similar places should be bird-proofed with 3/4-inch or smaller mesh wire or poultry netting.

Shooting

Although it should be used with caution and with due regard for state laws regarding the discharge of firearms, shooting with low powered guns is selective and will eliminate infestations, if persistently used. Where permissible, shooting with .22 caliber bird shot (#12) is effective.

Scaring Devices

Most of the devices commonly used for frightening birds-- such as scarecrows, plastic owls, and the like-- are only temporarily useful against English sparrows, except where they are roosting in trees.

Trapping

Local control of English sparrows can be accomplished by trapping and presents no danger to protected species. To lure birds to a trap, use poultry scratch feed, fine cracked corn, grain sorghum, wheat, bread crumbs or combinations of these. Bait several locations even though only one trap is used. Since some untrapped birds associate unpleasantness with a particular area, move the trap to another baited area when results at the first site diminish. The best trap sites are generally near low shrubs or hedges. The trap should be covered with 3/4-inch mesh wire, since some birds can escape through a larger mesh. Leave one or two birds in the trap as decoys. Larger numbers tend to flutter wildly and scare other birds away. Various ready-made live traps are on the market. Others can be easily fabricated.

Sieve-Type Trap

This simple trap requires close attention for good results. A sieve-like box with short sides is balanced on an upright stick with a string attached. A pull on the string lets the box fall over the birds attracted to bait underneath. While the dimensions can vary, the box should be narrow enough so that a person can reach inside to take out the captured sparrows. The trap should not be raised more than six inches above ground. If it is higher, sparrows can escape as the box is falling.

Funnel Trap

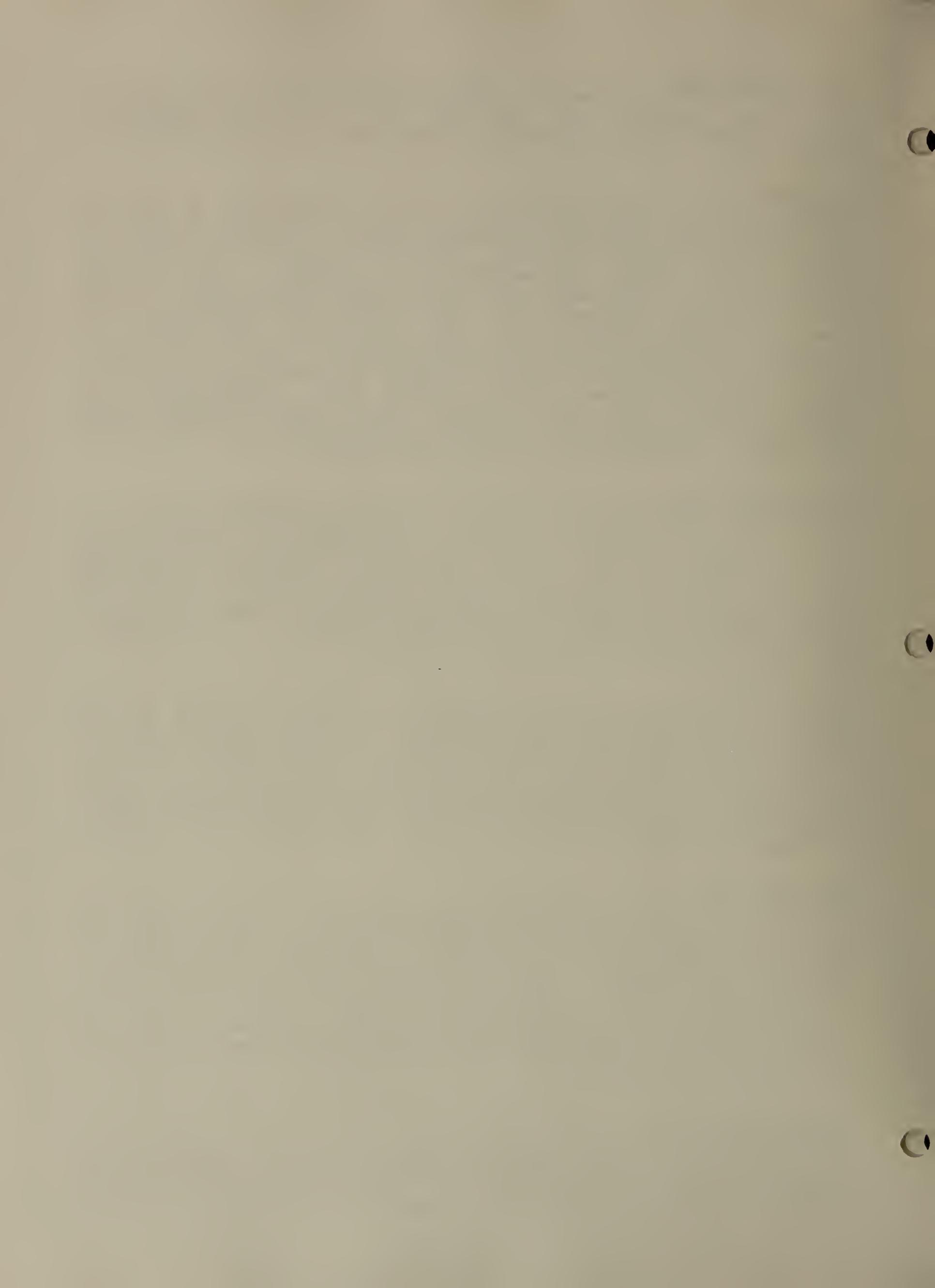
This trap is more difficult to build. It is constructed of wire mesh and consists of a large rectangle with two funnels, one at the entrance and another inside the box. The birds enter the first funnel at its apex and go inside the box. Stiff wires at the tip of the funnel's cone discourage sparrows from backing out. They then enter the second funnel and pass into a second compartment, from which escape is unlikely. A door is necessary for trappers to remove the birds.

Nest Box Trap

This trap resembles a bird nest box. Upon entering the trap, the weight of the bird operates a mechanism which, in turn, drops the bird into a bag and resets the trap for another. Collecting bags should be tightly woven. The front wall of the box should be the last put into place. Screw it down so that it can be easily removed for repair and renovation. Glue pieces of hair and feathers to the rear of the tipping chamber. Fasten the trap to a post or side of a building so that the collecting sack hangs free and is easily accessible.

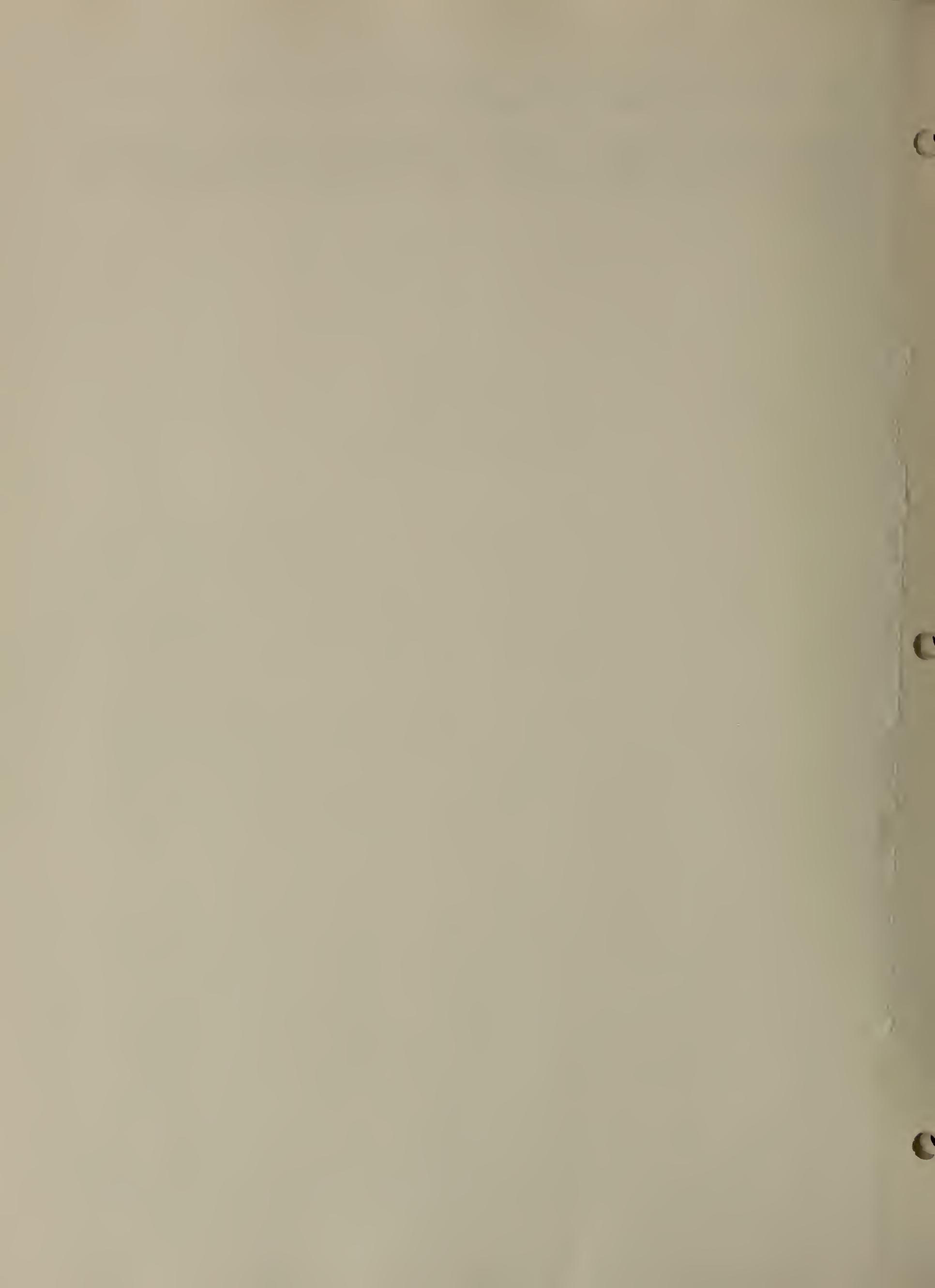
Center Drop Trap

This is one of the simplest and best traps to use. Birds drop through openings in the center and cannot fly out. Build the trap 6 feet wide by 6 feet high by 9 feet long. Use 2x2-inch material with 1x2-inch or 1x4-inch for cross braces and the door. Cover the



trap with 3/4-inch mesh wire. Make the entrance frame 1-1/2 feet wide with 2-inch mesh wire openings.

Adapted from a leaflet originally prepared by the U.S. Fish and Wildlife Service (1974). Rough designs of the live traps described above can be obtained from the Mass. Division of Fisheries and Wildlife.



COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES AND WILDLIFE

CONTROL OF STARLINGS

Large-scale trapping of nuisance starlings is generally impractical. However, the trapping method offers considerable promise in dealing with orchards, backyards, small feedlots, and newly-invaded areas.

The best livetraps devised so far is a modification of the Australian crow trap (similar to the New York starling trap). This trap has an opening in the bottom of a "V" formed on the top of the trap. Birds drop in through this opening to take the bait. On attempting to fly out, they go up into the ends of the "V" rather than back out through the throat of the trap, where they entered. Refer to the attached diagram and "bill of materials".

Traps should be made as large as practical, at least five or six feet high, six feet wide, and eight feet long. If the sections are bolted together it will be easier to take them apart when necessary to move them.

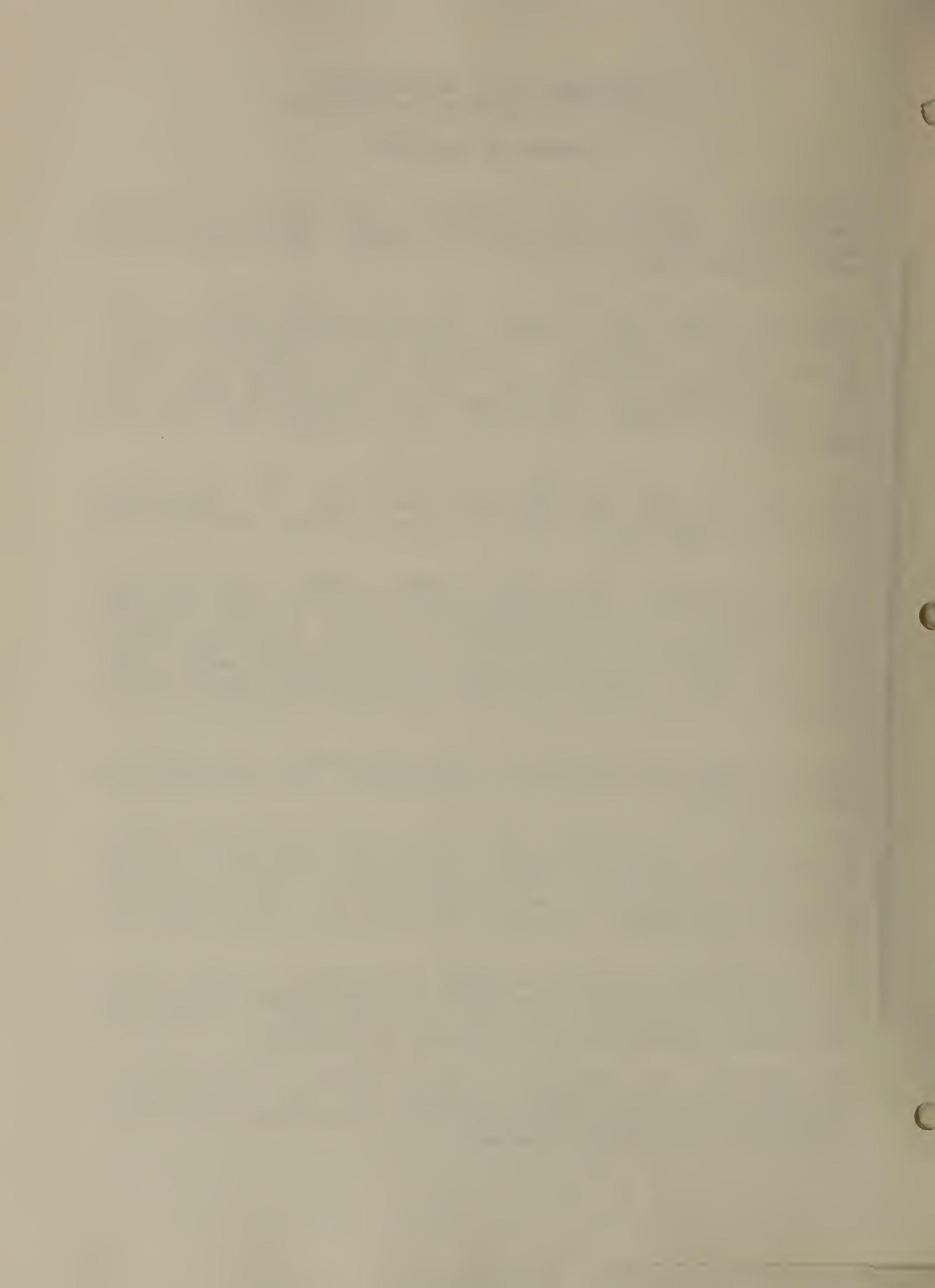
Do not place traps under trees. Place them in the open where the bait and decoy birds can be easily seen by other starlings. Almost any food which the starlings are used to can be used as bait. Culled apples, dried fruit, raisins, stale French-fried potatoes, canned or cracked corn, pelleted animal feed, silage, beet pulp meal, linseed oil meal, and even meat scraps have all been effective when the birds have had prior experience feeding on them.

Keep the traps well supplied with bait and water. An inexpensive watering trough can be made by splitting an old automobile tire down the middle.

Best results are obtained when ten to twelve starlings are left in the trap to serve as decoys. It may be necessary to "salt" the trap by catching the original decoys through other means before the starlings will enter the large trap. The trap should be tended at regular intervals and all of the birds, except the decoys, removed.

If a large number of birds is caught it is best to remove ten or twelve decoy birds first and hold them in a small cage. These birds will be needed when the trap is once again in operation. Then, remove the majority of the birds for disposal.

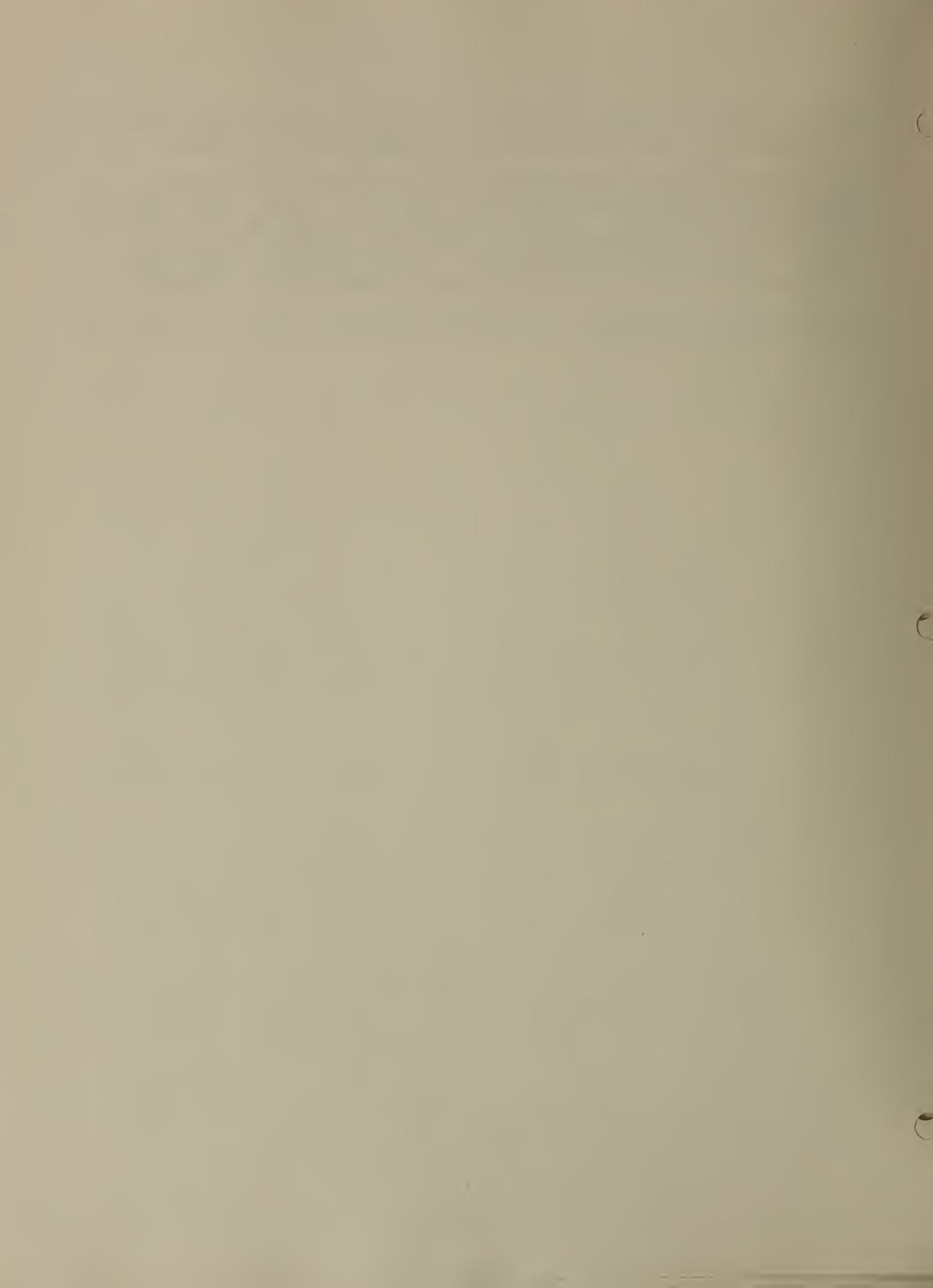
Trap location is important-- if the trap is not attracting starlings, move it to another location (or try another bait). All birds caught except starlings, English sparrows, and vagrant pigeons must be released unharmed.



Farmers should refer to M.G.L. c. 131, s. 38, and 321 CMR 2.09 for permits to trap other blackbirds damaging agricultural crops.

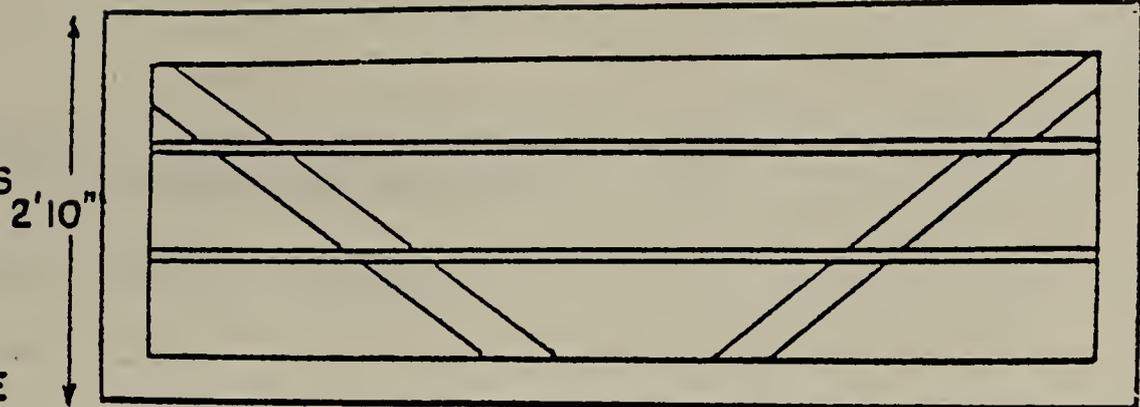
Under specialized circumstances, persons properly licensed by the Massachusetts Pesticide Board may obtain a permit for chemical control of starlings. Refer to M.G.L. c. 131, s. 43, 321 CMR 2.10, and the Massachusetts Pesticide Control Act (M.G.L. c. 132B). Unlicensed and improperly trained persons may not use chemicals for controlling starlings or other birds or mammals.

Adapted from a leaflet originally prepared by the U.S. Fish and Wildlife Service (1977).



