Solving
Human-Beaver Conflicts

Practical Solutions for
Local Health Officials and
Conservation Commissioners

Provided by

Living With Wildlife

A Program of the
Massachusetts Society for the Prevention of Cruelty to Animals
350 South Huntington Avenue
Boston, MA 02130
617-522-7400

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Introduction

As you are probably well aware, when beavers and humans come into contact, problems can and do occur, most notably with flooding caused by beaver damming activity and tree destruction and damage from gnawing. In July 2000, changes to the law in Massachusetts about human-beaver conflicts impact you, and we want to assist you with understanding what these changes mean and what is available to you to help you do your job. The Massachusetts Society for the Prevention of Cruelty to Animals (MSPCA) has been involved in this issue for many years and this guide includes current information on the legal and practical aspects of resolving human-beaver conflicts in a long-term, cost-effective manner.

The most important piece of information for you to know is that *there are places for you to turn for help with beaver problems* and that *the problems you are facing do have effective solutions!*

The MSPCA's Commitment: Living With Wildlife

The Living With Wildlife program of the MSPCA has been working in communities across the Commonwealth for several years, providing information to cities and towns about effective beaver problem management. We understand that local authorities have not always found it easy to secure the assistance they've needed for addressing these serious problems; we are here as a resource. The MSPCA has worked with countless cities and towns to solve beaver problems and we have experienced staff who can assist you with practical and procedural questions, not only about how to resolve problems, but also about working within the law. We can steer you in the right direction and tell you where to find the right resources for solving your problem. (See "Resources"). We hope that you find this information useful and encourage you to use us as a partner for bringing real solutions to human-beaver conflicts in your city or town.

Beavers and Public Health Officials

Recent changes to state law have an impact on local public health officials. Under these changes, local health officials must respond to requests from the public to determine whether or not specific beaver activity poses a threat to public health and safety. **The law makes suggestions about what may constitute such a threat, but it is up to each health official to decide whether the threat is real or not.** The Massachusetts Department of Public Health (DPH) has written guidelines to assist local boards of health with determining whether or not beaver activity poses a real threat to human health and safety; these guidelines are included in this guide under "DPH." This guide also provides some general information on Giardia (see "Giardia"), and can help steer health officials to the appropriate resources for solving beaver problems should they find a real threat to the public's health.

If local health officials determine that there *isn't* a threat to public health or safety, this doesn't mean that the person seeking assistance is without options. They can still install water flow devices, breach dams, or trap beavers, under different conditions, which are outlined within the last three paragraphs of the law (see "The Law"). What local health officials can do is provide people with the resources, so that they have someone to turn to for assistance.

Please note that the Department of Environmental Protection (DEP) shall make any determination of a threat to a public water supply. This is not the responsibility of local health officials. The DEP's recommendations to water authorities are included in this manual under "DEP."

Beavers and Conservation Commissioners

As Massachusetts' conservation commissioners well know, beavers are important creators of wetlands. When these wetlands are in urban and suburban areas, flooding and tree damage caused by beavers can have a negative impact on people, and managing these problems with a specific concern for wetland preservation is imperative. Under old and new laws, breaching beaver dams is subject to the approval of local conservation commissioners (see "The Law"). Under the old law, both conservation commissioners and the state Division of Fisheries and Wildlife (DFW) had to approve any dam breaching before it could take place and, in practice, this often meant that conservation commissioners were able to rely on the determination by DFW and approve DFW's recommendation. Now, in cases of threats to public health or safety as determined by local health officials, conservation commissioners alone have that authority. All other situations that do not involve a health threat still need the approval of both DFW and local conservation commissioners.

I. Methods for Solving Beaver Conflicts

As public officials assigned to assist people with finding solutions to beaver problems, it is important for you to understand not only what resources are available to you and what is legally allowed, but also what people coming to you for help are experiencing and expecting. By the time someone approaches a local official for help with a problem, the flooding has often already occurred, and people are anxious for quick solutions. They are often angry about the damage, afraid that the flooding could endanger their health, and, in our experience, frustrated because they've not been able to find good assistance and advice. The MSPCA has worked with countless cities and towns and private property owners who are under the mistaken impression that statutory changes have left them without any options for dealing with beaver damage. This is simply not true.