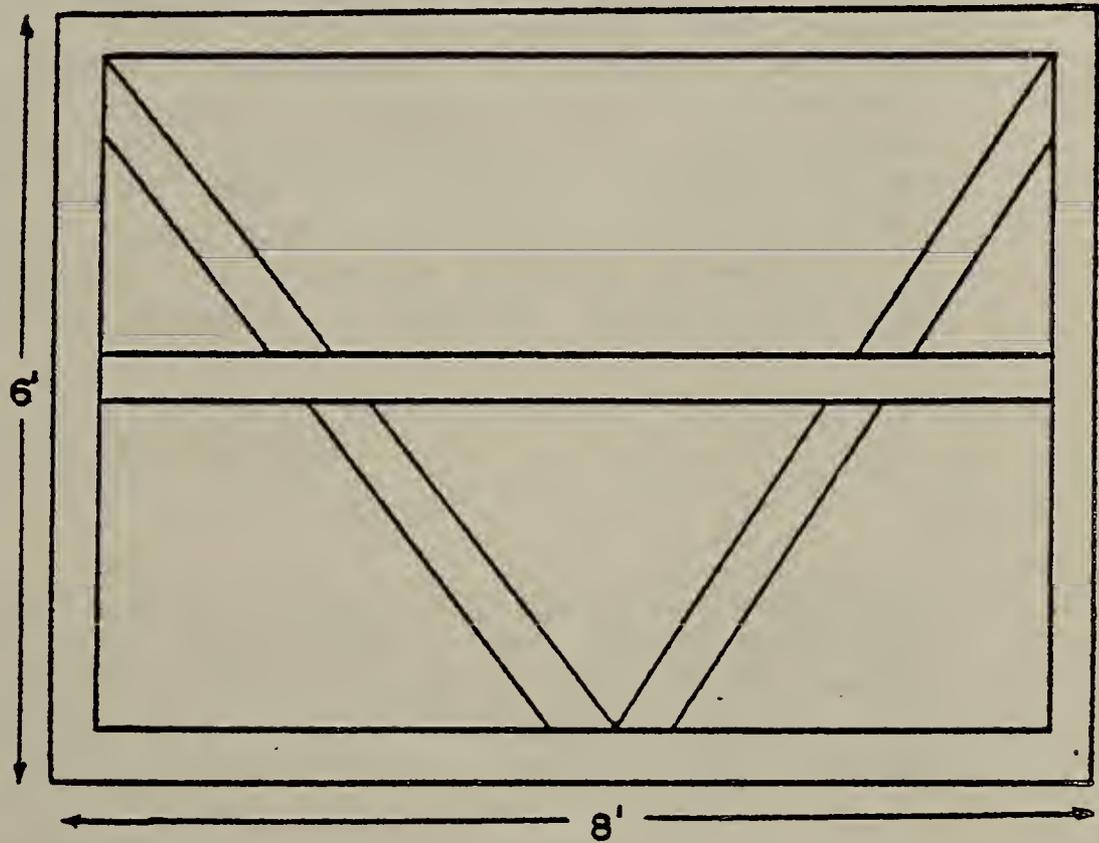
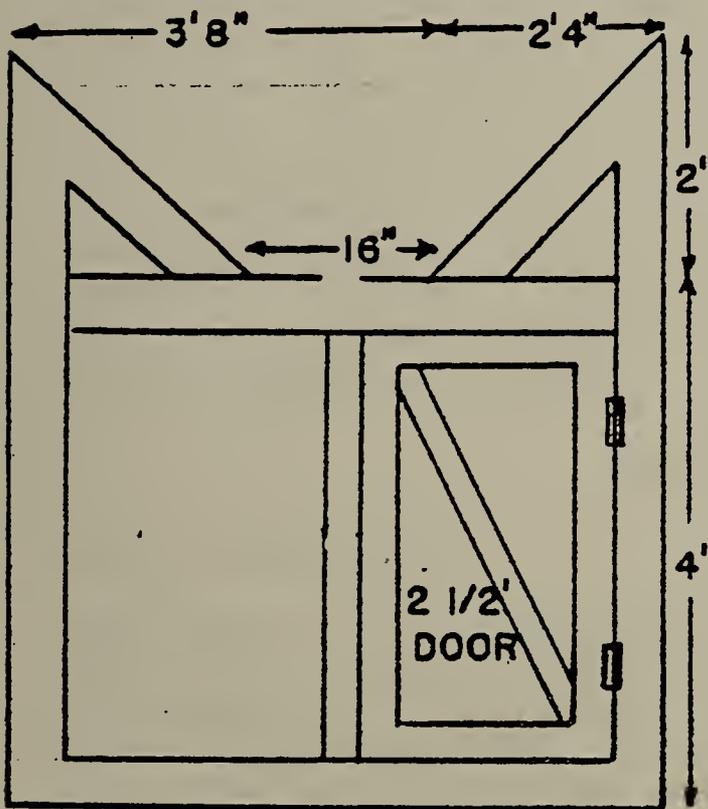
BILL OF MATERIALS

- 15 - 1" X 4" X 8' 2 HINGES
- 25 - 1" X 4" X 6' 2 IB. STAPLES
- 4 - 1" X 1" X 8'
- 1 - 1/2" X 16" X 8' EXTERIOR PLYWOOD
- 40' X 6' - 1" MESH CHICKEN WIRE

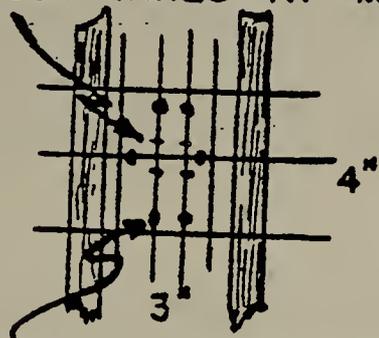


TOP PANEL (MAKE TWO)

SIDE PANEL (MAKE TWO)

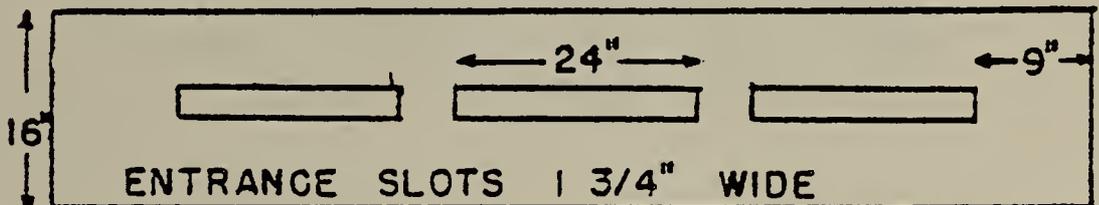


CUT WIRES AT MARKS

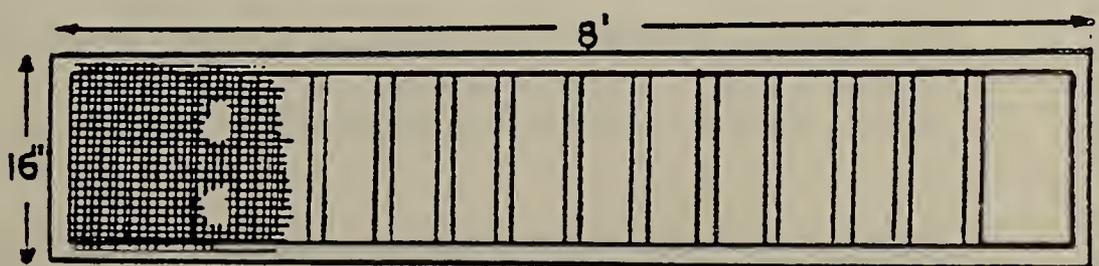


BEND AT CIRCLES

TRAP THROATS

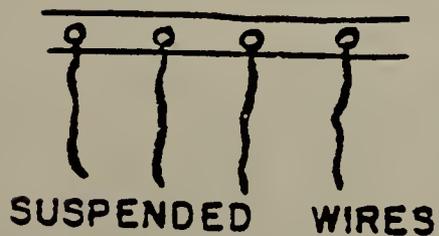


NO. 1



NO. 2

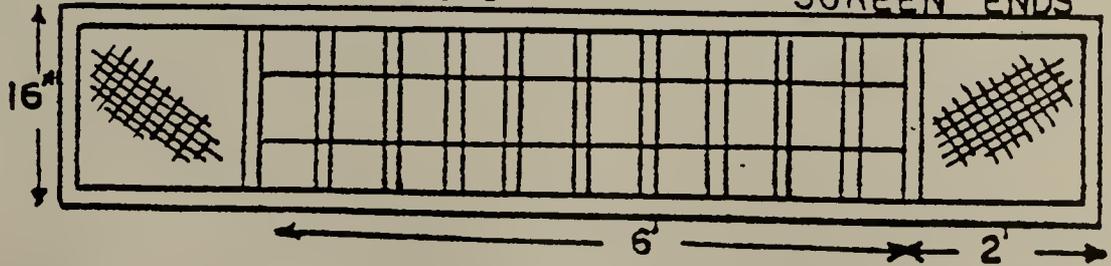
30 HOLES REQUIRED



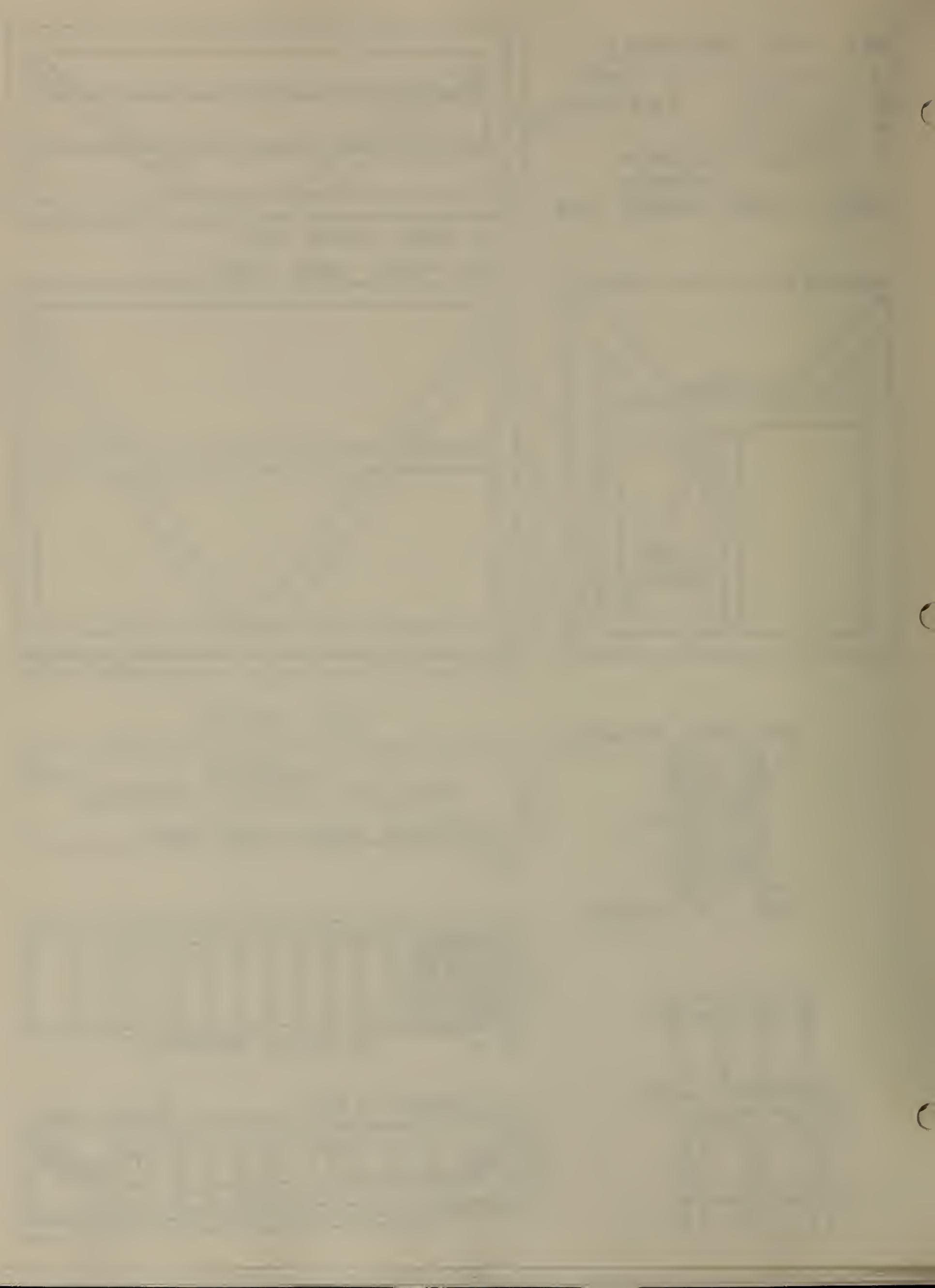
SUSPENDED WIRES

13 SPACES 4 5/8"

SCREEN ENDS



6' 2'



COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES AND WILDLIFE

VAGRANT PIGEON CONTROL

Pigeons Today:

Pigeons similar to those now living in a semi-wild state in towns and cities have been closely associated with man since the beginning of recorded history. The form, coloration, and habits of these feral birds suggest that they were originally derived from the blue rock, or common, pigeon (Columba livia) of Europe, Asia, and Africa. Most flocks of pigeons in urban or rural areas are composed of free-ranging "wild" birds. However, banded birds (homing pigeons) are privately owned and should not be killed or molested. While the presence of pigeons affords pleasure to many, excessive concentrations present a health hazard and may offend people's senses.

Control Techniques

Roost Elimination:

Measures to control roosting sites appear costly, but permanent methods of control are usually worthwhile in the long run. Openings in lofts, church towers, behind signs, and under eaves can be screened with rust-proof 3/4-inch mesh wire, which will also keep out starlings and English sparrows. Roosting on ledges can be eliminated by screening them with wire netting or by installing wood or metal sheathing at a steep incline.

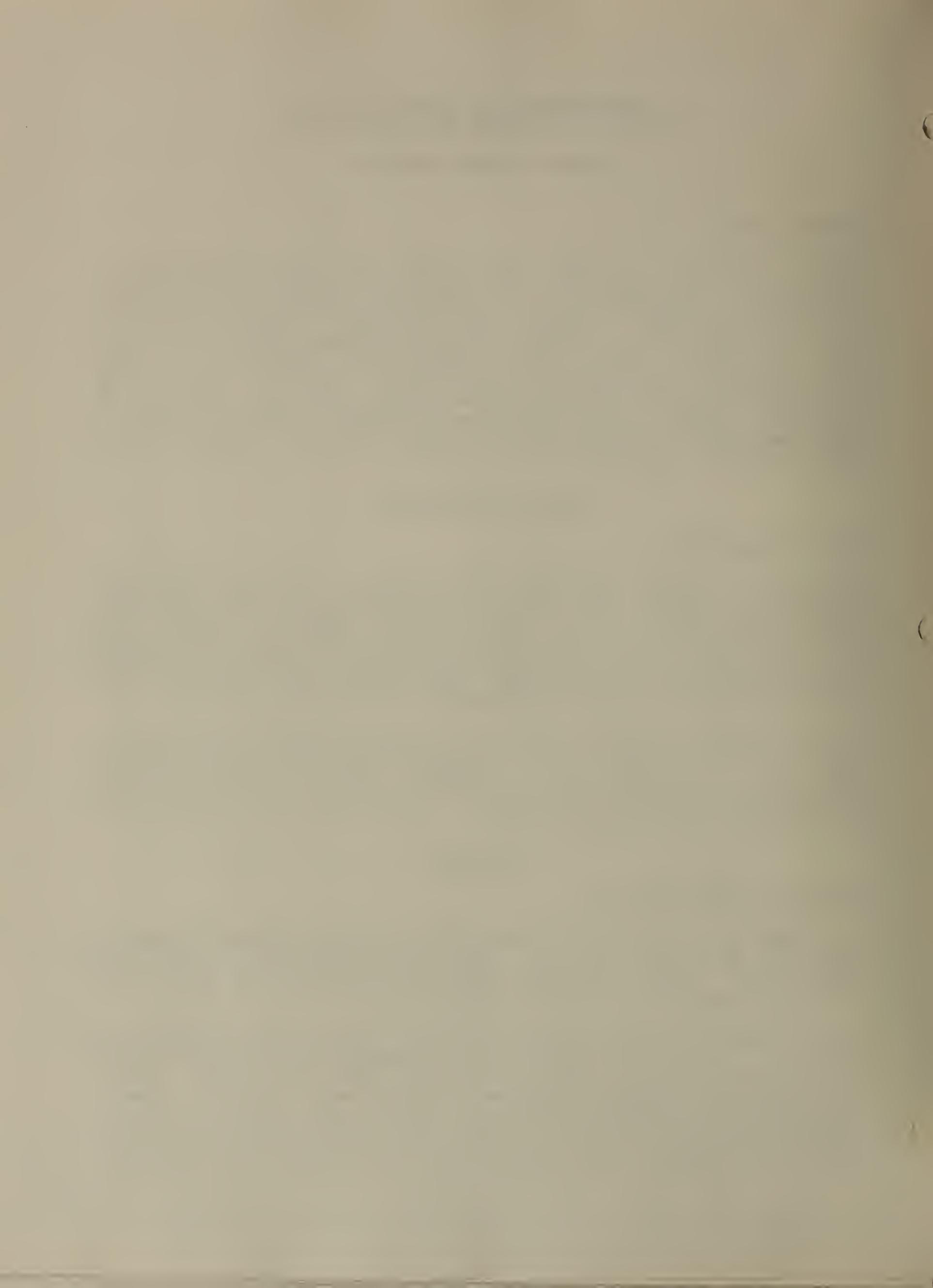
Products such as glue, wires, or electrical devices can also be used, but these methods are usually expensive and not always effective. Somewhat more permanent products are those which utilize metal wires in the form of a bristling fence which acts as a barrier to prevent roosting.

Trapping

General Recommendations:

Set traps in inconspicuous places where pigeons commonly roost or feed and where they are not apt to be vandalized. Roof tops which have water dripping from air-conditioning units are excellent summertime trapping sites.

Small traps can be used effectively, but larger walk-in types are better. They should be easy to dismantle. It is important to bait the trap with the kind of food the birds are eating. Whole corn and grain sorghum are generally good baits. Scatter a small amount outside the trap door to attract the birds. Keep a generous quantity of bait on the floor inside and near the trap door at all times. Water should also be available in the traps.



One or two decoy birds will tend to draw in others. Light-colored birds make better decoys than dark, blue-gray ones. Trapped birds should be removed frequently. Too many fluttering birds will tend to scare others away.

Loft Traps:

Birds often use attics, unused upper stories in industrial buildings, deserted factories, or partially-used buildings as nesting and roosting sites. These indoor roosts can be made into productive traps by closing them up with screening or plastic. Leave one or two entrances open until the birds become accustomed to using them. Then, fit the entrances with trap doors that can be closed from the outside at night after the birds have settled down. The trapped birds can then be caught by hand or with nets.

Funnel Traps:

A simple trap can easily be made from 1x2-inch welded wire with a 1-1/2-inch "V" opening. This is kept from springing shut by large nails. Pigeons are attracted to a small amount of bait scattered at the entrance. They see more bait inside the trap and force their way through the small opening.

A variation of the above can be made by having the funnel on a inclined board. Pigeons pick up bait, squeeze their way through the opening, then hop down 4 to 6 inches to the floor of the trap. This use of an inclined board tends to keep trapped birds away from the entrance.

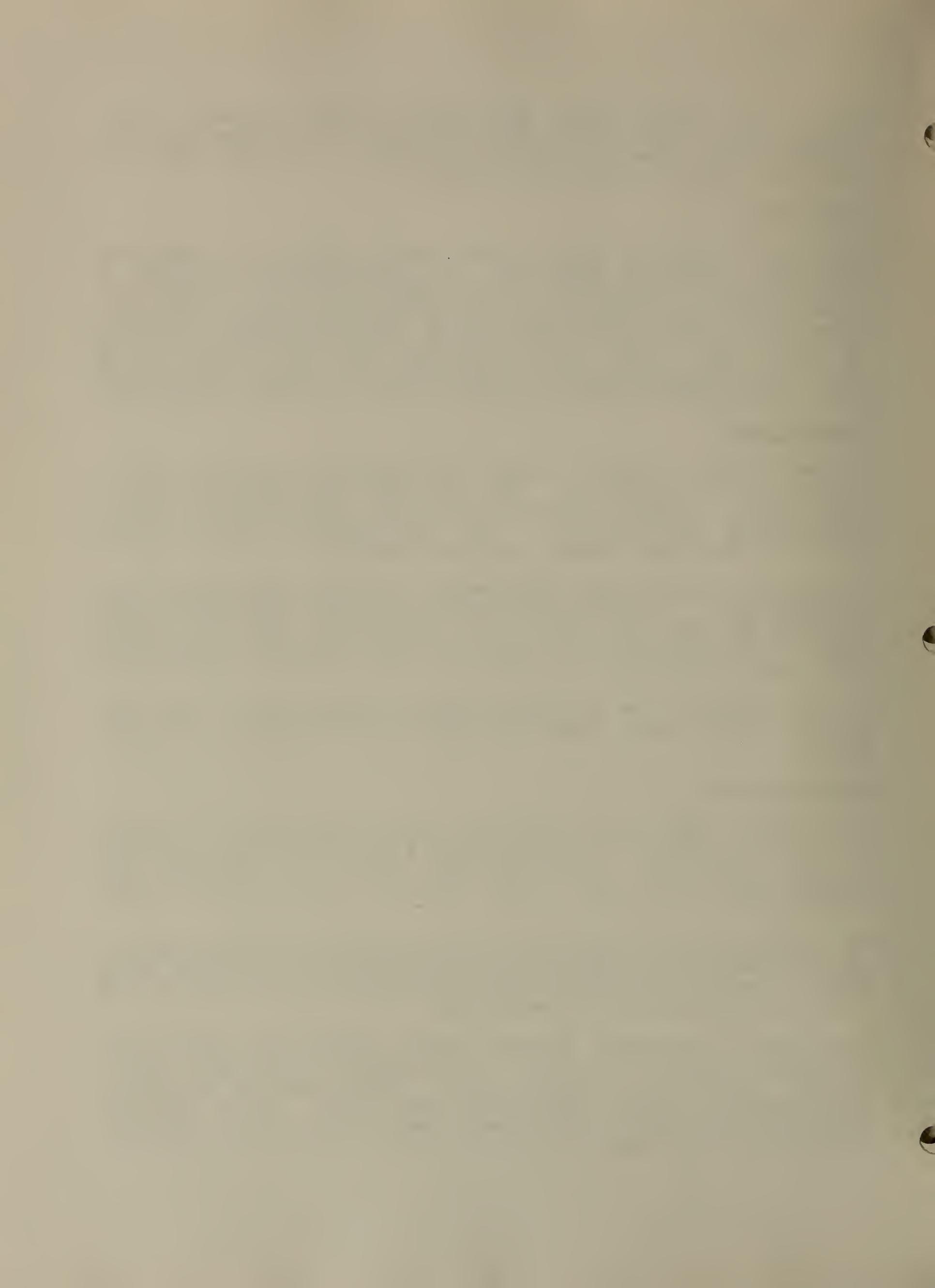
VARious shapes can be utilized in making funnel traps. The lily-pad and clover-shape traps are easy to set up and peg to the ground.

Bob-Type Trap:

This trap is capable of large daily catches and enables a person to enter and remove the birds through a small door constructed in the end of the trap. Although large traps are preferred, good catches have been made using poultry crates and other small enclosures.

The construction of a trap with 1x2-inch material is desirable so as to reduce the weight, which is a factor if the trap is to be moved. The use of bolts and the construction of the trap in five sections will facilitate dismantling.

The door or entrance through which pigeons are lured is the principal feature of the trap. Individual, free-swinging "bobs" are most practical and successful. These bobs can be made of heavy aluminum wire or light-weight metal rods. It is important that they swing upward and inward easily and drop back smoothly into slots at the base of the door.



Shooting:

Shooting is not normally the most effective nor aesthetically pleasing way to control pigeons. Sometimes, individual birds roosting in barns or similar structures may be controlled in this fashion. Be sure to comply with state laws regarding the discharge of firearms. At ranges less than 50 feet, .22 caliber bird shot is effective and will do little or no damage to structures.

Poisoning:

Poisoning should not normally be used for pigeon control. Where permitted, users must comply with provisions of M.G.L. c. 131, s. 43, 321 CMR 2.10, and the Massachusetts Pesticide Control Act (M.G.L. c. 132B).

Adapted from leaflets prepared by the U.S. Fish and Wildlife Service (1968, 1976).

COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES AND WILDLIFE

CONTROL OF OPOSSUMS

Range and Description.

The opossum ("possum") is the only native mammal in the United States that possesses an abdominal pouch for carrying its young. It can be found in wooded areas from the Gulf of Mexico to New England and westward to Michigan, Wisconsin, Iowa, and Missouri.

The 'possum is usually light gray in color and the average adult measures about 33 inches in length, including a 12-inch tail. They produce one to three litters per year, depending on the region of the country. The young (5-13, usually) are tiny (bumblebee-sized) and poorly developed at birth. After birth, they crawl into the mother's pouch and attach to the mammary glands where they remain for four-six weeks. After leaving the pouch, the young remain with the mother for about one month before setting out on their own.

Opossums seek shelter in a hollow log, rock crevice, tree cavity, or an old squirrel leaf nest. They prefer habitats adjacent to swamps, along streams, and in wooded country. Where food is plentiful, travel may be limited to a few hundred yards from den site to feeding areas. The animals are omnivorous, eating almost anything available, including fish, crustaceans, insects, mushrooms, berries and other fruits, cultivated vegetables, eggs, carrion, and human garbage. They are sometimes detrimental to farm poultry and corn fields.

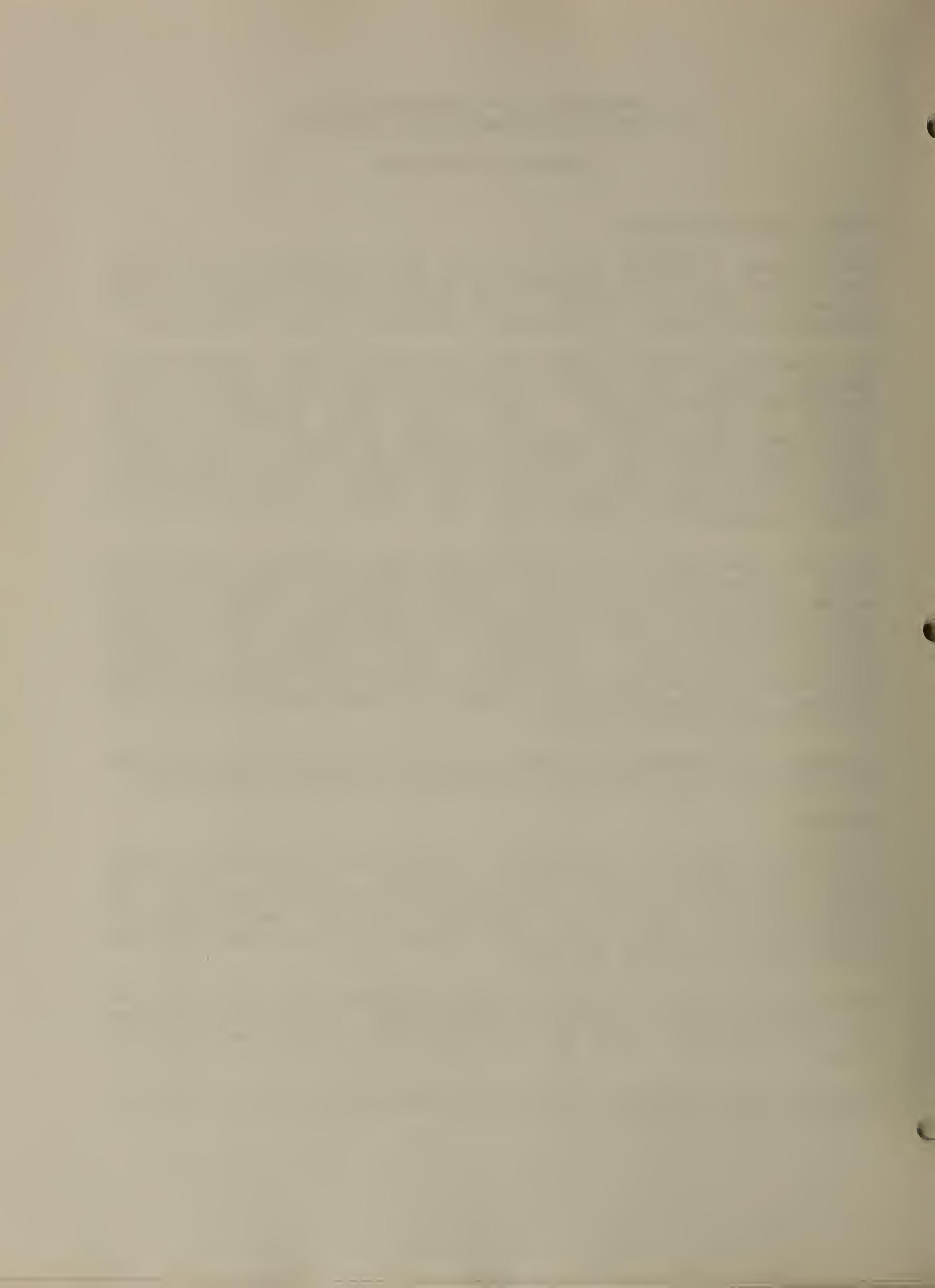
Opossums are hunted and trapped in many states for food and fur. The furs are used mostly for trimming in inexpensive garments.

Control.

"Nuisance" opossums can usually be excluded from chicken coops, pens, and similar structures by keeping openings blocked up, loose wire fastened down, and similar exclusionary measures. The animals can be kept from climbing over wire mesh fences by stretching electric fence wire near the top of the fence and three inches out from the mesh.

Opossums can also be readily caught in cage or box traps set near its denning area or near the damage site. Smelly baits such as cat or dog food, fish, or over-ripe fruit are often effective baits.

Adapted from a leaflet originally prepared by the U.S. Fish and Wildlife Service (1977).



COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES AND WILDLIFE

CONTROL OF MOLES

There are three species of moles inhabiting New England, including the eastern, star-nosed, and hairy-tailed moles. Moles are not rodents, but are members of the scientific order Insectivora, which also includes shrews. The principal characteristics which identify moles are: short, powerful front legs with outwardly-turned feet; short black or gray fur with a distinct silky luster; tiny, hidden eyes and ear openings; and a long, often slender, snout.

Moles produce one litter of about four young each year. The nests are usually deep in the ground, under the protective cover of a large stone, tree, sidewalk, or roadway. These active small mammals have keen senses of smell, touch, and hearing, but are nearly blind. They are most active on damp cloudy days in the spring and fall. Their principal food consists of earthworms, grubs, beetles, and insect larvae. Vegetation makes up only a small portion of their diet. They destroy few bulbs and plants by direct feeding. Most damage is done when plant roots are dislodged as the animals burrow through the soil in search of invertebrates.

Control Measures.

Trapping.

Time, patience, and some knowledge of mole habits are the only prerequisites of successful trapping. A few properly-set traps, kept in good working condition, are adequate to take care of light mole infestations. The "harpoon" or "prong" type traps are the most common types used for catching eastern moles. These traps are carried by hardware and garden supply stores and by some mail order houses. Directions for setting the different kinds is usually supplied with the trap.

The best time to trap moles is early in the spring, as soon as the first ridges are noted, or after the fall rains. The selection of a main or frequently-used runway is of prime importance. The conspicuous ridges made by most moles are the primary feeding tunnels. Some, however, may be used only once by the moles. To determine which runways are active, stamp down a short section of each runway. Observe daily for several days and restamp any raised sections. If a tunnel is burrowed out and raised up daily, it is an active runway and a trap should be set at this location. Move any trap that fails to catch a mole within one or two days.

The star-nosed mole does not leave surface ridges, but its presence can be detected by mounds of dirt pushed up from the underground runways. It is necessary to set traps in a run

connecting the mounds; therefore, some digging may be required to locate the underground tunnels.

Live-Trapping.

To live trap moles, you should use a container into which moles will fall and be unable to escape. First, determine the active runway by the method described above. Then, dig a small hole in the most active runway and place a #10 tin can (about 7 inches in diameter and 10-12 inches deep) in the hole. Be sure the top of the can is level with the bottom of the runway. Fill and pack soil tightly around the can (not on top of it). Lightly stamp down the runway for one foot on each side of the can. Cover the hole above the can with a board or a piece of sod. The moles will attempt to open the runway and will frequently fall into the can and be unable to climb out.

Barriers.

Sometimes limited areas such as seedbeds or small gardens sustain persistent mole damage. In these situations, where damage is liable to recur, the installation of a barrier of sheet metal or hardware cloth may be justified. Such a barrier should begin at the ground surface and go to a depth of at least 12 inches and then bend outward at a 90-degree angle for an additional 10 inches. All connections in the barrier must be secure if it is to be effective.

Adapted from a leaflet originally prepared by the U.S. Fish and Wildlife Service (1977).

COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES AND WILDLIFE

CONTROL OF COTTONTAIL RABBITS

Cottontail rabbits are an important prey for many species of avian and mammalian predators and are also game animals which furnish a great deal of hunting recreation. As such, they are protected by state law and can only be taken during restricted hunting seasons or as otherwise provided by law. However, in some localized areas, cottontails may cause damage to farm and garden crops during the summer. In winter, they may turn to tree nurseries, orchards, and ornamental shrubs. It is at these times that rabbit control may be necessary to reduce damage.

Habitat Control

Cottontail rabbits prefer dense thickets or heavily vegetated areas in which to live. Cover of this type is necessary for food and protection from predators. Overgrown ditch banks, brushy fence rows, or brush piles within or adjacent to croplands, nurseries, or orchards may be major factors contributing to rabbit damage. Cottontails leave this cover at night or in the early morning, feed in crop areas, and return to the thicket for protection during the day.

Mowing, brush cutting, and general cleanup of overgrown areas may be all that is needed for rabbit control. Without sufficient cover, rabbits do not stay in exposed areas.

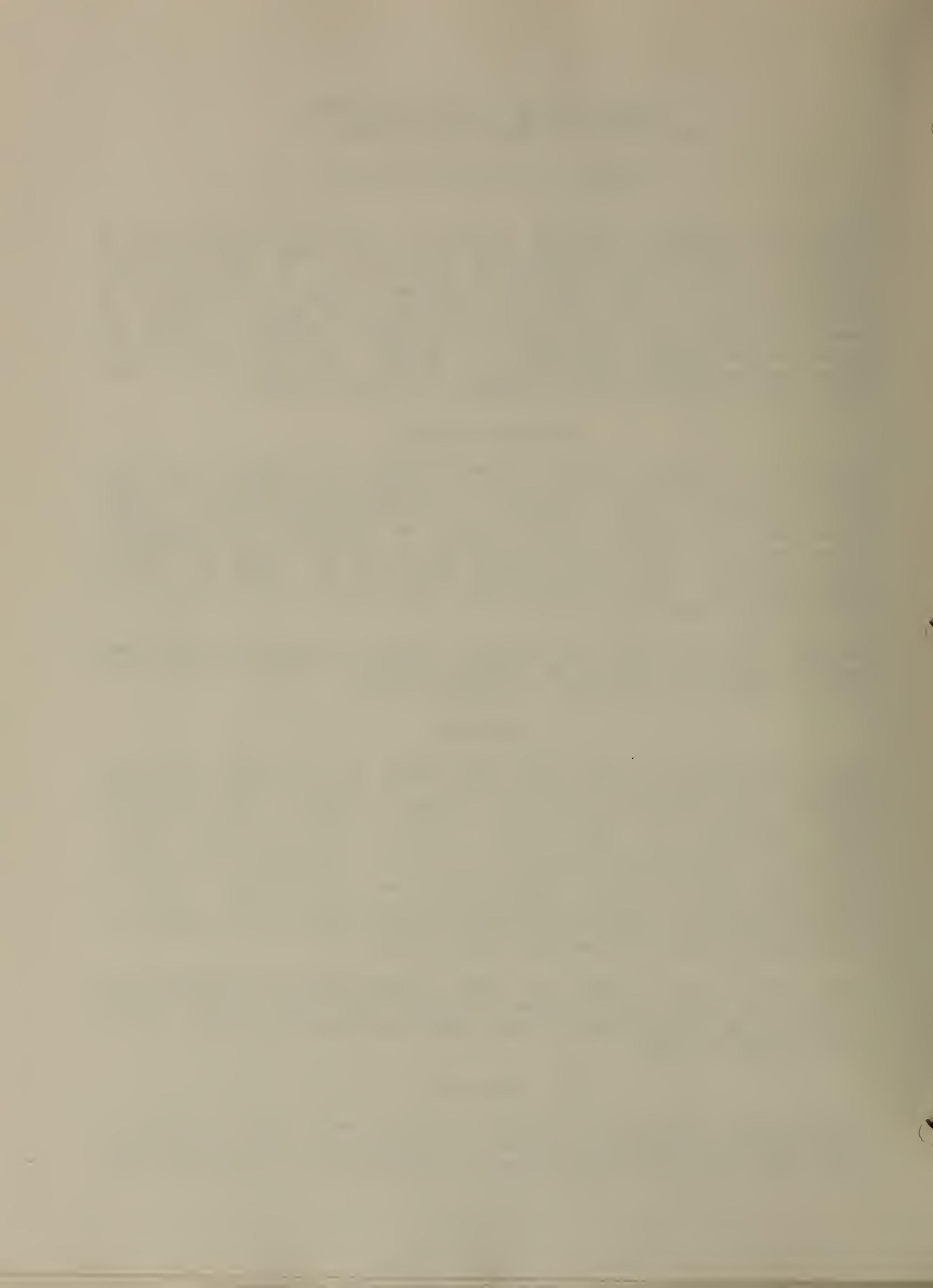
Trapping

Live trapping can be an effective means of removing individual animals causing damage to gardens or other crops. Although rabbits are active at any time of day or night, the height of their activity is just before sunrise and just after sunset; thus, live traps should be set prior to these peak activity periods. Cottontails usually do not have definite trails going from their cover to their feeding grounds. There may be one or two fixed points where rabbits regularly enter. These points of entrance and areas showing constant rabbit activity or damage are the logical places for setting live traps.

Metal live traps ("cage" or "box" traps) may be purchased from hardware or farm supply stores. Wooden live traps, such as those used by the Pennsylvania Game Commission (see attached), can be easily made at home.

Fencing

Rabbit-proof fences will aid in protecting small home gardens or other areas of valuable crops. Generally, a two to four-foot high fence of 1-1/2 inch galvanized mesh wire or "chicken wire"



is a sufficient barrier. This type of fence must be thoroughly staked to the ground and the bottom edge buried to a depth of 4-6 inches in order to prevent the rabbits from burrowing or crawling beneath it.

Tree Guards

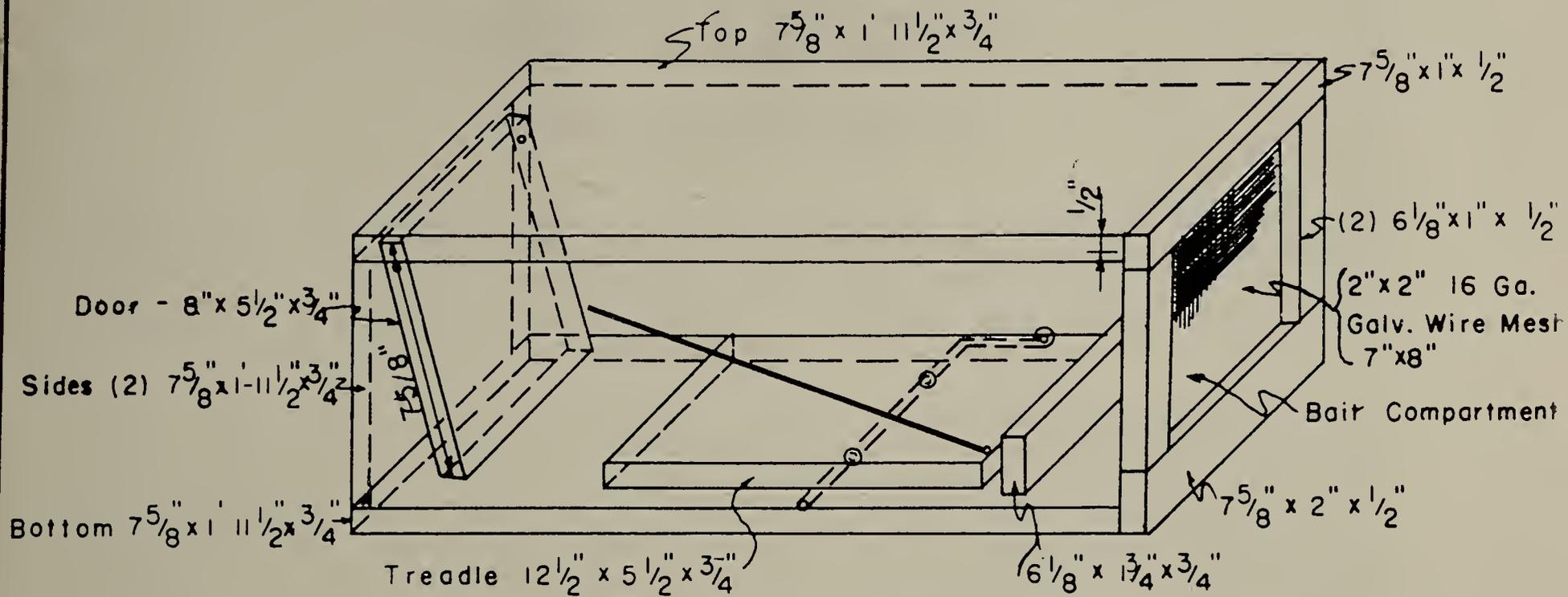
Tree trunk guards are also effective in preventing rabbit damage to trees or shrubs. These guards should be of a material heavy enough to prevent rabbits from chewing through them. Poultry wire of 1-inch mesh, 20 gauge, in strips 12-18 inches wide can be formed into cylinders around trees. These should be braced away from the tree to prevent the rabbits from bending the wire and reaching the tree. Tree guards may also be available from a number of commercial sources; check with your local farm supply store.

Repellents

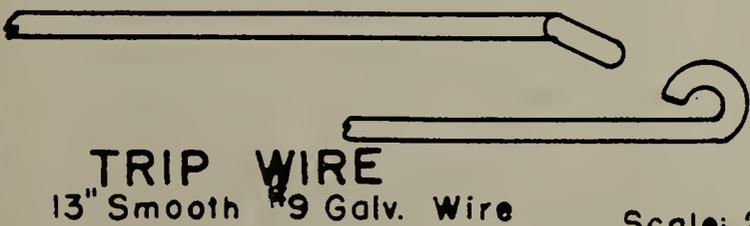
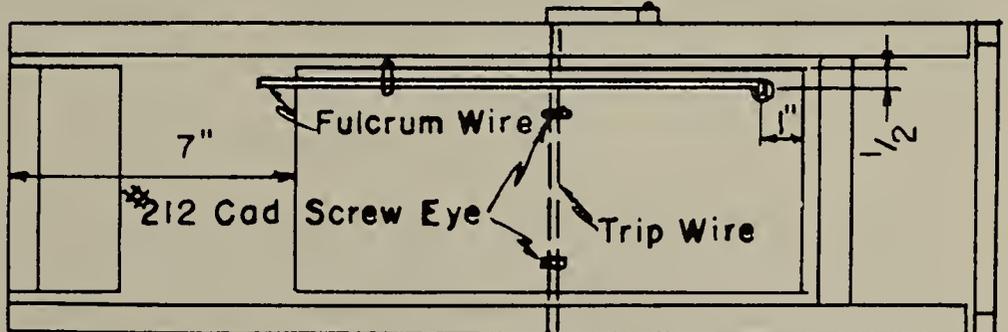
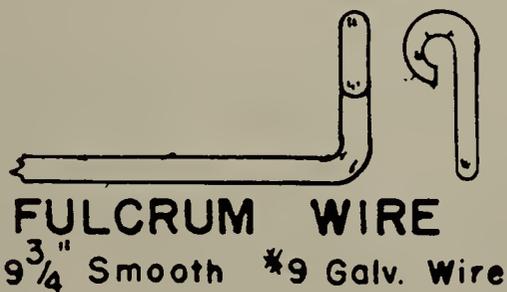
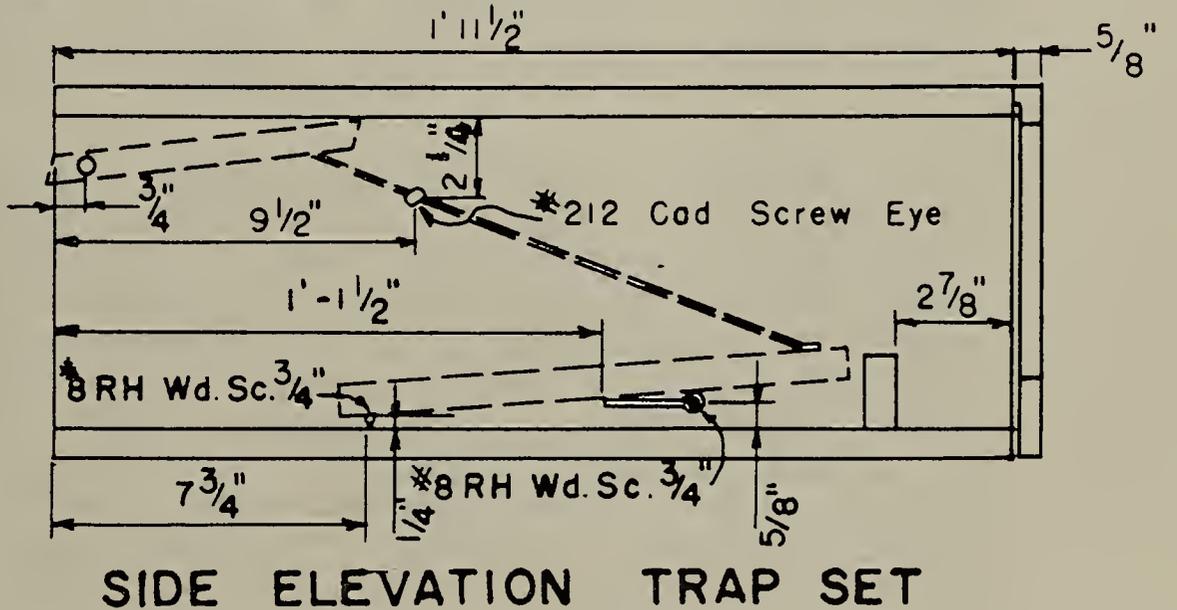
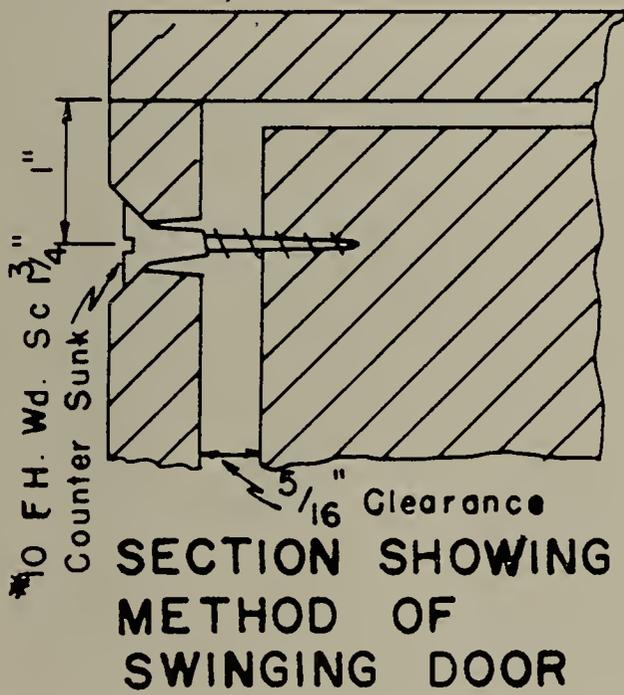
Taste repellents have often been recommended as a method of reducing rabbit damage. Many of these afford only temporary protection and must be applied too often to warrant their regular use. Most are not registered for application to plants which will be harvested for human use. Additional factors which determine the effectiveness of a repellent include: thoroughness of application, weather conditions, and proximity of existing rabbit food and cover. The application must be heavy enough to withstand adverse weather conditions, since rain and snow may dilute the repellent or wash it off. Commercial repellents containing Thiram are effective and can be applied safely to trees and shrubs. However, be sure that use of any repellent is done in accordance with provisions of the Massachusetts Pesticide Act.

Adapted from a leaflet originally prepared by the U.S. Fish and Wildlife Service (1976).

RABBIT BOX TRAP



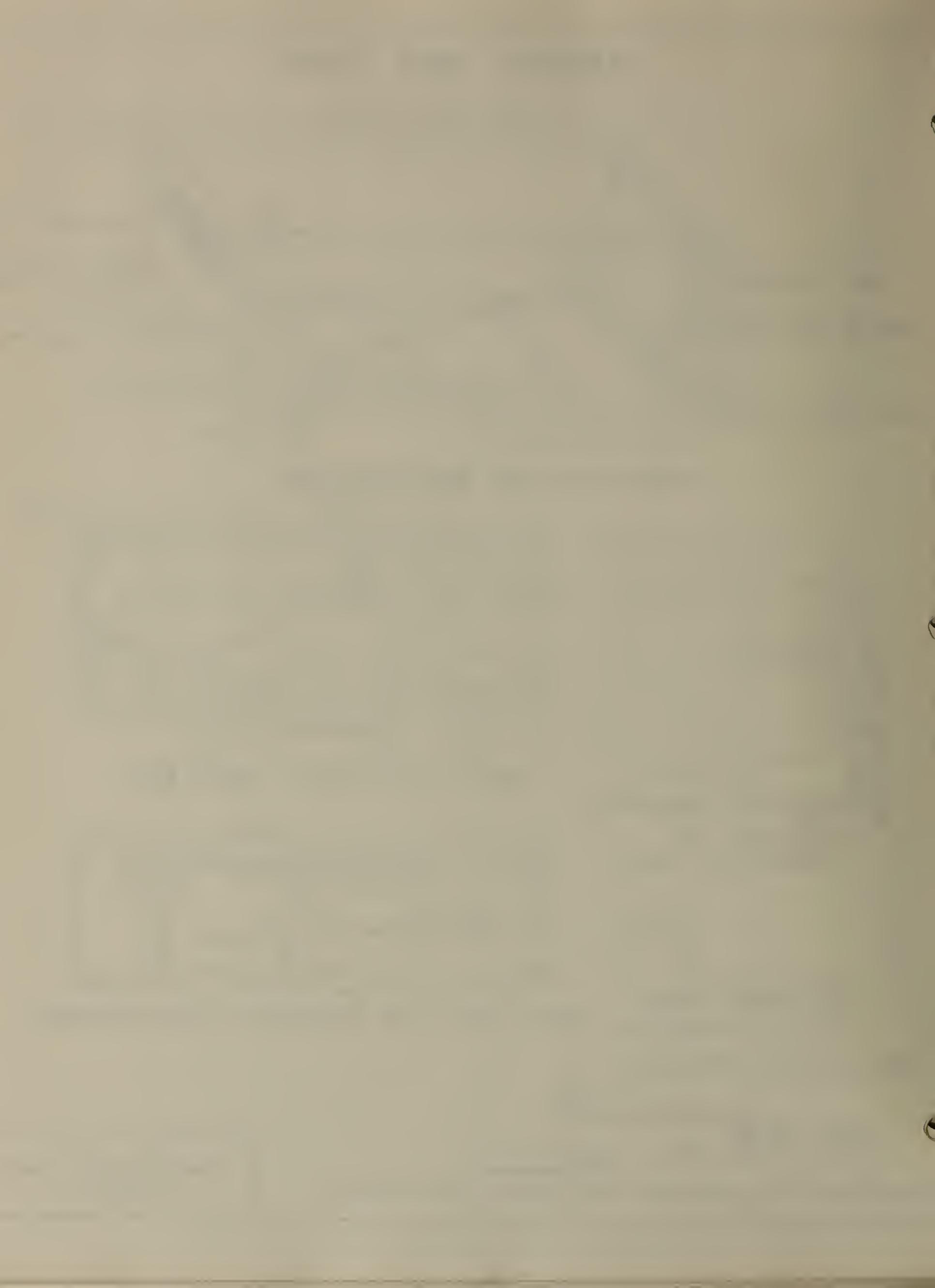
TRAP WITH ONE SIDE REMOVED



Scale: 2" = 1'-0"

Wood - 2 White Pine - Nails - 8d (for front frame) & 6d Cem. Coated Box

TYPE R-4
PENNSYLVANIA GAME
COMMISSION



COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES AND WILDLIFE

CONTROL OF TREE SQUIRRELS

Tree squirrels are found in most of the forested areas of the United States. In the Northeast (including Massachusetts), there are three kinds of tree squirrels-- the gray squirrel, the red squirrel, and the flying squirrel. There are two species of flying squirrel, but they may be hard to tell apart.