Here's what can legally be done: construct water flow devices, breach beaver dams, and trap and remove beaver.

1. Construct Water Flow Devices

Called beaver deceivers, flexible pond levelers, and beaver bafflers, these pipe and fencing devices are designed to regulate water levels and prohibit damming that could result in flooding. The MSPCA believes that installing water flow devices to regulate water levels in wetlands is the most cost-effective, long-term, and successful solution to beaver flooding problems. When installed properly, these devices can solve beaver problems for many years with only minimal maintenance. Unlike trapping and dam breaching, water flow devices are designed to be effective for the long-term, eliminating the need for continuous and repeated trapping or dam breaching efforts. Our experience, and the experience of those with whom we've worked both inside and outside of the state, demonstrates that water flow devices are undoubtedly the preferred option. The MSPCA likes this solution not only because it's incredibly effective, but also because it protects the wetland, provides an opportunity to share the benefits of beavers and wetlands with everyone involved in solving the problem, and allows beavers and humans to co-exist without resorting to killing the animal. There are good options available to you for using water flow devices; the most important thing is to talk with someone who is experienced with these devices (see "Resources).

Water Flow Devices and the Law

Permits for building water flow devices are needed from local conservation commissioners because they are built in water, just as permits are necessary for constructing a dock or building a structure on the edge of the water. Should the installation of a water flow device require building in a beaver dam (many devices do require this), this would constitute a breaching of the dam and permission is necessary as stated below under "Breach Beaver Dam."

2. Breach Beaver Dam

Breaching a dam is the only way to effectively relieve flooding in a timely manner because it is the only thing that will lower the water level. Breaching a dam, however, is serious business because of the risk of further flooding if a dam is too severely breached and because it could endanger all the wild species depending on the impounded water for survival if the water is drained too low. Conservation commissioners know the importance of maintaining a dam for the purpose of protecting the wetland and its inhabitants; if a dam is breached, it should be done carefully, with a small notch in the dam to allow for the slow release of water – too large a cut in the dam can cause the entire dam to give way as the water pressure builds, causing an even more serious flooding problem and subsequent draining of the wetland. If beaver currently inhabit the site, the breach should be made in the morning and should be monitored while the water recedes during the day. Beavers are nocturnal and will quickly and easily repair the breach come nightfall, so additional breaches may be necessary.

If the flooding can be tolerated until a water control device has been installed, this is the best option because the risks of further flooding or wetland damage are then eliminated. If the flooding is really causing a serious health threat, careful breaching to lower the water level is the only immediate relief available. If you are charged with breaching a dam and are not familiar with doing it, you should seek the advice of someone with more experience, as there are very strong wetland protection laws in Massachusetts with severe penalties for unauthorized breaches (see “Resources”).

It is important to understand that breaching dams is a temporary fix to flooding problems that will not solve those problems in the long run. Beavers can easily repair damage to a dam, even if the dam has been removed with a backhoe! Even if beaver are removed from the site through trapping, the wetland habitat is prime for occupation by other beavers and they will move in, rebuild the dam, and the problems will reoccur. Time and time again we have encountered the frustration of local city and town officials who have been dealing with the same problem site for many, many years. They spend countless dollars and hours repeatedly breaching dams and hiring trappers, only to find that the problems return. We recommend using water flow devices.

Breaching Dams and the Law

Under current law, if there is an established threat to public health or safety as declared by the local health official, and that local health official has issued an emergency permit, the person receiving the permit can choose to breach a dam *and must get permission and work with the local conservation commissioners to do so*. In cases where a health or safety threat is *not* present, permission to breach must be secured from the state Division of Fisheries and Wildlife and local conservation commissioners.

Please note that because dams are so important to maintaining wetlands, unauthorized breaches can be punishable under the state Wetlands Protection Act by a fine of up to $25,000 per day plus damages.