The red squirrel is usually found among cone-bearing trees, whereas the gray squirrel is usually found in hardwoods. Flying squirrels are active at night, while the red and gray squirrels are usually active during the early morning and late afternoon. Around human dwellings, gray squirrels may sometimes be active all day. Tree squirrels do not hibernate, although during severe cold or wet weather they remain in their nests for several days. A litter of two to seven young is born in the early spring, with a second litter sometimes arriving in late August. The young remain in the nest at least six weeks before going out on their own.

Tree squirrels are usually beneficial. Gray squirrels are protected by law and may be hunted only during a limited fall hunting season. At the present time, red and flying squirrels are unprotected and may be hunted by licensed hunters year-round. In some instances, tree squirrels may cause damage and it becomes necessary to control them. They may invade attics, destroy growing plants and fruit, dig up newly planted bulbs, and strip bark and leaves from shade trees and shrubs. Utility companies report that squirrels often cause them considerable work and expense when the animals gnaw through cables. Squirrels have also invaded orchards during the late summer and have been known to destroy from 500-600 bushels of fruit in one orchard in a few days. In a few instances, gray squirrels have attacked and bitten pedestrians in public parks, perhaps because they are accustomed to hand-feeding.

Blocking Squirrels from Buildings

Tree squirrels usually enter through openings near the eaves of a building. Check for unscreened attic ventilators, loose louvers, and spaces under eaves where the sheathing does not fit the overhanging roof. Knots that may have fallen out from boards leave holes which may be enlarged by squirrels. These holes should be patched. Openings where telephone and electric cables enter a building may also be used by squirrels, or the squirrels may gnaw the cables themselves. Metal flashing around chimneys may also work loose, leaving an opening for the squirrels. They may also crawl down fireplace chimneys and can enter the house when the damper is not closed securely. Close large openings around water and waste pipes, too. Check the doors and the

windows; if left open and not screened, squirrels may enter that way.

At times, squirrels jump on roof tops from nearby trees. Metal bands about two feet wide, fastened around the trunks at a height of six to eight feet, will usually keep squirrels from climbing isolated trees, but are valueless if squirrels can jump from tree to tree. If possible, prune branches near the house so squirrels cannot jump from the tree to the roof. Colorless paint or wood preservative containing zinc naphthenate may sometimes be used to protect trim or shingles which squirrels are gnawing. However, be sure that the paint is suitable for the surface you apply it to so that it will not stain or damage the original surface.

Protecting Trees

Use of metal bands on trees and removing low-hanging branches so squirrels cannot jump up to the limbs will prevent squirrels from damaging fruit and shade trees, if the trees are far enough apart so that squirrels cannot cross from tree to tree.

Catching Squirrels

Squirrels usually follow regular routes of travel and box or cage traps placed in such areas can prove quite effective. Be sure the trap works easily and closes tightly enough to hold the trapped animal. It should be large enough so that the doors do not close on the squirrels' tail, thus blocking the door from latching. It should be small enough, though, so that you do not catch other animals, such as skunks and cats. Good baits include nut meats, pumpkin or sunflower seeds, peanut butter, rolled oats, and similar items. Place the trap toward the trail or near the base of a den tree or a place where the squirrels are feeding. Check the trap regularly, particularly if the trap is in a sunny area and the squirrels can become overheated.

Conibear Traps: Conibear traps, size #110, or others of similar design, may be used inside buildings in attics or crawl spaces to kill squirrels which are chewing wires or causing damage which cannot be controlled otherwise. Be sure you know how to set these traps and set them only inside where other animals or persons cannot be caught or spring them.

Shooting: If discharge of firearms is permissible in your area, squirrels may be shot with a .22 rifle or a small gauge shotgun. Be sure to comply with state and local laws regarding shooting and the discharge of firearms. Shooting is usually most effective in the early morning and late afternoon.

Adapted from a leaflet originally prepared by the U.S. Fish and Wildlife Service (1976).

COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES AND WILDLIFE

CONTROL OF RATS AND HOUSE MICE

Two species of rats have been introduced to New England from Europe. These include the black rat (Rattus rattus), which was brought over by the first settlers in the 1620's, and the brown or Norway rat (Rattus norvegicus) which was introduced around 1775. The Norway rat has proved more aggressive and has displaced the black rat, which is not now found in Massachusetts.

The common house mouse (Mus musculus) is also an introduced animal, having also been brought in inadvertently by the colonists. It is most common in urban areas and around farms.

The Norway rat and house mouse are considered to be pest species, rather than wildlife, and are not protected by state laws.

Description and Habits

House mice are typically dark gray on the back and ashy gray on the abdomen. Variations occur all the way from black to nearly white. The ears are large and prominent. The tail is small and slender, being about the length of head and body combined. They are quite small, weighing about 3/4 ounce. They may sometimes be confused with immature white-footed mice, which are also dark above and light below.

Rats may vary in color from almost pure gray to reddish brown or nearly black. Partial albinos may also occur. The average length of the adult Norway rat is 16-18 inches, including the tail, which is 7 to 7-1/2 inches in length. Norway rats weigh from 10-17 ounces, although a one-pound rat is unusually large. The average life span of a rat in the wild is only 8 months, however, they can live beyond three years in captivity.

Female house mice may give birth to young during any month of the year, especially in warm and secluded locations. The gestation period is approximately 21 days and from 5-8 litters averaging 5 young each are born during a single year. Juveniles are dependent upon the mother for about 3 weeks and may reach maturity in 2-3 months. Although caged mice may survive for two years or more, it is probable that few wild mice live for more than one year.

Rats breed at three to four months of age and probably continue to breed until death. The gestation period is 21 to 25 days. The young are weaned when three weeks old, often just prior to the birth of another litter. The female comes into heat about every five days and can breed within one day after giving birth. A female averages between 5-7 litters annually consisting of 8-10 young each. However, litters may contain as many as 20 young and as many as 14 litters annually have been recorded. Natural mortality can be high; however, under normal conditions, each pair annually produces 60-70 young which survive to breeding age. While breeding is usually greatest during spring and fall, 20-30 percent of the females in a colony are usually pregnant at any given time.

House mice and rats eat the same foods as man, but, under natural conditions, are primarily seed eaters. Foods high in protein or

sugar content, such as peanut butter, bacon, ground meat, cheese, cookies, and candy are readily consumed. The diet varies in different environments and some animals can live on live insects, starchy clothing, and glue in book bindings. However, when necessary, they will eat and thrive on virtually any edible item.

Rats and mice are color blind. Their depth of vision is limited to about a few feet in rats and 6 inches or so in mice. They can distinguish movement farther away, however. They have a well-developed sense of smell and taste which aids them in avoiding poorly prepared toxic materials. Their hearing is exceptionally good and they seem to recognize higher frequency sounds than do humans. Their facial "whiskers" and body hairs are very sensitive to touch and aid them as they move about in confined spaces. Regular travel routes are marked by dark smudges on the sides of tunnels and runways, due to the animals' rubbing on them. They are often cautious of anything new and the displacement of a familiar object may disturb them for a time.

Rats and mice are good swimmers. They will sometimes swim through sewer lines and enter homes through floor drains. It is not uncommon for them to climb pipes as high as the second story and emerge. A large rat can reach vertically 18 inches and jump three feet with a running start. They have been known to fall four stories without apparent harm. It is possible for young rats to go through a 1/2-inch hole and house mice can pass a 3/8-inch hole.

The front incisor teeth of rats grow continually. They must gnaw in order to wear back the teeth. They can chew through lead pipes, three inches of poorly formed concrete, oak planks, and sun-dried brick.

While rats and mice are primarily burrowing animals, they can climb when necessary. Rats prefer to live in burrows or tunnels in rubble 8-18 inches underground. A long-established colony might have tunnels extending the length of a city block. In light sandy soil, they have been known to burrow down to six feet.

Rats usually start their search for food and water after sunset each day. They apparently feed twice during the night; once shortly after dark and again in the early evening. The average rat needs 3/4 to 1 ounce of dry food and 1-1/2 ounces of water every 24 hours. Without food, they will start to weaken in 3-4 days, but, without water, they weaken in 1-2 days. Mice are not as reliant on water and have been kept in captivity on dehydrated food containing less than 5 percent moisture for periods of up to one year. This difference is a factor in baiting for the two species.

If food and shelter are present, house mice may spend their entire life span within a 25-foot range. Rats generally travel over a wider distance, but their movements are also correlated with the availability of water, food, and shelter. When disturbed by construction or other large-scale displacement, rats have moved as much as four miles in one week.

Economics

Rats and mice transmit over 35 known diseases to man and domestic animals. They also carry several kinds of lice, fleas, and ticks. Disease is spread by their excrement, their parasites, and their bites. Among the human diseases carried by rats are plague, typhus, infectious jaundice, rat-bite fever, salmonellosis, and trichinosis.

The vast economic losses are also significant. During the period April 1959 to March 1960, the U.S. Food and Drug Administration made 370 seizures due to rat and mouse contamination. The total poundage of contaminated food was 7,092,700. Samples of grain taken directly from combines indicate that 5-9 percent of the wheat in some areas contained rodent droppings. The degree of contamination varied from zero to 4500 per kilogram (2.2 lbs.). One pair of rats living in a granary eats approximately 27 pounds of food in 6 months, but contaminates 10 times as much. During this time, the two rats produce 2-4 pounds of droppings and 1-1/2 gallons of urine, and shed one million hairs.

Rats and mice can also start fires by damaging insulation on electric wiring. A survey of 39 cities in the 1960's showed that 530 fires were started by rodents.

Control

The best control of rats and mice is to take away the food and shelter that permits them to survive. Traps, poisons, and other methods are only stop-gaps which can temporarily halt a growing population or which can be used against individual animals which find their way into an otherwise secure dwelling.

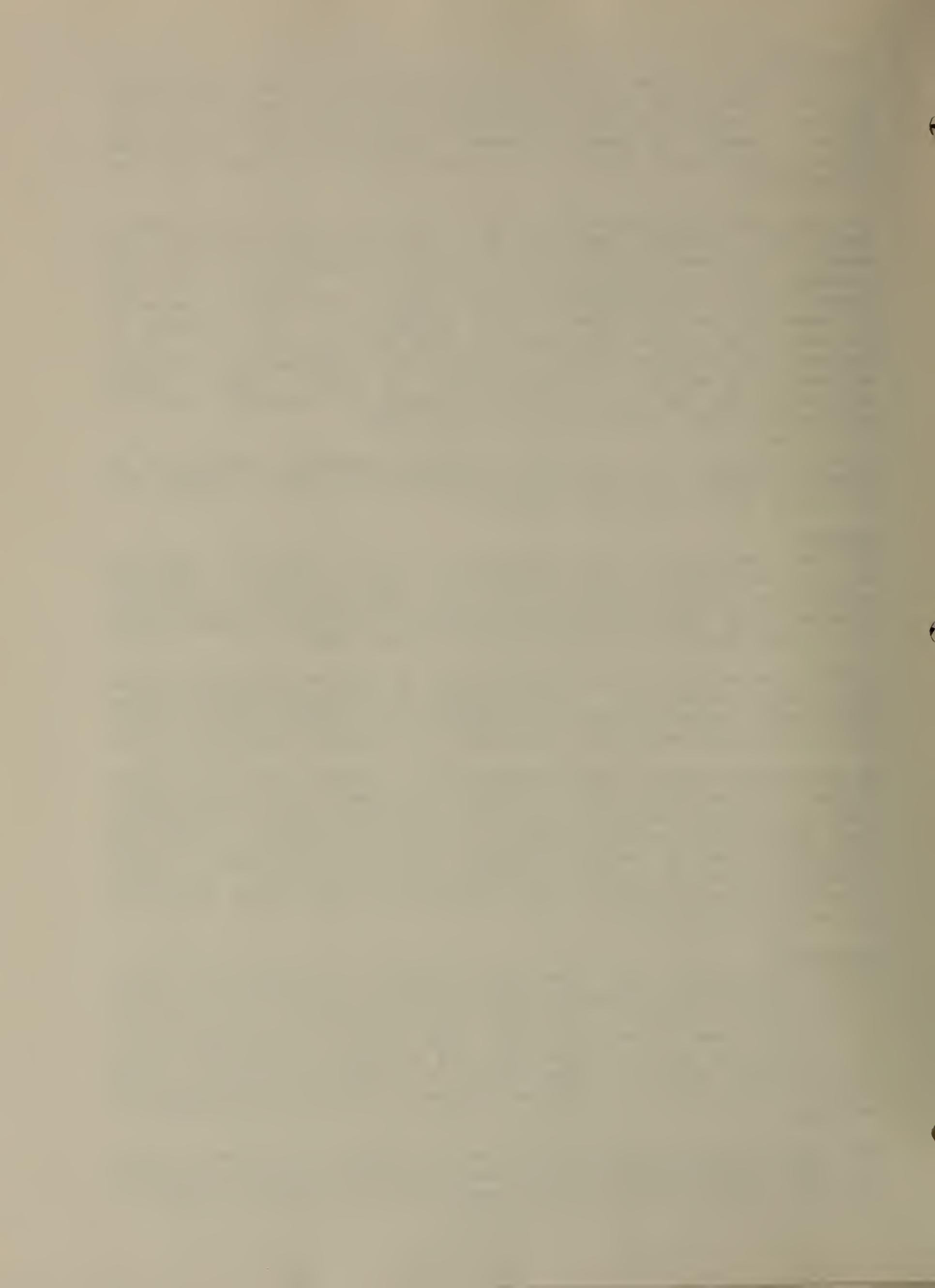
Light infestations of rats and mice can be removed through the use of ordinary snap traps. These should be placed at right angles along walls between objects, or by holes and damaged materials, so that the trigger mechanism intersects the animal's route of travel.

An attractive bait is chunky peanut butter smeared over the trigger surface. Other good baits are cake, doughnuts, bacon, nut meats, cheese, and soft candies. A sprinkle of rolled oats or dry cereal over and around baited traps is sometimes helpful. Trap-shy individuals may be caught by hiding the whole trap under a layer of flour, rolled oats, or similar dry light-weight bait. At times, a wad of cotton attached to the trigger may attract mice searching for nesting materials.

Poisoning

Toxic rodenticides are sometimes helpful in controlling large infestations where trapping is impractical. No one bait or poison is universally effective, and many rats and mice are now resistant to the more common chemicals. For this reason, it is desirable to use poisons as little as possible and to rotate their use. Only those poisons approved under state law should be used and they should be used only by trained personnel having the appropriate permits.

The selection of poisons should be consistent with human safety and that of domestic and wild animals. Anticoagulants (diphacin, fumarin, pival, warfarin, PMP) cause death by internal bleeding.



They are the least hazardous of the rodenticides and are highly effective on an unexposed population, but are slow acting. Small amounts of them must be consumed daily for 5 or more days in order to produce death and several weeks may elapse before complete control is attained. They may be purchased ready-mixed or as a concentrate. For large-scale use, the concentrate is most economical. The basic bait mix consists of 12 parts ground yellow corn meal, 5 parts rolled oats, 1 part vegetable oil, and 1 part granulated sugar, mixed with the anticoagulant according to the manufacturer's instructions. Precautions should be taken to prevent contamination of food and to protect humans and pets from accidental poisoning (see M.G.L. c. 270, s. 3A). Place baits carefully in protected bait stations and promptly pick up and dispose of dead rats and mice.

Adapted from leaflets prepared by the U.S. Fish and Wildlife Service (1977).

COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES AND WILDLIFE

CONTROL OF PORCUPINES

The distinctive characteristic of the porcupine is its quills (up to 30,000 on an adult animal). These quills and the long black hairs make the "porky" appear quite large, although, actually, the heaviest ones weigh only about 25 pounds. The porcupine does not "throw" its quills, but when attacked slaps its adversary with a quick flick of the tail, which imbeds the loosely attached quills in the attacker.

The porcupine is most active at night, usually spending the day asleep in a rock crevice or perched in a tree. It does not hibernate and is active even in sub-zero temperatures and deep snows. Porcupines are usually solitary, but several may group together in a single den during periods of extremely cold weather.

During the summer, porcupines may be found in open meadows, fields, and along the banks of streams and lakes. They eat plants, including garden and truck crops such as corn. In the fall, they may seek fruit in orchards. In the winter, they seek out forested areas and feed largely on foliage of certain evergreens such as white pine, hemlock, and larch (tamarack). The inner bark of a wide variety of forest trees is also a major food item.

Porcupines are usually sparsely distributed and they rarely become overabundant. Their feeding habits are such, however, that they can sometimes cause localized damage. In addition to damaging crops and timber, the porcupine can do considerable damage to structures such as camps and summer homes, which are unoccupied during the winter. The porcupines will chew or gnaw on railings, woodwork, tool handles, and even rubber tires. For these reasons, control is sometimes necessary.

Control Methods

Fencing. In areas where a forest adjoins an agricultural development, there are often continuing problems with porcupines. A wire mesh drift fence sometimes separates forest and field, but this will not stop the porcupine-- which climbs very well. Electric fencing, such as is commonly used to control domestic livestock, can be effective. Mount the hot wire on porcelain insulators some 18 inches or more above the ground on the outer side of the fence so that it is 2 inches out from the fence proper. Maintain this 2-inch distance by frequent use of plastic spacing links between the hot wire and the fence netting. The negative pole of the controller unit is connected with both the fence netting and a steel grounding stake driven into the soil. The top of the fence proper must extend at least 6 inches above

the level of the hot wire. Thus, the total height of the fence can be as low as 24 inches, but the height of nearby vegetation which can touch and short out the hot wire will govern the fence construction.

Shooting. Where permissible, individual porcupines can be controlled by shooting. Shooting is less effective in the summer, due to the animal's solitary behavior, however, they can sometimes be found at the site of damage, such as in corn fields. A sunny warm day is best for shooting. Avoid shooting on windy days as the animals hold close to shelter and are difficult to locate.

Live-Trapping. Porcupines can be easy to live trap, particularly during the winter. Use a cage or box trap with a 10x12 inch opening. It should be placed near the place where the damage is being caused, or at breaks in a fence, in farm furrows, or runways. Traps which are set at the base of an apple or other fruit tree will usually quickly catch a marauding porcupine, but the trap should be checked regularly since the animal will damage the tree if not caught right away. Two or three apples placed at the rear of the trap will serve as bait.

Adapted from a leaflet originally prepared by the U.S. Fish and Wildlife Service (1976).

COMMONWEALTH OF MASSACHUSETTS
DIVISION OF FISHERIES AND WILDLIFE

CONTROL OF ANIMAL ODORS WITH NEUTROLEUM ALPHA

Noxious animal odors may be masked effectively using the deodorant Neutroleum Alpha. Odors arising from penned animals, as in a laboratory or kennel, skunk spray contamination, or a rotting carcass are examples of odor problems controlled by Neutroleum Alpha.

Neutroleum Alpha is available in concentrated or water soluble form. The water soluble form is cheaper and more flexible in use than the concentrate. The water soluble form can be diluted for use as an area spray or used as is by saturating materials such as cotton or lamp wick. For an area spray, add two ounces of Neutroleum Alpha to one gallon of warm water.

Space or area sprays should be used in a room or small building where the odor-causing substances are widespread or bulky. An area contaminated with skunk spray or where highly odoriferous material has been spilled would be likely places for spray application. The entire area or odor-causing mass should be covered thoroughly with the spray. Generally, one application is sufficient. Sometimes, due to the depth of the odor-causing material, a second application is needed. The interval between applications is usually fourteen days.

Saturated cotton balls or lamp wick may be employed where the source of the odor is localized. The saturated materials should be suspended in or near the contaminated area so that air circulation can move the volatile deodorant throughout the area. The saturated materials can be suspended by string behind doors, from door knobs, behind curtains, from curtain rods, from pipes, or from strategically placed thumb tacks. The saturated materials are effective for about three weeks.

The source of odors is sometimes difficult to locate, especially when small animals die in walls and other out-of-the-way places. Lack of knowledge of air circulation in the area contributes to the difficulty. The smoke of a burning cigarette or punk will show the air circulation in the affected areas. The vicinity of electrical wall outlets and radiator pipes should be checked carefully as these areas usually have a continuous air current. Gases from decomposing animal carcasses are heavier than air and settle into the lower levels in a structure. It is in these areas that the greatest number of saturated materials should be placed.

The normal number of placements of saturated materials in an average room in a house is four. The number should be doubled in the basement beneath the same-sized room.

Neutroleum Alpha may be obtained from Fritzsche Brothers, Inc., Port Authority Building, 76 Ninth Avenue, New York, N.Y. Inquiries concerning current prices should be directed to the company. This deodorant may also be purchased from hospital supply houses or pest control operators.

Obnoxious odors may also be masked using NI-712, a commercial citrus odor eliminator available as an aerosol spray. This substance is available from Neutron Industries, Inc., 7107 N. Black Canyon Hwy., Phoenix, AZ 85021.

The above is for the information of correspondents. The inclusion of company or trade names does not imply endorsement by the Commonwealth or the Federal government.

Adapted from a leaflet originally prepared by the U.S. Fish and Wildlife Service (1969).

A Homeowner's Guide To Massachusetts Bats & Bat Problems





A Homeowner's Guide To Massachusetts Bats & Bat Problems



by

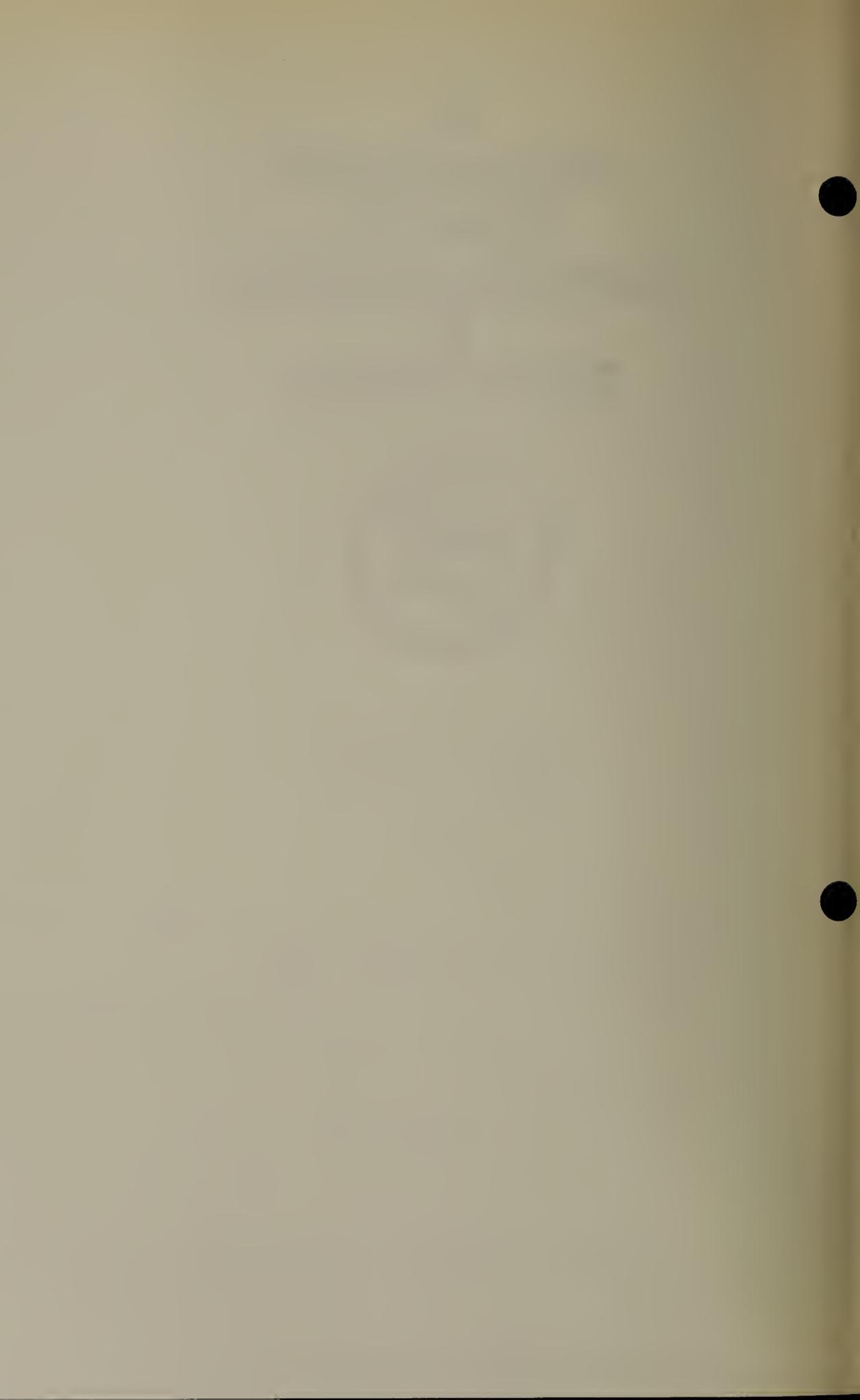
Thomas W. French (1)
James E. Cardoza (2)
Gwilym S. Jones (3)

1986

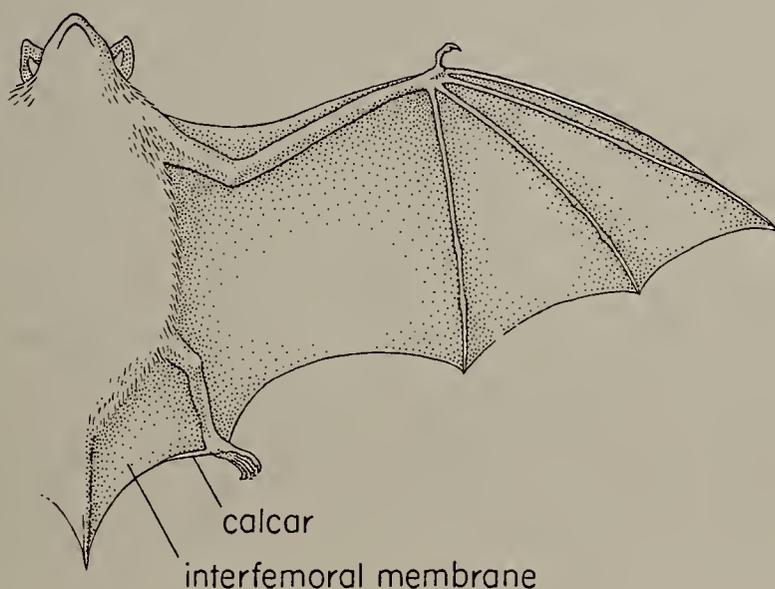
- (1) Nongame and Endangered Species Program, MDFW,
100 Cambridge Street, Boston 02202
- (2) MDFW, Field Headquarters, Rt. 135, Westboro 01581
- (3) Department of Biology, Northeastern University,
Boston 02115

Illustrations by Laszlo Meszoly

Publication of this Document Approved by State Purchasing Agent



Some people believe that bats are flying mice. In fact, bats form a separate and distinguishable group -- one which is more closely related to shrews and moles and even to monkeys than to rodents. Bats can easily be identified by their wings. Each wing is composed of skin stretched between four elongated fingers (Fig. 1). A similar membrane, in many bats, called the interfemoral membrane, is situated between the hind limbs and tail.



The anatomy of a bat showing the four elongated fingers in the wing, the interfemoral membrane and the calcar.

Figure 1

Distribution & Diversity: Bats occur worldwide, except in the Arctic and Antarctic, and are second only to rodents in number of species. However, of the approximately 850 species of bats in the world, only 39 occur in the United States and, of those, only nine occur in Massachusetts.

Natural History: All species of bats in Massachusetts are insect eating bats in the family Vespertilionidae. All are active at night and occasionally at dawn and dusk. They locate their insect prey by means of a "sonar-like" echolocation system. This ability permits them to capture tiny insects in the dark and to avoid flying into objects. During the winter, bats either hibernate or migrate to warmer regions farther south.

Beneficial Aspect: Bats are of immense benefit to humankind in that they consume great quantities of noxious insects such as mosquitoes. Dr. Merlin Tuttle of Bat Conservation International reports that the gray bat, which is closely related to several species in Massachusetts, consumes as many as 3,000 small insects in a night. In the Boston area, Dr. Thomas Kunz of Boston University estimates that 14 to 15 tons of insects are consumed each summer by the 50,000 big brown bats that live within the bounds of Route 128.

House Bats: During the warmer months, almost every bat found in buildings in the Commonwealth is either a little brown bat or a big brown bat. Occasionally, the northern long-eared bat and small-footed bat may enter buildings, and only very rarely does the eastern pipistrelle do so. During the winter, the big brown bat is the only bat that normally inhabits buildings.



Examples of an unkeeled (left) and keeled (right) calcar on the feet of two bats. This character is often used to identify a bat.

Figure 2

MASSACHUSETTS SPECIES

Table 1. Species of bats that occur in Massachusetts with their habitats, distributions and status of the uncommon species noted.

<u>COMMON NAME</u>	<u>SPECIES</u>	<u>DISTRIBUTION IN MASS.</u>	<u>SUMMER</u>	<u>HABITAT</u>	<u>WINTER</u>	<u>NOTES</u>
Big brown bat	<u>Eptesicus fuscus</u>	statewide	buildings, trees	buildings, trees	buildings, caves mines	-----
Little brown bat	<u>Myotis lucifugus</u>	statewide	buildings	buildings	caves, mines	-----
Northern long-eared bat	<u>Myotis septentrionalis</u>	probably statewide	trees, building exteriors, only occasionally inside buildings	trees, building exteriors, only occasionally inside buildings	caves, mines	-----
Indiana bat	<u>Myotis sodalis</u>	last recorded: 1939. Berkshire, Hampden & Worcester Counties	caves, mines, hollow trees, beneath tree bark	caves, mines, hollow trees, beneath tree bark	caves, mines	ENDANGERED (Federal & State)
Small-footed bat	<u>Myotis leibii</u>	known only from Hampden County	beneath tree bark & the like; only occasionally in buildings	beneath tree bark & the like; only occasionally in buildings	caves, mines	SPECIAL CONCERN
Eastern pipistrelle	<u>Pipistrellus subflavus</u>	statewide	trees, rarely in buildings	trees, rarely in buildings	caves, mines, rock crevices	-----
Silver-haired bat	<u>Lasionycteris noctivagans</u>	probably statewide	trees	trees	buildings, trees, rock crevices (migratory)	-----
Red bat	<u>Lasiurus borealis</u>	statewide	tree foliage	tree foliage	migratory	-----
Hoary bat	<u>Lasiurus cinereus</u>	statewide	tree foliage	tree foliage	migratory	-----

KEY TO THE BATS OF MASSACHUSETTS

A key is the most effective tool for identifying a plant or an animal, in this case a bat. If you have never used taxonomic keys, be assured that they are easy to use. Each number offers you a choice. Begin with Number 1, if a bat does not fit the description for 1a, then it will fit the description for 1b. If, for instance, it matches 1b, follow the directions which state to go directly to 4a. Then continue determining which description fits, 4a or 4b, etc., until you discover the species name of your particular bat.

- 1a. Upper surface of interfemoral membrane (Fig. 1) either completely or half covered with hair; tips of many body hairs white, causing frosted appearance. go to 2a
- 1b. Upper surface of interfemoral membrane without hair; tips of body hairs without white tips. go to 4a
- 2a. Except for white tips, hair (i.e., pelage) rusty colored. RED BAT
- 2b. Except for white tips, hair dark brown or black. go to 3a
- 3a. Interfemoral membrane completely covered with hair; forearm 1 3/4 to 2 1/4 inches long. HOARY BAT
- 3b. Only 1/2 of interfemoral membrane (nearest the body) covered with hair; forearm 1 1/2 to 1 3/4 inches long. SILVER-HAIRED BAT
- 4a. Hairs on back tricolored - dark at base and tip but lighter in the middle. EASTERN PIPISTRELLE
- 4b. Hairs on back bicolored - dark at base and light at tip. go to 5a
- 5a. Forearm greater than 1 3/4 inches long. BIG BROWN BAT
- 5b. Forearm less than 1 3/4 inches long. go to 6a
- 6a. Face with black mask; ears black; forearm less than 1 3/8 inches long. SMALL-FOOTED BAT
- 6b. Face with no black mask; ears not black; forearm longer than 1 3/8 inches long. go to 7a
- 7a. Ears very long, when laid forward extend 1/16 inch (= 4mm) beyond nose. NORTHERN LONG-EARED BAT
- 7b. Ears relatively short, when laid forward do not extend beyond nose or as much as 1/16 inch. go to 8a
- 8a. Hair glossy; calcar (Fig. 2) not keeled. LITTLE BROWN BAT
- 8b. Hair dull; calcar keeled. INDIANA BAT

Bats in the Home

The presence of any wild animal in the home should be a warning that the house is not weather-tight. Finding the source where bats enter the house may be as simple as locating an open chimney flue or cellar hatch but often it needs the attention of a carpenter.

How to Evict a Bat: The discovery of a bat flying through the house can bring anything from excitement to hysteria to a family. Fortunately, a single bat usually can be dealt with quite easily. The best action is to put away that broom or tennis racket and open a window or door to let the bat fly out. If possible, close off the room containing the bat and open a window in that room. A flying bat will usually circle the room several times, using its "sonar" until it locates the open window and flies out. If possible, stay in the room with the lights on and watch to be sure the bat leaves. It will not become tangled in your hair or attack, but it may flutter by you close enough for you to feel the light breeze from its wingtips. For many people, leaving the bat alone to find its way out may be the preferred plan. In either case, it should be a matter of a few minutes before the bat leaves the house.

A bat that flies into a room and then disappears has probably landed behind the curtain or in some nook or cranny. In this case, open the window, turn out the lights, close the door and block the space under the door with towels. If it is nighttime, the bat will probably find its way out through the window within an hour after dark. As long as the weather outside is not too cold, this method should do the trick.

A bat that has landed can be assisted out of a house in several ways. If it has landed on a curtain, place a jar or coffee can over the bat and carefully work the bat into the container. Then quickly place the lid on the container. A bat on the floor can be covered with a towel and picked up in this manner. No species of bat that occurs in Massachusetts can bite through a thick towel! Another method is to use leather gloves and simply pick up the bat. Do not use thin

cotton gloves and never pick up a bat with a bare hand. Whatever method used, the bat will open its mouth and squeak loudly when touched. Don't worry, you are probably 5,000 times heavier than the bat! After you have captured the bat, take it outdoors and release it. Do not call the local police or fire departments; they have more important duties to perform. Have a neighbor assist if you need moral support.

A Colony in the House

The attic is the most common portion of a house in which bats accumulate in colonies. In the summer, little brown bats and big brown bats commonly use buildings to raise their young. The heat of an attic keeps the babies warm and allows them to grow and develop more rapidly. In late summer, an attic may become too hot for the bats, forcing them into the living quarters as they search for cooler places to roost. On hot summer days, they may be found near the attic door trying to escape the heat. At such times you might also see them flying around the yard in the daylight. Late summer is also the time of year when young bats are learning to fly. You might find these inexperienced young when they fall down a chimney, come down the attic stairway, fly through an open window or land on the ground.

Little brown bats travel great distances to caves and mines in which they spend the winter. One Massachusetts mine contains about 3,500 bats each winter and one in New York about 40,000. Bats come from all over the Northeast to use these sites. The big brown bat, however, often stays in houses to spend the winter in small colonies.

How to Know When There is a Bat Colony in the House: The most obvious sign that a bat colony resides in your home is when you observe bats flying in and out of a hole in the house. If they become a nuisance,

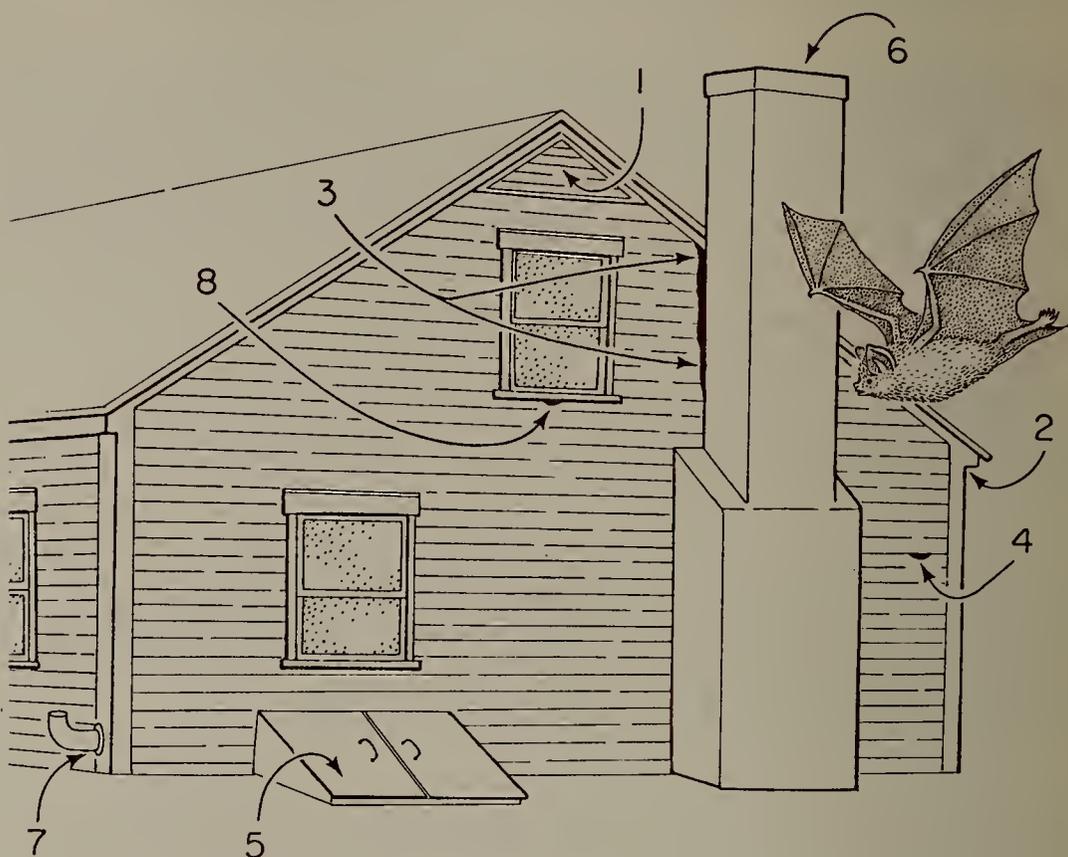
discovering the entranceway(s) to the colony is the most important step in solving the problem. (See Fig. 3)

Time of Year to Remove a Bat Colony: With few exceptions, attempts to evict a colony of bats from a building should be made only during the early spring, during the month of May, or late summer, from the first of August to mid-October. The only good long-term solution is to bat-proof the building by blocking all possible entrances when all bats are out. Poisons or repellents should not be used because they increase the chances of bats coming in contact with children and pets and do not solve the basic problem; holes in the house. Even if the original bats are killed, others will follow if the basic problem is not resolved.

In spring and fall you can temporarily block roost entrances after the dusk emergence, opening the holes for an hour at dusk for one or two subsequent evenings to let any trapped bats out. The installation of one-way doors over the entrances is the best method.

At times other than early spring and late summer, it is unlikely that all of the bats will be away from the colony at the same time. In the late fall and winter (mid-October through April), some or all of the bats in the colony will be dormant because they hibernate through the cold months. During the summer, the colony may contain a large number of baby bats that are too young to fly and are left alone in the colony while their mothers are out feeding. If the entrances to the colony are blocked while bats are inside, they will eventually die and create an offensive odor in the house. Otherwise, they will search for ways out of the house and may end up in the living quarters.

The following are potential entranceways for bats entering a home:



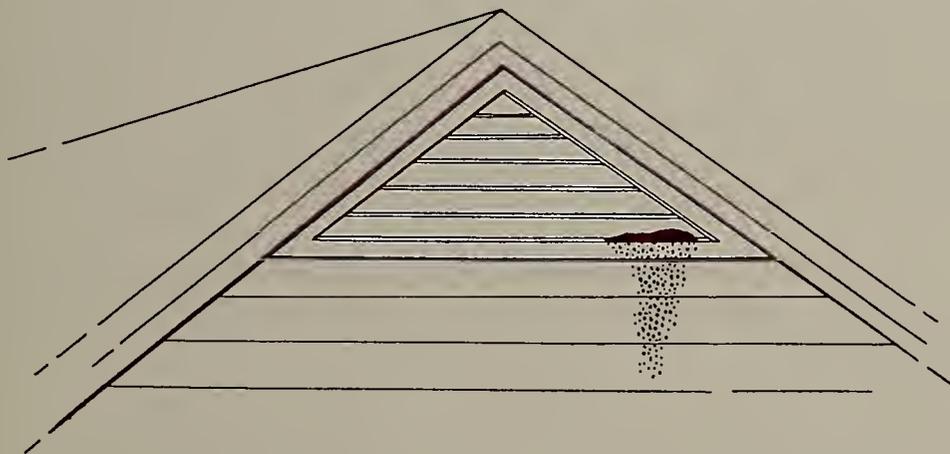
- (1) an unscreened attic vent
- (2) a hole or crack under a rotted eave
- (3) a crack or separation where the chimney meets the house
- (4) loose or warped siding
- (5) an open cellar hatch
- (6) chimney
- (7) openings where pipes or wiring meet the house
- (8) rotted window sills or a loose fitting screen

The most common avenues of bat entry into a house are through an unscreened attic vent, a hole or crack under a rotted eave, a crack or separation where the chimney meets the house, loose or warped siding, an open cellar hatch, a chimney, openings where pipes or wiring meet the house, and rotted window sills or a loose fitting screen.

Figure 3

Other Signs that Bats are Present Include:

- (1) a single bat found in the living quarters on more than just one occasion
- (2) squeaking and rustling noises, particularly at dusk or on hot summer days, in the ceiling or walls. This may also come from mice or flying squirrels.
- (3) a hole in the eaves with a dirty stain below it (Fig.4). As bats enter and leave a colony, they often urinate, causing a stain on the wall. Their droppings may also be splattered on the siding below the entrance hole.



A typical bat colony entrance can often be recognized by a stain below it.

Figure 4

- (4) a stain forming on the ceiling of older houses accompanied by an offensive odor. This happens only in the larger colonies and when there is no insulation protecting the attic floor. The problem is caused by a build-up of guano (dung) and urine under the roosting bats.
- (5) droppings (feces or guano) on the steps, sidewalk or patio beneath the exit hole. Guano is often pushed out of crevices and other openings where bats exit each evening.

Only if the colony is known to be little brown bats should you attempt to seal up the entrances during the winter (November through March).

Colonies in Massachusetts homes are usually either big brown bats or the species of bat is unknown. Very seldom does the homeowner know that the colony is a little brown bat colony; it is important, therefore, to follow the guidelines for removing bat colonies only in the early spring and late summer.

How to Get Rid of a Bat Colony: The most important step in removing a bat colony is to discover where the bats are entering and exiting. There may be one or several such holes in a house. Since most bats leave their roost about 15 minutes after sunset, you should watch the outside of your house between 30 minutes before and 30 minutes after sunset. Silhouette flying bats against an open view of the sky if possible. Bats may be difficult to see if the area around the house is dense with foliage. In addition, look for stains near holes, but be aware that not all entrance holes are stained.

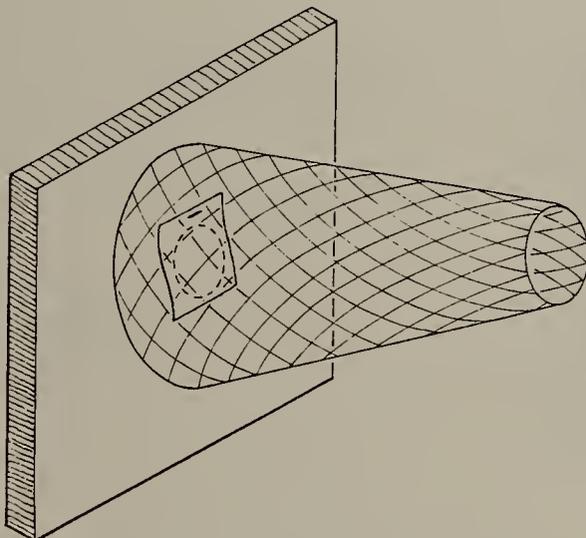
Once you have located all of the entrances, close each one except the primary entrance, using a good sealing material such as any of the following: caulking, screening, polyurethane foam, fiberglass insulation, polypropylene rope, and flashing. Next, you should install a one-way door over the remaining hole so that bats are permitted to exit the house only. Many effective designs can be used but for a few good examples refer to Figures 5 to 7. For the next three or four nights, watch the bats as they leave. If the door is functioning properly, there should be no bats coming out by the third or fourth night. When you no longer see bats exiting the house, seal up the last hole. If you have sealed all of the holes, you will have no further problems.

If you discover that the bats are using another entrance of which you were not aware, move the one-way door to that entrance and repeat the process described above. Such entrances can be quite small - a little brown bat can squeeze through a hole $\frac{5}{8}$ inches x $\frac{7}{8}$ inches and a big brown bat can squeeze through a hole $1\frac{1}{4}$ inches x $\frac{1}{2}$ inches. During the first few days, returning bats that cannot get

back into the attic may roost in the open under the eaves or on the side of the house, but they will soon abandon the area.

Designs for One-Way Doors: Many designs for one-way bat excluders have been designed and tested and many new designs could certainly be devised with a little imagination.

The "EX-100 Hanks Bat Excluder" (Fig. 5) consists of a square wooden base plate that is large enough to cover the bat colony entrance. A small round hole is cut through the base plate through which the bats can exit the colony, and a flexible piece of plastic or other material is stapled over the hole. When bats pass out through the hole, they push

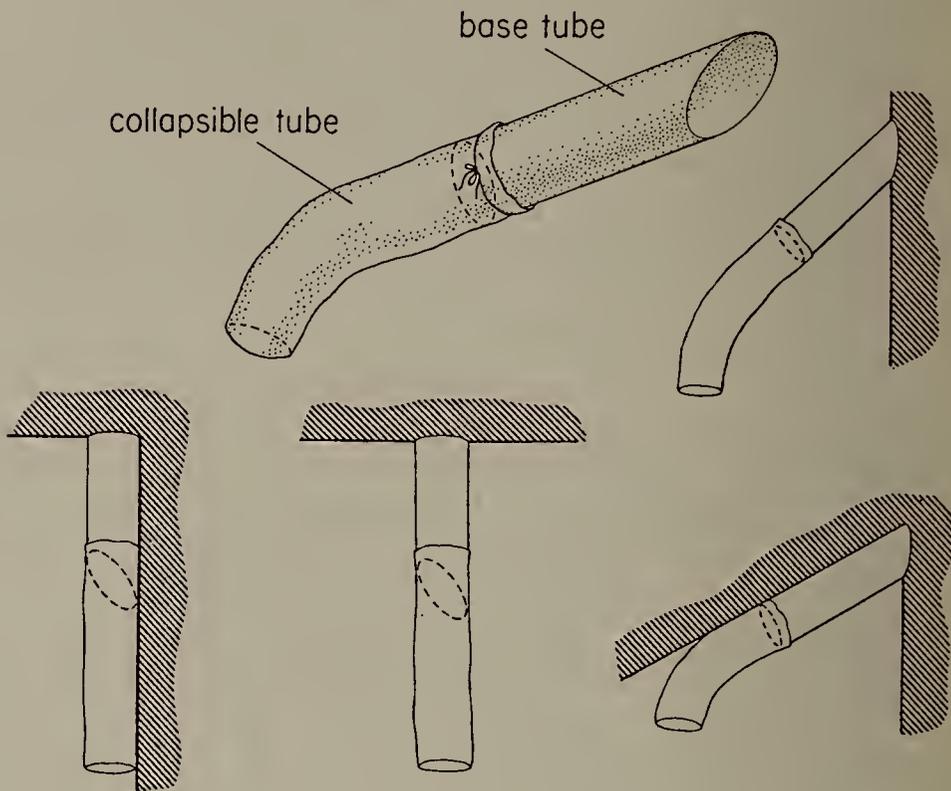


Design of the "Ex-100 Hanks Bat Excluder."