3. Trap Beavers

The MSPCA believes that trapping does not provide long-term solutions for human-beaver conflicts. The simple reason for this is that when beaver are removed from a wetland habitat, this habitat becomes available to other beaver that will move into the vacant territory, and the problems will begin again. It has been our experience that cities and towns who have been dealing with repeated beaver problems over many years are looking for solutions that will last, not a temporary fix such as is provided through trapping. If trapping is chosen, however, it is legal and can be done by a licensed trapper.

Many living things rely on the rich wetlands beaver create for their survival, and trapping beaver out of a wetland may cause the drainage of the wetland and the destruction of a variety of plants and animals, many of which are threatened or endangered. Removal of beaver will have a large impact on the other living things there and will radically compromise the integrity of the wetland. It is also important to consider the time of year when issuing permits to trap beaver. Beaver kits are born in mid-May and are not very active at birth; removal of adult beaver at this time may orphan the kits at an age when their survival may be tenuous because of their dependence upon the adults. For this reason, conditions may warrant that permits for particular sites need to be delayed. For more information on beaver trapping, contact the Division of Fisheries and Wildlife (see "Resources").

Beaver Trapping and the Law*

Beaver can be trapped by a licensed trapper during the regular beaver-trapping season using box or cage traps (current trapping season runs from Nov. 15 – April 15). In cases of declared threats to public health or safety, beaver can be trapped using box, cage, or Conibear traps with an authorized emergency permit from public health officials. In cases of beaver-caused property damage where there isn't a threat to health or safety, beaver can be trapped by a licensed trapper during trapping season using box or cage traps, or with special permission from DFW outside of trapping season. If box or cage traps and alternative measures like water flow devices fail to solve a flooding problem after 15 days, beaver can be trapped by a licensed trapper using a Conibear trap.

**Please note that all trappers must be licensed by the state Division of Fisheries and Wildlife and that trapping rules and regulations change periodically, so the information shown above may have been amended. For the most complete and up-to-date information on beaver trapping, contact the DFW (see "Resources").*

II. Resources

Massachusetts Society for the Prevention of Cruelty to Animals
Living With Wildlife Program
Comprehensive information on resolving human-beaver conflicts

350 South Huntington Avenue
Boston, MA 02130
617-522-7400
www.mspca.org

Stephanie Hagopian,
Assistant Director
Living With Wildlife Program
Phone: 617-541-5104
Fax: 617-983-5449
E-mail: hagopian@mspca.org

Andrea Martens,
Project Coordinator
Living With Wildlife Program
Phone: 617-989-1541
Fax: 617-983-5449
E-mail: amartens@mspca.org

Beaver Solutions
Water flow device installation – beaver removal

Mike and Ruth Callahan, Owners
98 Bay Road
Hadley, MA 01035
Phone: 413-535-9145
Fax: 413-587-9788
E-mail: mrcallhn@aol.com

Integrated Wildlife Control
Water flow device installation – beaver removal

Don LaFountain
P.O. Box 690169
Florence, MA 01062-0169
Phone: 413-586-0890
Fax: 413-584-3898
E-mail: lafon@javanet.com

Critter Control® of Central Massachusetts:
"Urban Wildlife Management Specialists"
Water flow device installation – beaver removal

Charlie Boulmetis
20 Envelope Terrace

Worcester, MA 01604-3652
Phone: 508-757-4751 1-800-564-9600
Fax: 508-756-3309

The Fund for Animals
Water flow device installation – serving Southwestern Massachusetts

Skip Hilliker, Beaver Consultant
Contact: Laura Simon
Phone: 203-393-1050
Fax: 203-393-2770
E-mail: lsimon@fund.org

Beaver Busters
Expert in the use of water flow devices – inventor of the "Beaver Deceiver"
Water flow device installation

Skip Lisle, Wildlife Biologist
RR 1, Box 1240
Stockton Springs, ME 04981
Phone: 207-567-3069
Fax: 207-827-1137
E-mail: slisle@penobscotnation.org

Massachusetts Division of Fisheries and Wildlife Regional Offices
Beaver removal, dam breaching, permits for trapping and dam breaching