Figure 5

past the plastic flap and then the flap closes shut behind them. A wire mesh cone is attached to the base plate so that bats can pass out of the narrow end of the cone but are not easily able to re-enter this small hole when they approach in flight.

Constantine's bat proofing device (Fig. 6) is made from a tube of plastic, metal, rubber or some other smooth material. One end is cut at a 45 degree angle and the other is cut straight across so that a bat colony entrance on any surface of the house can be covered. One end of

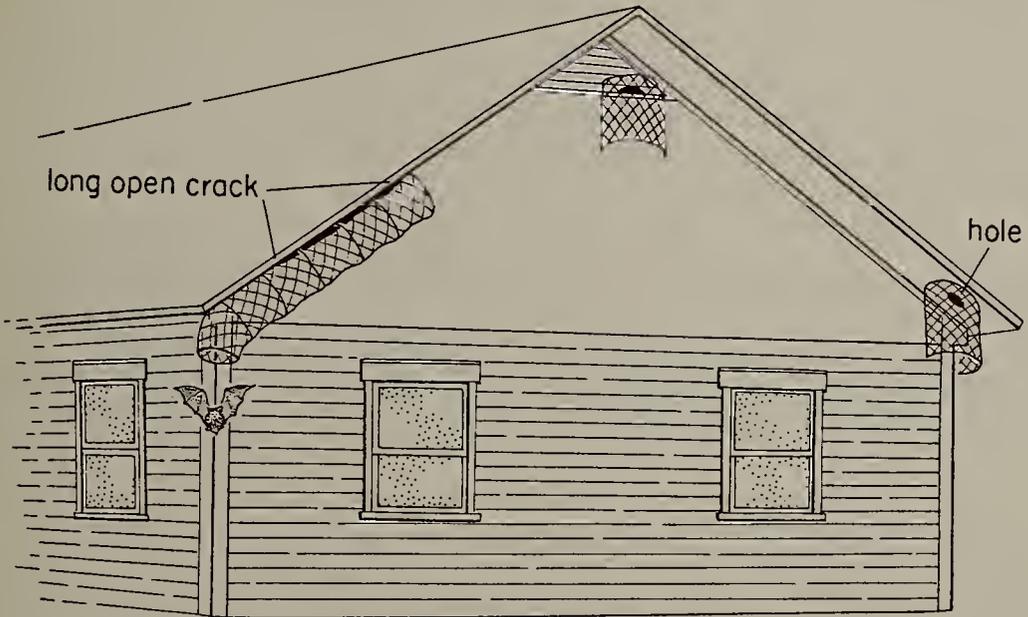


Design of Constantine's bat-proofing device and various ways it can be attached to a bat colony entrance. This can easily be constructed by attaching a piece of cloth to the end of a cardboard tube.

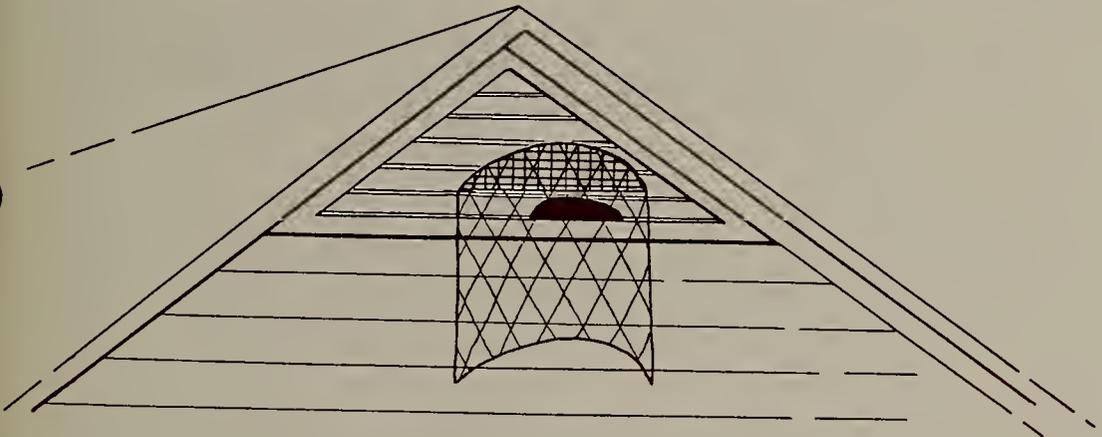
Figure 6

the tube is taped to the house so that it covers the colony entrance; an open-ended plastic bag, or a similar material is tied to the other end. This collapsible tube allows a bat to escape easily but the exit hole collapses shut behind the bat so that it cannot re-enter.

Another form of one-way door can be made by simply caging in the bat colony entrance with wire screen (Fig. 7).



The caging must be completely enclosed on the top and sides but the bottom is open two feet below the colony entrance. (See picture below).



Several designs and applications of open-bottomed wire mesh bat excluders.

Figure 7

As bats exit they can drop out the bottom but they cannot fly through the screen. The open bottom of the cage is too far below the entrance for most bats to try to re-enter through the bottom and if they try, the cage is too narrow and long for them to fly all the way to the entrance. They could land on the side of the house and climb back to the entrance but they seldom try this tactic. This type of one-way door can be used for a small entrance hole or it can be adapted to cover a long open crack under the eaves or along a chimney.

Preventive Maintenance: Working to keep your house weather-tight and energy-efficient is the best way to prevent bat problems. Cracks, separations, rotted eaves, rusted ventilation screens and other openings should be repaired as soon as they are noticed.

Chimneys are another common avenue of entrance. Bats and many other animals, including flying squirrels, gray squirrels, starlings, screech owls, wood ducks and raccoons frequently enter houses through the chimney. This can be prevented by covering the chimney top with a spark arrester consisting of a $\frac{1}{4}$ inch mesh.

SUMMARY

- (1) If you strive for an energy-efficient home using insulation in the attic and caulking all cracks and holes, your house will probably be both energy-efficient and bat-proof.
- (2) If a bat colony causes a nuisance in your home, discovering the entranceway(s) is the most important step in solving the problem.
- (3) Bat colonies should be removed from buildings only in the spring (May) and late summer (first of August to mid-October) when all individuals can be removed.

- (4) The best method for removing a colony from a building is to seal all but the main entrance hole, place a one-way door over the main hole for several days so that bats can leave but not re-enter, then seal the last hole.
- (5) Poisons and repellents should not be used because they do not provide a long-term solution, they greatly increase the chances of bats coming into contact with children and pets, and they may be harmful to humans.

OTHER ALTERNATIVES

Repellents and Poisons: Although a number of methods for repelling bats have been devised, this approach is only a temporary solution at best and should not be done when bats are dormant or have young.

An application of naphthalene crystals or flakes on the attic floor or between the walls has been recommended. As long as a strong odor remains, bats may not return but the effects will not last for long. Inhalation of the fumes should be avoided at all times. This technique is generally not considered effective.

Thoroughly lighting the attic may reduce the size of a colony. This method may also cause bats to move deeper into the house as they avoid the light. They are then more likely to enter the living quarters and come into contact with people.

The use of poisons never should be considered. Poisons greatly increase risks to human health. They tend to cause the bats to disperse widely and significantly increase the chances of grounded bats being picked up by children and pets. Thus, the risks of someone being bitten are greatly increased, instead of decreased. It has also been suggested that physiological stress could activate latent rabies virus and sublethal doses of poisons may increase the local incidence of rabid bats.

The trade name product "ROZOL" is the only pesticide registered in Massachusetts for use in bat control. This

product is an anticoagulant and is a "Restricted Use Pesticide." Its sale is limited to persons licensed for vertebrate pest control. It is also a "State Limited Use Pesticide", which means that a permit from the State Pesticide Bureau must be issued prior to each use. In general, permits are issued only as a method of last resort and will not be issued for use at sites treated in previous years. ROZOL dust is generally ineffective as it settles to the lowest places, while bats hang from the highest. It is also extremely hazardous to humans who may contact it, even years after it is used.

Disease and Public Safety: Two diseases are usually associated with bats: rabies and histoplasmosis. In Massachusetts, the first rabid bat was not documented until 1961. Between 1961 and April 1986, a total of 196 bats have been found to be rabid by the Massachusetts Department of Public Health. The frequency of rabies in wild bats has been variously estimated from 0.1 to 0.5. This means that from one bat in 1,000 to one in 500 might be expected to have rabies. If we consider only bats that are found on the ground, and thus more likely to be sick, the percentage of diseased bats is slightly higher.

Throughout the United States and Canada, bats are known to have transmitted rabies to humans on only ten occasions; the last record was in 1984. None of these cases occurred in New England. Rabid bats are far less dangerous than generally assumed, since they rarely become aggressive. Bites normally result from careless handling. If you simply leave bats alone, there is little to fear.

Since the rabies virus is transmitted almost exclusively by bites, no bat should be handled without gloves or other protection, and one should always take care not to be bitten. If you or someone else is ever bitten by a bat, make sure that the bat is captured and submitted for examination to the Massachusetts Public Health Department in Jamaica Plain, Massachusetts.

Histoplasmosis is a fungus associated with the droppings of bats and birds. If dust containing the fungal spores is stirred up and inhaled, a lung infection may result. Symptoms of histoplasmosis include fever, congestion, and spots on the lungs that show up on x-rays. Mild cases of the disease are common and often even go unnoticed. The

disease is rarely fatal. To guard against the disease, never sweep guano from an attic floor or stir up guano dust by other activities unless an adequate protective mask is worn.

Bat Conservation

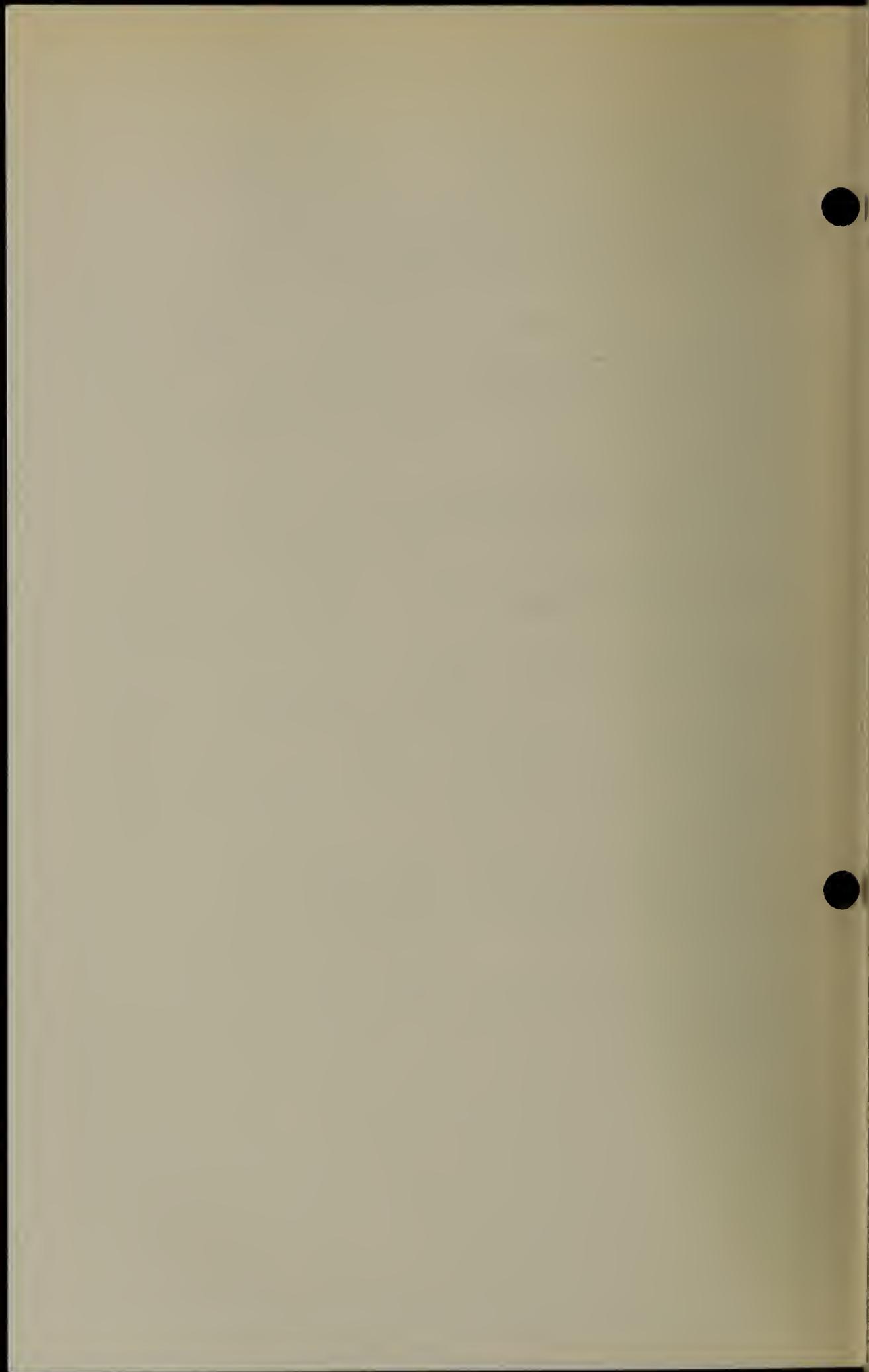
"Bat boxes" or roofed shelters can be useful in providing secure roosting sites for bats that are displaced from dwellings. Boxes can be constructed of rough pine, about 5 x 7 x 12 inches, with a 3/4 inch entry slit. Exact construction plans may be obtained from the Massachusetts Division of Fisheries and Wildlife, Field Headquarters, Westboro, MA 01581. Boxes should be placed in areas where flying insects are abundant, usually near wet areas. They should be 12-15 feet above the ground to discourage vandalism, and should be sheltered from the noonday sun and from direct winds.

Bats are protected by law in Massachusetts and may not be killed or captured except under permit or when otherwise authorized by law.

For assistance in identifying a captured bat in Massachusetts, you may wish to take or send the animal to one of the authorities listed below:

Dr. David Klingener
Dept. of Zoology
Morrill Hall
Univ. of Mass.
Amherst, MA 01002

Dr. Thomas H. Kunz
Dept. of Biology
Boston Univ.
Two Cummington St.
Boston, MA 02215

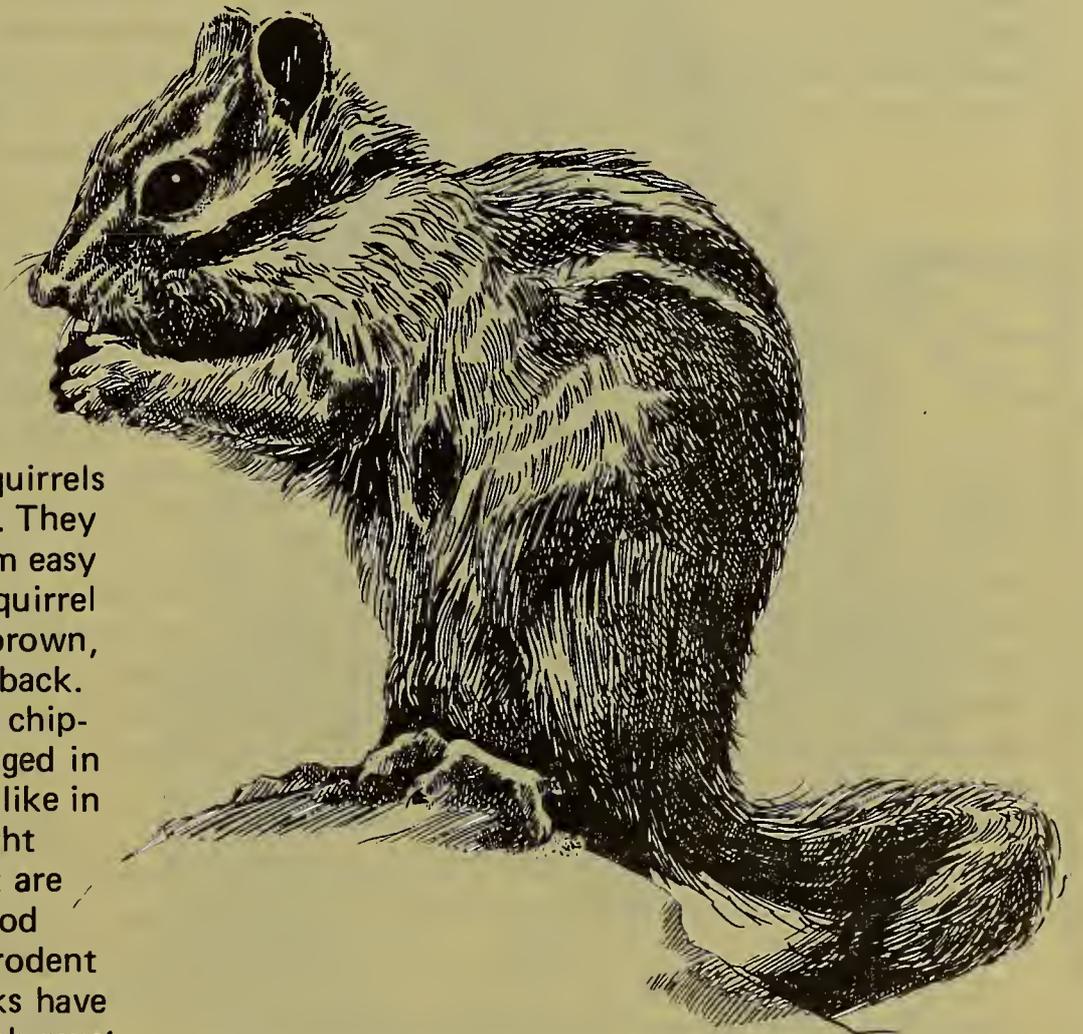


University of Massachusetts,
United States Department of Agriculture and County Extension Services cooperating



Wildlife in Massachusetts

Chipmunk



Chipmunks are small ground-dwelling squirrels common in forested areas of Massachusetts. They have characteristic markings that make them easy to distinguish from other members of the squirrel family. Their coat is rusty-red to chestnut-brown, and has five dark-brown stripes lining the back. Their tail, which is about one-third of the chipmunk's total length, is flat, hairy, and fringed in white or gray. Both males and females are alike in color, size (8-1/2 to 9-1/2 inches), and weight (2-1/2 to 4 ounces). Their short front feet are specially designed for holding and eating food while sitting up. Like all members of the rodent family (squirrels, beavers, mice), chipmunks have chisel-shaped, ever-growing front teeth which must be controlled by gnawing.

Habitat and Behavior

Chipmunks prefer hardwood forests having a thick ground vegetation interspersed with old logs or stone walls. In open areas with little or no ground cover, they are most often found living in the cracks and crevices of stone walls or ground burrows. These energetic and resourceful animals are often seen in parks, lawns, and around gardens.

Chipmunks may seem to be more common than other members of the order *Rodentia* because they are active during the daytime. They seem however, to be most active in the cooler hours of morning and afternoon. When temperatures are too high or low, or the weather is stormy, they will not venture from cover.

When not busy with food gathering or territorial defense, chipmunks sleep in their underground burrows. Burrow entrances are neat, round holes, usually less than two inches in diameter. During the

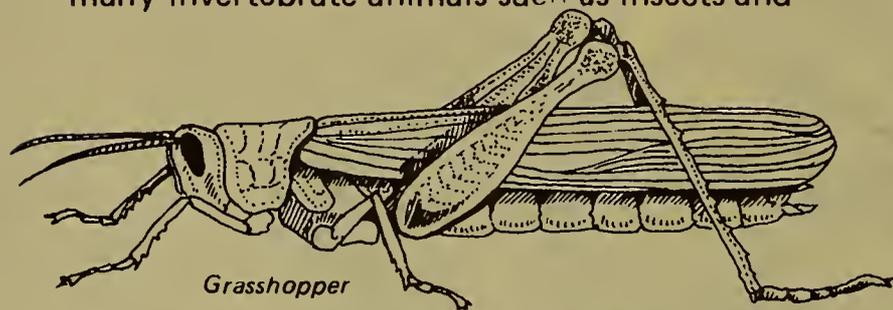
winter, the entrance is plugged. From the entrance, the burrow drops straight down for a few inches and then declines more gradually until it levels out at about three feet below the surface. When excavating, the chipmunk will carry soil away from the entrance in its cheek pouches. Because of this, there is little or no evidence of excavated soil at the entrance. Within four to five years an average chipmunk burrow may be 30 feet long, have several openings, and may have up to six chambers.

Chipmunks are not true hibernators, though some may sleep for long periods of time during the cold winter months. They store food rather than fat, and must wake up to eat. Mild winter weather may bring them out of their dens for short periods of time.

In late February and early March, chipmunks leave their burrows to breed. There are two breeding seasons every year: spring and summer. During the spring season, the older females and one-year-old females will breed. During late July and Au-

gust, females which do not mate in spring and a few of the three-month-old females will breed. Older females may even have two litters per year. After a 31-day gestation, four or five young are born (blind and naked). The young develop and grow very quickly, spending only a month in the burrow.

Chipmunks are omnivorous, feeding on both plants and animals. Some of the plant foods eaten are acorns, beechnuts, seeds of woody plants, berries of the American yew, ragweed, wintergreen, Canada Mayflower, clover, and wild buckwheat. Occasionally they sample mushrooms, sunflower seeds, watermelon, apples, and squash. They eat many invertebrate animals such as insects and



worms, but sometimes catch vertebrate animals (moles, young mice, small songbirds, and frogs). Chipmunks have special internal cheek pouches which can be filled with food. The pouches are used to carry food to storage sites for future use during the winter and are emptied by squeezing them with their front feet. But, more often they eat their food on the spot, usually at a favorite stump or rock. Such a feeding area rapidly becomes littered with broken nut shells and seeds. During the late summer and early fall, chipmunks start gathering and storing nuts and other seeds for the winter.

Chipmunks usually do not travel very far — 75 yards from their burrow or nest would be consid-

ered a great distance. The outer areas of an individual's home range often overlap with that of other chipmunks, except during the breeding season. Chipmunks are solitary and except for females with young, live alone in separate dens. Predators of chipmunks include: man, hawks, mink, raccoons, weasels, martens, foxes, bobcats, coyotes, cats, and large snakes.

Economic Importance

In their natural habitat, chipmunks are part of the natural community of plants and animals. They compete with gray and red squirrels, grouse, deer, turkeys, mice, and other nut-eating animals for food. Some food is eaten on the spot; some is buried. When a large amount of food is stored and left in the ground, there may be less for other wildlife but some stored seeds can sprout and new trees will grow from them.

Chipmunks are enjoyable to watch, but when they move into urban settings, they may conflict with man's interests. They dig up garden seeds and have been accused of eating flower bulbs. Burrow entrances in lawns, rock gardens, stone walls, and near building foundations may be objectionable. If such disturbances can be tolerated, it may be just as well to learn to enjoy these alert animals. Maybe the benefits of watching outweigh the disadvantages. If control is necessary, such as when they get into houses, snap-type rat traps can be used effectively.

Written and compiled by Nan Chadwick.
Illustrations by Nancy Haver.

Issued by the Cooperative Extension Service, E. Bruce MacDougall, Dean, in furtherance of the Acts of May 8 and June 30, 1914; United States Department of Agriculture and County Extension Services cooperating. The Cooperative Extension Service offers equal opportunity in programs and employment. J2394:11/84-3M

Cooperative Extension Service
U.S. Department of Agriculture
University of Massachusetts
Amherst, Massachusetts 01003

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF
AGRICULTURE

AGR 101



University of Massachusetts,
United States Department of Agriculture and County Extension Services cooperating



Controlling Wildlife Damage

Woodchuck

The woodchuck is a member of the rodent family and is one of the most common mammals in Massachusetts. It prefers to inhabit pastures and meadows or the edges of brush woodlands. Complex burrows are dug and are used for denning and winter hibernation.

Woodchucks are most active during daylight hours and prefer to feed in the early morning or evening. They are vegetarians, and eat alfalfa, clover, grasses, leaves, dandelion buds, common chickweed, and other wild plants as well as agricultural plants such as beans, peas, carrots, and apples.

Control

Abandoned woodchuck burrows offer considerable benefits to many wildlife species. They provide escape cover and dens for cottontail rabbits, foxes, and other wildlife. However, in areas where they are overabundant, woodchuck activities may conflict with man's interests, especially on farms, in gardens, orchards, or nurseries. They can do heavy damage to pea, bean, corn, and hay crops. Mounds of earth from the burrow or entrance holes may be a hazard to farm equipment as well as to horses and their riders. In spring, fruit trees and ornamental shrubs may be damaged by the woodchuck gnawing on the stems. For these reasons, control measures may be necessary.

Fencing

Home gardens may be fenced to keep many animals from damaging or destroying produce. Since woodchucks are good climbers, they can easily scale wire fences. If fencing is already in place, an electric hot wire placed 5 to 6 inches off the ground and about 3 to 4 inches outside the fence will prevent woodchucks from climbing or burrowing under the wire mesh. Also, 4 to 6 inches of a fence should be buried to inhibit burrowing.

Shooting

In Massachusetts, the woodchuck is considered a nuisance animal. A valid state hunting license is required. There is no closed season, nor is there any limit on the number of woodchucks that can



be taken by an individual hunter. Landowners and their hunting friends can help reduce the number of woodchucks where necessary and desirable.

Gassing

If safety requirements do not permit shooting, commercial woodchuck gas cartridges may be used. These are specially designed cardboard cylinders



filled with slow-burning chemicals which, when ignited and put in the burrow, burn to produce carbon monoxide gas. When confined to the burrow system (by blocking the entrances), lethal amounts of gas accumulate. Since a burning material is involved, care should be taken to avoid setting fire to dry grass or brush. Because of the potential hazard from fire and toxic gasses, gas cartridges should not be used in dens found under sheds or buildings. Woodchuck cartridges are available from local farm supply stores. Directions for their use are on the label and should be carefully followed.

Trapping

Trapping may also be used to reduce woodchuck populations in problem situations. A regular box trap made of wood lined with metal to prevent chewing can be used. They should be baited with apples or other fresh fruit and should be checked twice a day (morning and night), so that trapped animals may be dealt with in a humane manner. **Steel leg-hold traps are not allowed in Massachusetts unless trapping in or under buildings or underwater.**



Written and compiled by Nan Chadwick.
Illustrations by Nancy Haver.

Issued by the Cooperative Extension Service, E. Bruce MacDougall, Dean, in furtherance of the Acts of May 8 and June 30, 1914; United States Department of Agriculture and County Extension Services cooperating. The Cooperative Extension Service offers equal opportunity in programs and employment. J2394:11/84-3M

Cooperative Extension Service
U.S. Department of Agriculture
University of Massachusetts
Amherst, Massachusetts 01003

**OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300**

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF
AGRICULTURE

AGR 101



University of Massachusetts,
United States Department of Agriculture and County Extension Services cooperating



Wildlife in Massachusetts

Gray Squirrel



The gray squirrel, named for its silvery-gray coat, is a slender, long-tailed arboreal (tree dwelling) rodent. Its bushy, flattened tail is usually held in an S-shaped curve over its body when sitting. Its hind legs are larger and stronger than the front ones and are used for leaping from tree to tree. The front feet are specifically adapted for holding nuts. An adult gray squirrel usually weighs between $3/4$ and $1-3/4$ pounds.

Gray squirrels display one of two color phases depending on the season of year. During the winter the underparts are white and the back and sides are made up of hairs banded in black, brown, and black with a white tip. Summer coats may be more yellowish-brown, with gray on the sides of the neck, shoulders, and thighs. Overall, the tail is gray in appearance, but individual tail hairs are brown at the base, banded with black and tan, and tipped with white. Both males and females are similar in color. In certain parts of Massachusetts a totally black color phase is known to occur. Gray as well as black color phases may be found within the same litter.

Gray squirrels can be found throughout Massachusetts, especially where there are hardwood trees such as oak, hickory, and beech. They are common in cities and parks where nut- and fruit-bearing trees are abundant and discarded food is available.

Habitat and Behavior

Gray squirrels are very quick and nimble animals. They can easily run, climb, and jump among branches of the tallest trees. Their long, flattened tail helps them to maintain their balance during these acrobatics. When startled on the ground, squirrels will usually scramble up the nearest trunk, traveling swiftly from tree to tree, seldom losing their grasp. When they jump too far, they can drop from the tree top to the ground without being injured. Squirrels can travel along electrical and telephone wires with ease for long distances without setting foot on the ground.

The gray squirrel uses leaf nests and tree dens. Good tree dens are permanent quarters, while leaf

nests are only temporary homes during summertime. The animals seem to prefer cavities in mature, living trees for winter dens. A den or cavity begins to form in a tree where a branch has fallen off or where a woodpecker has drilled a hole into the trunk. With the protective bark gone, weather and insects begin the decay process in the wood, and eventually, a cavity is formed. Cavities are created in live trees as well as in dead and dying ones. Squirrels need a den that has an opening measuring approximately three inches. They must often gnaw back new bark tissues that grow over openings to keep the den entrance from sealing. Old hollow trees with broken tips, cracks and many openings do not make good tree dens, but do provide hiding places for squirrels. On occasion, a squirrel may choose to den in a barn, garage, or attic.

During summer, adults build leaf nests which are usually placed in the top fork of a tree or in the crotch of a high limb near the trunk. A single entrance usually faces the main tree trunk or nearest limb. A leaf nest is made up of 3 or 4 parts: the base and supports are constructed of twigs, the floor on the inside is made of a layer of compact soil and organic debris mixed with twigs, and the outer shell is made of leaves and twigs. Often, an inner layer of woven bark, grass, and leaves is constructed to provide warmth and added protection. Leaf nests range in size from 14 to 16 inches in diameter and weigh from 6 to 7 pounds. Such nests are cooler than cavity nests and are free of parasites. They may also serve as temporary quarters near winter food supplies.

Squirrels have two breeding seasons per year: one in late January or February, the other in late May or June. Before mating, several males may chase a female in a noisy, energetic race through tree tops. After a 44-day gestation period, 3 to 5 young are born (blind and hairless). Young squirrels depend on the mother for about 12 weeks. Young from the first litter venture out in early May and those from the second litter become active in early August. Springtime litters are generally born in tree dens, but summer litters are usually born in leaf nests.

Squirrels rely heavily on mast (nut) crops such as acorns, hickory nuts, and beech nuts for food and can consume up to two pounds of nuts each week. When mast is scarce, squirrels may be hard pressed to find enough food to subsist. Food shortages and severe winter weather may reduce populations drastically. When mast is abundant, the animals store (cache) nuts, then throughout the winter they dig them up to eat. Experiments have shown that squirrels find these stored nuts with their highly developed sense of smell. They compete for mast with ruffed grouse, deer, black bear, chipmunks, white-footed mice, blue jays, flying

squirrels, and wild turkeys. During spring thaw, squirrels will eat buds and flowers of red and sugar maple. Later in spring, they may eat the maple and elm fruits. In summer, they feed on berries, mushrooms, apples, corn, and other grains. Gray squirrels will occasionally eat bird eggs and chew on bones or deer antlers for calcium, phosphorous, and other necessary minerals.

Although they may stay in the den for several days at a time during stormy weather, gray squirrels are active all year long. Daily, they are most active at dawn and in late afternoon. If wind is not strong, they will feed during rain or snow storms. Most squirrels live in an area of 2 to 7 acres. Their natural predators are hawks, owls, foxes, bobcats, and raccoons. Also, hunters take some during open season. House cats prey on squirrels, especially young ones. Many are killed on roads in the fall when they tend to migrate longer distances in search of food. The average life span of gray squirrels is about 1-1/2 years, but they have been known to live seven or eight years.



Written and compiled by Nan Chadwick.
Illustrations by Nancy Haver.

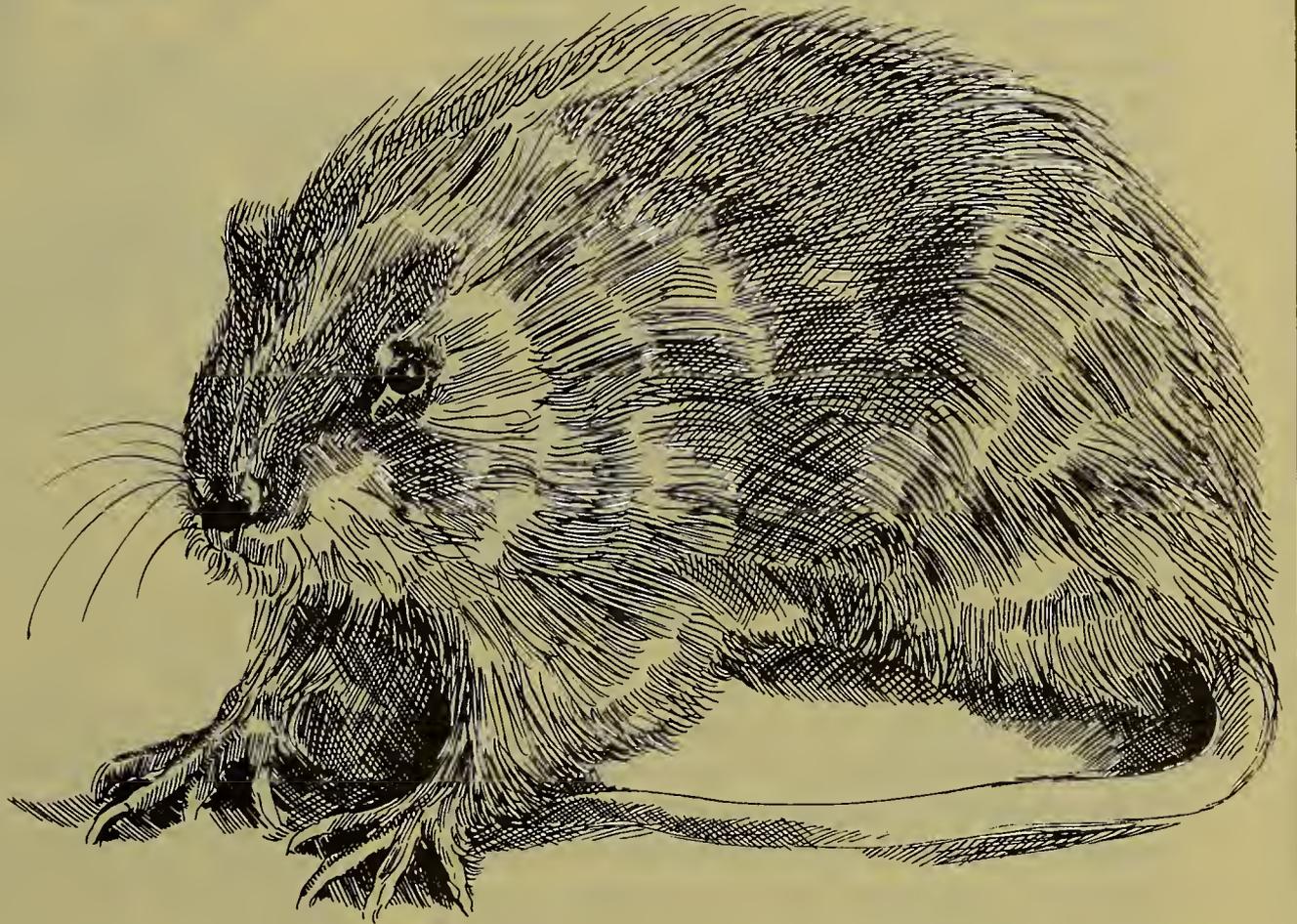
Issued by the Cooperative Extension Service, E. Bruce MacDougall, Dean, in furtherance of the Acts of May 8 and June 30, 1914; United States Department of Agriculture and County Extension Services cooperating. The Cooperative Extension Service offers equal opportunity in programs and employment. J2394:11/84-3M

University of Massachusetts,
United States Department of Agriculture and County Extension Services cooperating



Wildlife in Massachusetts

Muskrat



The muskrat is one of the larger wild rodents found in Massachusetts; adults weigh from 1-1/2 pounds to 4 pounds. Like its relative the beaver, it is a water-loving mammal. Its fur varies in color from rich dark brown to reddish brown. Its underfur is thick, silky and grayish. Muskrats have large, broad hind feet that are partially webbed and are well adapted for swimming. Unlike the beaver, the muskrat's scaly tail is flattened vertically so it can serve as a rudder while the large hind feet propel the animal through water. Its small, long-clawed front feet are specially adapted for holding food and digging. Muskrats have two scent glands located near the anus, which give off a musky odor that is strongest during the breeding season.

Habitat and Behavior

Muskrats are seldom found far from water. They prefer shallow ponds and marshes, but may occasionally be found along slow-moving streams, canals, and rivers. Muskrats may dig a den in a bank or build a house with aquatic plants. In general, burrow entrances are below water level. A bank den is ventilated by small holes hidden under a pile

of roots or other thick vegetation. When banks are too low for a den, muskrats build a lodge of cattails and other aquatic plants. The lodge may be constructed over a submerged stump or log, or built directly on the bottom of the wetland. The cone-shaped den is made of mounded cattail stalks, or bulrushes, roots, and mud dragged up from the bottom. Entrance to a lodge is always under water but the living chambers are above water. Interior rooms are protected by walls of vegetation and mud that are more than a foot thick and are lined with fine grasses. Muskrats will continue to build throughout the year. New houses appearing in late summer are usually the work of young muskrats. The tops of muskrat lodges are favorite nesting platforms for Canada geese and other water fowl.

Even though they are chiefly nocturnal, muskrats occasionally venture out during the day. Since they are mostly vegetarian, they feed on stems, roots, bulbs and leaves of aquatic plants; however, they may also feed on corn, clover, alfalfa, apples or other fruits. They also eat snails, mussels, crustaceans, insects, and fish. When feeding, a muskrat prefers to take its food out into the wetland

to an emerged floating log. There uneaten food soon piles up and forms a feeding platform. These "feeders" are places where they can eat without interference from predators. Because they are roofed, the feeders can safely shelter a muskrat during bad weather. In ponds or marshes which are likely to freeze over in the winter, muskrats often keep open under-the-ice access tunnels leading from the lodge to favorite feeding places.

Muskrats in Massachusetts breed from early spring until fall. In the south they may breed almost year-round. Usually three to five litters of 5 kits are born to a breeding female each season. Young muskrats are born hairless and helpless, but they grow very rapidly and are independent from the mother in only one month. Some young may even breed within the same year in which they were born.

Economic Importance

Originally found only in North America, the muskrat has been transplanted to Europe and other parts of the world. Muskrats are one of the most important furbearing animals in Massachusetts, as in most other states. Muskrats are regulated as furbearers and the harvest is strictly controlled under Massachusetts laws. Natural enemies include coyotes, skunks, weasels, bobcats, great horned owls, marsh hawks, red foxes, mink, snapping turtles, and large snakes.

Muskrats often cause damage to earthen dams and dikes by burrowing into the banks. Their feeding habits sometimes result in damage to agricultural or ornamental crops growing near water.



Written and compiled by Nan Chadwick.
Illustrations by Nancy Haver.

Issued by the Cooperative Extension Service, E. Bruce MacDougall, Dean, in furtherance of the Acts of May 8 and June 30, 1914; United States Department of Agriculture and County Extension Services cooperating. The Cooperative Extension Service offers equal opportunity in programs and employment. J2394:11/84-3M

Cooperative Extension Service
U.S. Department of Agriculture
University of Massachusetts
Amherst, Massachusetts 01003

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF
AGRICULTURE
AGR 101

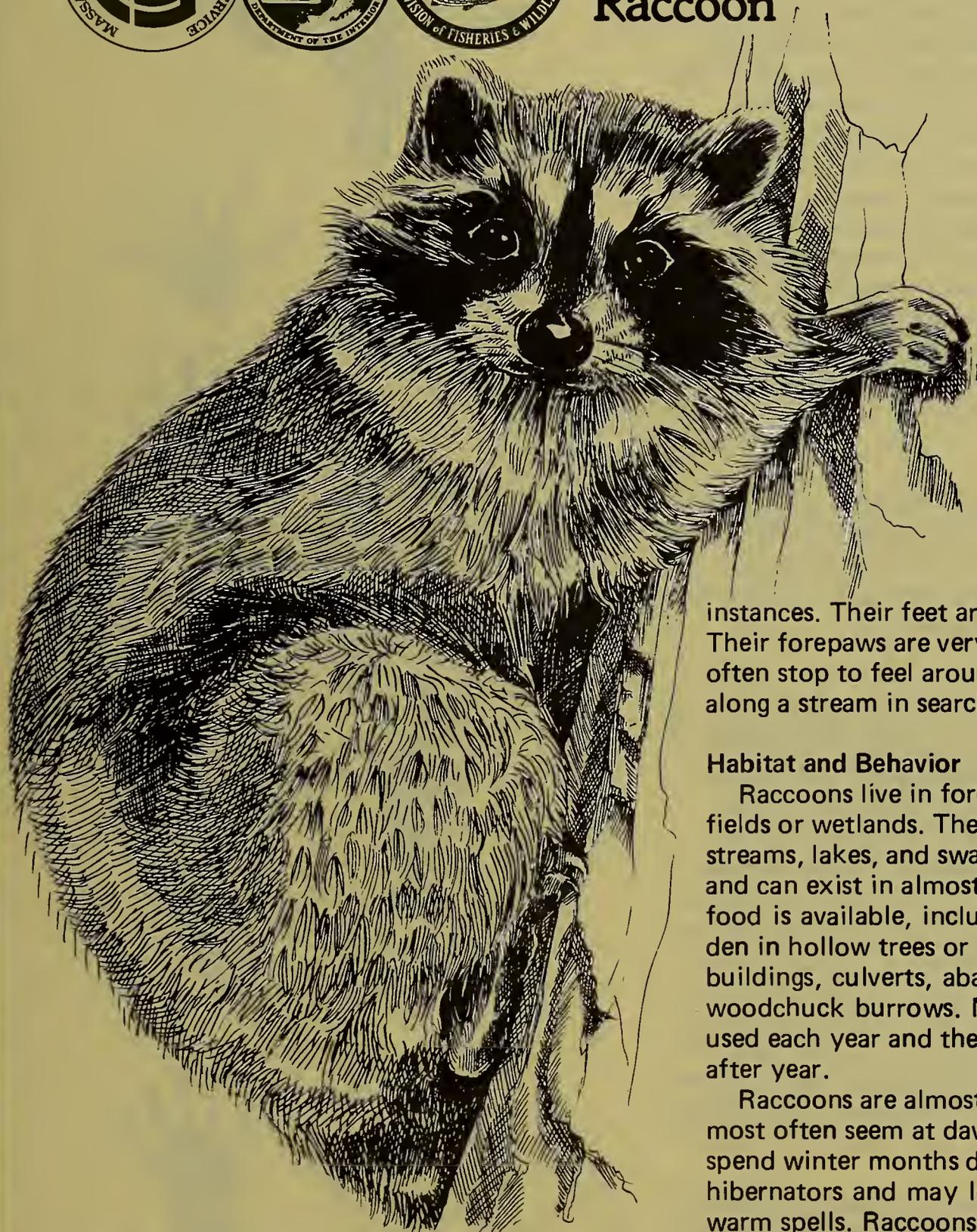


University of Massachusetts,
United States Department of Agriculture and County Extension Services cooperating



Wildlife in Massachusetts

Raccoon



Distribution and Identification

The raccoon is common throughout Massachusetts and most of North America. Raccoons are recognized by their black face mask and black, brown, and white ringed bushy tail. They have long thick fur, a wide head, and a slender, pointed nose. The coat is a grizzled gray or brown. Male and females are colored alike, and males are generally larger than females. Adults average between 8 and 16 pounds, but may get up to 40 pounds in rare

instances. Their feet are well adapted to climbing. Their forepaws are very sensitive to touch and they often stop to feel around in water as they wander along a stream in search of food.

Habitat and Behavior

Raccoons live in forested areas that are close to fields or wetlands. They are often found near streams, lakes, and swamps, but are very adaptable and can exist in almost every sort of habitat where food is available, including suburban areas. They den in hollow trees or logs, rock crevices, deserted buildings, culverts, abandoned beaver lodges, or woodchuck burrows. More than one den may be used each year and the same den is often used year after year.

Raccoons are almost entirely nocturnal, but are most often seen at dawn or dusk. Although they spend winter months denning up, they are not true hibernators and may leave the den during winter warm spells. Raccoons do not store food like chipmunks, but they build up layers of body fat which are used to supply energy until spring.

Although classified as a carnivore, raccoons feed on a wide variety of plants and animals including frogs, fish, shellfish, insects, birds, nuts, fruits, seeds, corn, and other vegetables. In spring they feed mostly on animal matter, and in late summer, fall, and winter, they feed mainly on plants and seeds. Some favorite plant foods include apples, acorns, corn, oats, berries, grapes, ragweed, and

tender shoots and buds. Animals commonly eaten include crayfish, frogs, snails, fish, snakes, insects, small birds and their eggs, shrews, mice, and carrion. In urban areas they frequently raid garbage and rubbish containers.

Most raccoons breed during January, February or March. The young are born about 63 days later. Litters of 3 to 7 cubs are born blind, but with fur. The cubs grow rapidly and open their eyes when they are about three weeks old. The mother and young remain together throughout the summer and may den together during the following winter.

Raccoons have few natural predators because of their relatively large size and their fighting and climbing abilities. While young raccoons are sometimes killed by owls, foxes, and weasels, man and dogs are the major predators of adults. Many raccoons are killed on roads each year and many young die from starvation, disease, and parasites during the winter. Hunting and trapping are strictly regulated to insure that only the surplus population is harvested each year.

Economic Importance

Raccoons are important furbearers and game animals. They are hunted and trapped for their fur, for meat and for sport. They fill an ecological niche as a predator, thereby helping to regulate rodent and other pest populations.

Control

Raccoons cause damage in corn fields by feeding on ears of corn and they occasionally kill poultry and eat eggs. Often they damage fleshy fruit and vegetables in gardens. They are also a nuisance when they get into garbage at camp sites or elsewhere, and may enter chimneys. Many of these problems would be easily avoided if people would keep their garbage in secure cans and block access to potential den sites in buildings. Raccoons have also caused problems for other wildlife. Initially, the wood duck nesting box program was seriously hampered because raccoons preyed upon eggs and hens sitting in the boxes. Today, the nesting boxes are fitted with a wooden extension or metal barrier that prevents the raccoon from reaching into or climbing up to the box.

Before initiating any control program, contact the Massachusetts Division of Fisheries and Wildlife or a U. S. Fish and Wildlife Service representative. Control measures can be either "reductional" or "preventive." Reductional methods include killing the offending individuals. Preventive measures include installation of electric fences of 6-foot high wire that surround the area to be protected. Also, garbage cans should be secured. Although the State Division of Fisheries and Wildlife can not get rid of the raccoons for you, it can supply trapping regula-

tions, directions for building inexpensive live traps, and instructions for capturing the nuisance animals. Since most raccoon problems are caused by a few individuals, controlling these troublesome raccoons will usually solve most of the problems.



Written and compiled by Nan Chadwick.
Illustrations by Nancy Haver.

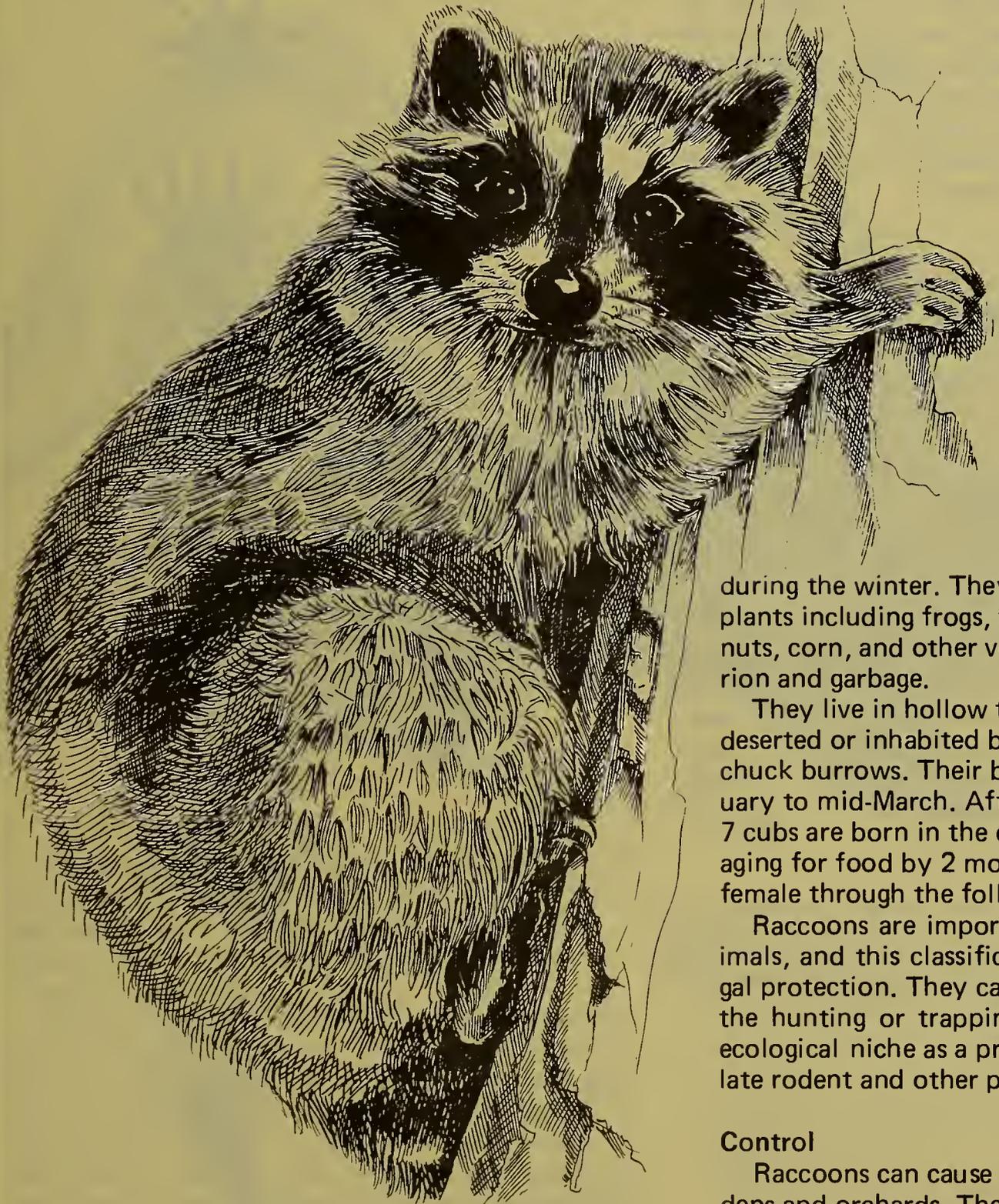
Issued by the Cooperative Extension Service, E. Bruce MacDougall, Dean, in furtherance of the Acts of May 8 and June 30, 1914; United States Department of Agriculture and County Extension Services cooperating. The Cooperative Extension Service offers equal opportunity in programs and employment. J2394:11/84-3M

University of Massachusetts,
United States Department of Agriculture and County Extension Services cooperating



Controlling Wildlife Damage

Raccoon



Raccoons live throughout Massachusetts, except in Nantucket. They are most common in forests and wet areas such as streams, lakes or swamps. They are recognized by their black face masks and black, brown and white ringed bush tails. Adults grow to about 28 to 36 inches long, including the tail, and can weigh up to 40 pounds.

Raccoons are nocturnal, and while they do not hibernate, they may be inactive for long periods

during the winter. They feed on many animals and plants including frogs, fish, crayfish, insects, birds, nuts, corn, and other vegetables. They also eat carrion and garbage.

They live in hollow trees or logs, rock crevices, deserted or inhabited buildings or in deserted woodchuck burrows. Their breeding season is from January to mid-March. After a 63 day gestation, 3 to 7 cubs are born in the dens. The young begin foraging for food by 2 months old and stay with the female through the following winter.

Raccoons are important furbearers and game animals, and this classification provides them with legal protection. They cannot be taken except during the hunting or trapping seasons. Raccoons fill an ecological niche as a predator. They may help regulate rodent and other pest populations.

Control

Raccoons can cause damage in corn fields, gardens and orchards. They feed on ears of corn, garden vegetables, fruits, and raid garbage cans. Many of the most trying raccoon problems in Massachusetts are in suburban areas: raccoons in chimneys, attics or garbage containers. Since individual animals do most of the damage, controlling these few troublesome raccoons will usually solve most of the problems. The Massachusetts Division of Fisheries and Wildlife should be contacted before any control program is started.

Hunting

Hunting may help keep animal numbers and damage at a tolerable level. Before hunting, permission should be granted and ground rules set between the hunter and the landowner. When hunting raccoons, a valid state hunting license is required during legal hunting season. If it is necessary to shoot out of season those animals doing damage to private property, your local state conservation officer should be consulted. It is permissible to destroy raccoons on your own land if they are doing damage, but no shooting may be done within 500 feet of an inhabited dwelling or within 150 feet of a state wood. No license is needed if shooting is done by the landowner, a member of the immediate family or a tenant.

Preventing Damage

Electric fencing can be used around gardens to protect crops from raccoons. Two electric wires placed 5 to 8 inches above the ground and powered by a fence charger will stop animals from entering vegetable plots. Care should be taken to examine wires frequently and support stakes to make sure vegetation doesn't grow up and short out the fence. Support stakes can be made inexpensively out of 1" x 3" strapping material. These supports, with insulators, can be driven into the ground at 10-foot intervals.

Keeping very tight-fitting covers on garbage cans around camps and homes, and keeping the garbage area clean and odor-free will usually prevent raccoons from becoming a nuisance. You can also keep garbage cans inside a closed garage or keep garbage in the freezer and only place it in trash containers on the day of pickup.

Written and compiled by Nan Chadwick.
Illustrations by Nancy Haver.

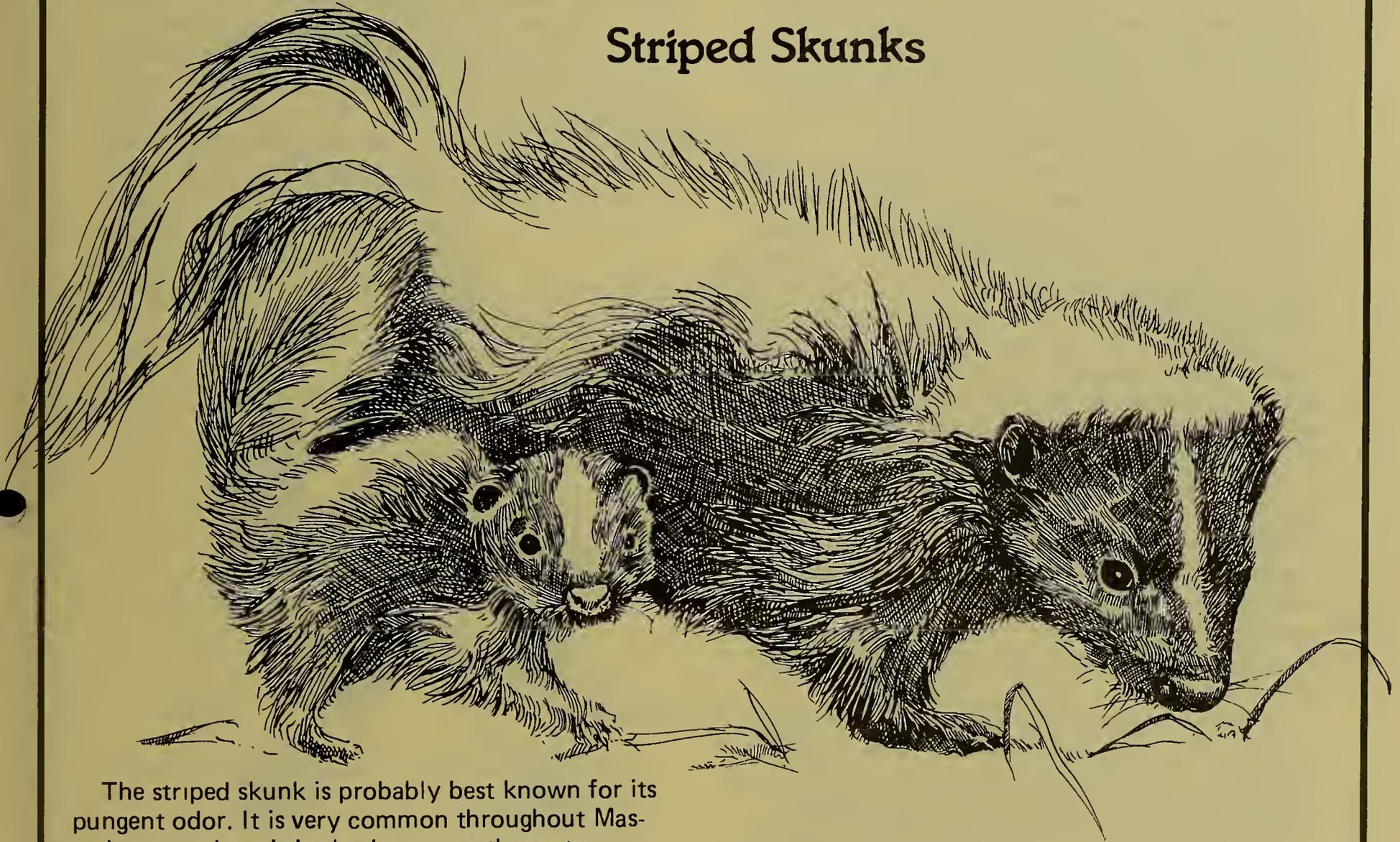
Issued by the Cooperative Extension Service, E. Bruce MacDougall, Dean, in furtherance of the Acts of May 8 and June 30, 1914; United States Department of Agriculture and County Extension Services cooperating. The Cooperative Extension Service offers equal opportunity in programs and employment. J2394:11/84-3M





Wildlife in Massachusetts

Striped Skunks



The striped skunk is probably best known for its pungent odor. It is very common throughout Massachusetts where it is also known as the eastern striped skunk, polecat, wood pussy, common skunk and lined skunk.

Striped skunks are about the same size as house cats, but with shorter legs. Their front feet have long, curved claws that are used for digging in grass and pulling apart rotten logs in search of insects. Skunks can be easily recognized by their broad white stripes running from the nape of the neck to the base of the tail. There is also a single white stripe between their eyes. While males and females look alike, males are somewhat larger. An adult male may weigh from 6 to 14 pounds and measure about 20 to 28 inches long.

Habitat and Behavior

The skunk belongs to the weasel family (Mustelidae). Like other mustelids they have scent glands located near the anal opening which are used for

protection. By lifting their tail over their arched back and contracting the muscles near the gland, a skunk can spray its yellowish, musky fluid accurately as far as 12 feet. Warning signals such as rapid stamping of the front feet and arched back or lifted tail are signs that a skunk is ready to spray. Skunks will usually not spray unless they are very frightened or upset.

Skunks inhabit a variety of habitat types, especially mixed woodlands that are close to open fields or agricultural lands. Though mostly nocturnal, they may be seen at dawn or dusk, and occasionally even in late afternoon. They search for food along woodland-field borders, fence rows, marshes, and stream edges. Although they can swim, they prefer to stay out of the water.

In spring, skunks feed on mice, snakes, and insect larvae. Later in the summer, grasshoppers

crickets, earthworms, and beetles are eaten. As insects become scarce in the fall, they eat a variety of small mammals including mice, shrews, moles, and chipmunks. Apples, raspberries, black berries and other fruit are also important in their diets. In more wooded areas, skunks will eat eggs and nestlings of ground-nesting birds. Where available, they will also feed on frogs and crayfish. Because they have such a varied diet, their chance of surviving during times of food shortages is high.

During the day, skunks sleep in dens or burrows located under stone walls or in abandoned wood-chuck holes. They like denning on sunny slopes, but in populated areas burrows are often hidden under buildings, wood piles, or stone walls. Although skunks are not true hibernators, they go into a deep sleep in late fall or early winter. They may, however, wake up during winter thaws. During most of the year, skunks keep to themselves, but as many as ten or more may den together in the winter.

By early March, skunks leave their dens to breed. A single litter of about 4 to 7 young is born in mid-May after a 62-66 day gestation period. Young skunks are born blind and helpless, and are weaned after 2 months. They may stay with their mother through their first winter. The kits are able to spray like an adult by the time they are 4 or 5 weeks old.

Skunks have few natural enemies. One encounter with the irritating, eye-burning musk is usually enough to keep most predators away. However, skunks are preyed upon by man, great-horned owls, bobcats, foxes, fishers, lynxes, and coyotes.

Economic Importance

Skunks are generally beneficial to farmers, gardeners, and landowners because they prey on field mice, other small mammals, and insects. Occasionally, they feed on corn, poultry, and eggs, a habit which conflicts with man's interests. They sometimes damage beehives when searching for insects. Probably the most common complaint is of skunks getting into basements, barns, garages, and under porches. Skunks that are active during the day are

often suspected of having rabies; therefore, precautions should be taken to avoid them. If an individual is bitten, the wound should be cleaned immediately with soap and water, and a doctor should be contacted soon afterwards. If possible, a skunk suspected of being rabid should be captured without damaging the head, so the brain tissue can be examined for rabies. Carcasses of these animals should be sent or taken to a state public laboratory. While nuisance skunks may be captured according to state wildlife regulations, it is illegal to keep skunks as pets.



Written and compiled by Nan Chadwick.
Illustrations by Nancy Haver.

Issued by the Cooperative Extension Service, E. Bruce MacDougall, Dean, in furtherance of the Acts of May 8 and June 30, 1914; United States Department of Agriculture and County Extension Services cooperating. The Cooperative Extension Service offers equal opportunity in programs and employment. J2394:11/84-3M

University of Massachusetts,
United States Department of Agriculture and County Extension Services cooperating



Controlling Wildlife Damage

Skunks



Skunks forage for food at night, seeking grubs, insects, small rodents, carrion, soft fruit, berries, corn, and mushrooms. Occasionally, they eat eggs and nestlings of ground-nesting birds and poultry. Skunks generally make their dens in abandoned woodchuck holes or in rock piles or under buildings and wood piles. They are not true hibernators but go into a state of dormancy during periods of cold weather, waking when temperatures rise. Their breeding season is in late February and early March.

Skunks are basically beneficial to man because they prey on many small rodents and objectionable insects. However, they become a nuisance by occasionally feeding on corn, poultry and eggs. They will take one chicken at a time, but then usually return for more. Since skunks do not climb well, predation is limited to poultry and eggs in nests near or on the ground. If many chickens are killed and nests above the ground are destroyed, rats, weasels or mink are more likely suspects. Beehives

may also be damaged by skunks in search of insects. Skunks may dig up lawns, golf courses, and meadows in search of beetle larvae and other grubs. The diggings appear as patches of upturned earth and turf, 3 to 4 inches across, funnel-like in appearance, and usually 3 to 4 inches in depth. Since other animals such as moles, squirrels and dogs dig up lawns, it should be determined precisely which species is causing the problem before control measures are attempted. Moles tunnel below the ground surface and leave ridges or mounds of dirt in the grass with no visible evidence of burrow openings. Squirrels may make small shallow excavations while burying or removing nuts. Dogs may bury or remove bones.

Skunks sometimes are carriers of diseases that are harmful to humans and domesticated animals. Such diseases include rabies, distemper and leptospirosis. Diseased skunks may sometimes be identi-

fied by behavior that is unusual for the species such as appearing during daylight hours, erratic wandering or loss of coordination and unusually aggressive behavior. If an animal is seen and suspected to be diseased, it should be reported to a local conservation officer or to the police. It is unwise for persons untrained in handling diseased animals to attempt capturing, killing or removing them.

Control

Skunks are generally beneficial; therefore, control should, where possible, be preventive rather than destructive (killing the animal). Skunks that den under buildings may become a nuisance. Although they rarely spray in their dens, they do emit a musky odor which may be objectionable. When skunks are out, openings in foundations can be sealed off using welded wire fencing, sheet metal, concrete, or other suitable materials. If skunk activity is suspected, flour or ground limestone can be sprinkled in front of the opening and checked after dark for tracks. If there are signs of activity, the direction of the tracks will indicate if the skunk has left the den. The opening can then be sealed. Caution should be used when closing entrances between early May and mid-August to avoid trapping young inside. When skunks enter garages, cellars or houses, doors should be left open to allow the skunk to leave. If the skunk does not leave on its own, a live trap baited with sardines or canned cat food can be used. Cover the trap, except for the entrance, with a burlap sack at the time it is set, so the skunk can be easily moved to a more desirable location without fear of spraying. The animal can be released from the trap by carefully placing the trap on the ground and slowly opening it so the skunk can walk out. Note! Permission must be obtained from the Massachusetts Division of Fisheries and Wildlife to live trap skunks.

In most instances, food from uncovered garbage containers or dog dishes attracts skunks to buildings. The use of secure lids on containers will usually solve this problem. It is wise to keep doors to poultry coops closed at night. A 3-foot high fence of 2-inch wire mesh with 2 feet above and 1 foot below the ground surface will keep skunks out.

Written and compiled by Nan Chadwick.
Illustrations by Nancy Haver.

Issued by the Cooperative Extension Service, E. Bruce MacDougall, Dean, in furtherance of the Acts of May 8 and June 30, 1914; United States Department of Agriculture and County Extension Services cooperating. The Cooperative Extension Service offers equal opportunity in programs and employment. J2394:11/84-3M

Trapping

Wooden box traps or commercial wire-mesh traps covered with burlap bags are very effective. Trapped skunks should be released at least 5 to 10 miles from the trap site in sparsely populated areas. Because skunks are classified as furbearers in Massachusetts, trapping them can only be done from November to February. All traps used on someone else's land must have a valid registration number permanently embedded or cut into the trap. A current valid trap registration certificate and a valid trapping license is required of all who trap on someone else's property. Steel jaw leg-hold traps may be used only in or under buildings on land owned, leased, or rented by the trapper.

Skunk musk is very irritating to mucous membranes. Temporary intense pain and burning may be caused by contact with lips, eyes, and nasal passages. Diluted solutions of vinegar or tomato juice helps in removing skunk odor from people, pets and clothing. Neutroleum Alpha, an aromatic, is effective when placed in basements or garages. This material might be obtained from some hospital supply houses or pest control firms.



Here are some of the answers that we give to people with questions about young wildlife:

Q A baby bird has fallen out of its nest in a tree in my backyard. I am afraid something might happen to it if I leave it there on the ground. Should I bring it into the house and feed it until it is able to fly?

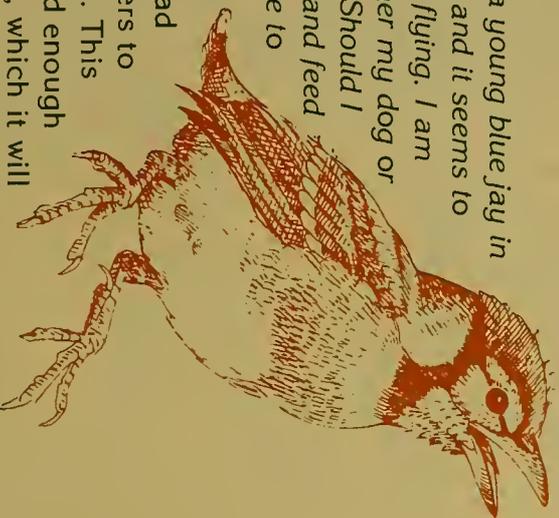
A No. The best thing to do is put the bird carefully back into the nest. Don't worry about getting your scent on the bird; it should not affect the mother's care. Even if you find that the nest has blown out of the tree, put it back in the tree securely along with the nestling.

Q A few minutes ago, I was walking through the woods behind our house and saw several baby raccoons on the ground near a large hollow tree. I wonder if they fell out of the hole way up in the tree and the mother has abandoned them because she can't put them back in their nest. Should I bring them home and care for them?

A No. Most likely, the young raccoons are merely exploring, and their mother is nearby. They are probably old enough to be fully capable of climbing back up the tree to their den when they are ready to return. If they were too young to climb, the mother would carry them back.

Q There is a young blue jay in my backyard, and it seems to have difficulty flying. I am afraid that either my dog or cat will get it. Should I bring it inside and feed it until it is able to fly?

A No. As a fledgling, it had enough feathers to leave the nest. This means it is old enough to learn to fly, which it will rapidly begin to do. Leave the bird alone, but you should keep your dog



and cat in the house for a few days so that they will not disturb the bird.

Q This morning I found an abandoned fawn near the edge of a field on my property. I brought the fawn into my house to save it, but I don't know how to care for it. What should I do?

A Immediately, take the fawn back to the spot where you found it, and leave it there. The mother should come back again looking for the fawn. Even one to two days after removal from the wild, fawns have been successfully reunited with their mothers by returning them to the place where they were found. When you picked up the fawn, the mother was probably eating not far away. Usually young fawns are quite safe when left alone because their color pattern and lack of scent help them to remain undetected until their mothers return.

Q A moment ago, I accidentally kicked open a nest of baby rabbits while walking in the thick grass at the far corner of my backyard. They seem so helpless. I waited but saw no sign of their mother. Should I rescue them?

A They do not need to be rescued. The mother would not return as long as you remained at the nest. Just replace the top of the nest that you uncovered and leave. The mother will return and care for the young. Cottontail rabbits leave their young for hours while eating, but they do return to nurse the young. As with other young wildlife, it is best to **LEAVE THEM ALONE!**

IF YOU CARE...



LEAVE THEM THERE!



young wildlife belongs in the wild



Commonwealth of Massachusetts
Division of Fisheries & Wildlife

THE PROBLEM

Every year, the lives of many young wildlife are upset by people who mean only to help. Those people take *baby* wildlife from the wild in a mistaken attempt to save them. Hopefully, a little understanding will prevent this problem.



WHY IT OCCURS

The arrival of spring and summer also means the arrival of newborn and just-hatched wildlife. These youngsters soon venture into the world on shaky legs or fragile wings. Most are learning survival from one or both parents. For them, the perils of survival are a natural part of ecology. Some will not survive. However, young wildlife that learn well and are the most fit usually live the longest.

Those early unsteady steps and flights are part of normal development, helping young animals learn to take care of themselves. Some develop that ability quickly, almost from birth. Varying hare, for example, are ready to venture into their world within hours. Other animals need more parental care. Cottontail rabbits are born with no fur and eyes closed, unable to leave their nest for several days.

It is at this time that most of the problems arise. Some people assume that the young wildlife they have *found* are abandoned. They believe that the young animals are helpless and need to be *saved*. In nearly all cases, this is a mistake; the young animals are neither abandoned or orphaned.

THE RESULT

These well-meant acts of kindness tend to have the opposite result. Instead of being left to learn their place in the world, young wildlife are

removed from the wild. They are denied important natural learning experiences. Worse, most people quickly find that they do not really know how to care for young wildlife, and many of the animals soon die in the hands of these well-meaning people. Of course, this can be prevented if young wildlife are not taken from the wild in the first place.

Young wildlife that do survive human care have missed the natural experiences that enable them to fend for themselves. When these animals are released back into the wild they have a reduced ability to survive. It is difficult for them to function as they should in the natural world. Their ability to find natural foods is impaired, thereby reducing survival chances. Further, they may be thrust as unwelcome intruders into the home range of another member of their species.

Often, the care given to young wildlife unavoidably results in some attachment to humans. Upon release to the wild, those animals generally have little fear of people. Some return to places where people live, only to be attacked by domestic animals or to be hit by cars. Some become nuisances getting into stored food, trash cans or dwellings. People have also been injured by once-tamed wildlife.

WHAT TO DO

All of these problems can be avoided if we follow one simple rule when coming upon young wildlife: **LEAVE THEM ALONE!** It may be difficult to do, but this is the real act of



kindness. We must not allow ourselves to be fooled into thinking that the situation is different — in nearly all cases, young wildlife do not need to be *saved*. Resist the temptation to help them. Only when they are found injured or with their dead mother is there reason to do something, and then the state's Wildlife laws are specific about what may be done legally.

Nearly all wild birds and mammals are protected under the law. They may not legally be taken from the wild or kept — never consider them as possible pets; it is both illegal and unwise. They are wild animals that belong in the wild. However, a distressed/injured wild animal may be assisted, but a person must deliver the animal immediately to a licensed Wildlife rehabilitator, to an office of the Division of Fisheries & Wildlife, or to an Environmental Police Officer.

The Division of Fisheries & Wildlife licenses wildlife rehabilitators who are qualified to care for injured or truly orphaned wildlife. In cases where the services of a wildlife rehabilitator are required, they may be obtained through one of the Divisions offices:

Field Headquarters

Rt. 135, Westboro 01581
Phone: (617) 366-4470
or 366-4479

Western Wildlife District

Hubbard Ave., Pittsfield 01201
Phone: (413) 447-9789

Connecticut Valley Wildlife District

East Street
Belchertown 01007
Phone: (413) 323-7632

Boston Office

Leverett Saltonstall Building
100 Cambridge Street, Boston 02202
Phone: (617) 727-3151

Central Wildlife District

Temple Street
West Boylston 01583
Phone: (617) 835-3607

Northeast Wildlife District

Harris Street
Box 86, Acton 01720
Phone: (617) 263-4347

Southeast Wildlife District

195 Bourne Rd.
Buzards Bay 02532
Phone: (617) 759-3406