Field Headquarters
One Rabbit Hill Road
Westborough, MA 01581
Phone: 508-792-7270

Western Wildlife District
400 Hubbard Avenue
Pittsfield, MA 01201
Phone: 413-447-9789

Connecticut Valley Wildlife District
341 East Street
Belchertown, MA 01007
Phone: 413-323-7632

Central Wildlife District
211 Temple Street
West Boylston, MA 01583
Phone: 508-835-3607

Northeast Wildlife District
Harris Street, Box 2086
Acton, MA 01720
Phone: 978-263-4347

Southeast Wildlife District
195 Bournedale Road
Buzzards Bay, MA 02532
Phone: 508-759-3406

Massachusetts Department of Public Health
Bureau of Environmental Health Assessment
Information on beaver or muskrat related threats to human health and safety
250 Washington Street
Boston, MA 02108
Phone: 617-624-5757

Massachusetts Department of Environmental Protection
Guidance for conservation commissions and about public water supplies
1 Winter Street
Boston, MA 02108
Phone: 617-292-5602

Resources on the Web

The Wildlife Protection Act M.G.L. c.131 s80A
http://www.state.ma.us/legis/laws/mgl/131-80A.htm

Guidance for Conservation Commissioners Implementing M.G.L. c.131, s80A
Threats from Beaver and Muskrat Related Activities
http://www.state.ma.us/dep/brp/ww/files/beaverww.doc

Determining Treats to Public Water Supplies Related To Presence of Beaver and Muskrat
Department of Environmental Protection (DEP)
Standard Operating Procedure (SOP)
Drinking Water Program
http://www.state.ma.us/dep/brp/dws/files/beaverws.doc

Information for Beaver Regulations Provided by Massachusetts Department of Public Health, Bureau of Environmental Health Assessment
http://www.state.ma.us/dph/beha/beavers/beavh.htm

CASE STUDIES ON SOLVING BEAVER CONFLICTS FROM BEAVER SOLUTIONS

CASE STUDY #1 - Installation of Pond Leveling System

Root Road, Westfield, Massachusetts

In April of 2000 we were contacted by the City of Westfield to evaluate a beaver pond along Root Road. A semicircular beaver dam, approximately 100 feet long, had been built in front of a culvert. The dam had been there for a number of years and the wetland that it created compromised very valuable habitat. Unfortunately the rising height of the dam was threatening the road and members of the highway department had to repeatedly breach the dam in order to keep the water down.

After obtaining a breach permit from the state Division of Fisheries and Wildlife and approval from the Westfield Conservation Commission, we installed two 12” Pond Levelers through the dam. The inlets of these two pipes are surrounded by five foot protective cages which are sunk into a deep channel in the beaver pond. The flexible 12” pipes then run along the bottom of the pond, up and through the beaver dam, and

down into the middle of culvert. A straight piece of fence was placed across the front of the culvert to prevent any damming inside the culvert.

The height at which the pipes go through the beaver dam becomes the “leveling point”. When the pond level drops below the peak in the pipes it will cease to flow. When the pond rises above the pipes they will begin to drain. If the eventual height of the pond is higher or lower than necessary,
it is a simple matter to readjust the height of the pipes in the beaver dam.

There is relatively little maintenance with this system. The pond level will need to be monitored for a couple of weeks in case adjustments are necessary. The fence in front of culvert should be cleaned of debris 2 to 4 times per year.

CASE STUDY #2 - Culvert Protective Fences
New England Central Railroad, Amherst, Massachusetts

In May of 1999 we installed two trapezoidal culvert fences on two different culverts in South Amherst for the New England Central Railroad. These culverts are in prime beaver habitat and the track crews have been having problems with them being blocked with beaver dams for many years. The two sites had been trapped out repeatedly but due to the good habitat, new beavers would always reoccupy the area.

A roadbed or railbed with a culvert probably appears to a beaver as a wonderful dam with a small hole in it. This is why beavers are so attracted to road culverts. The trapezoidal fence makes the culvert much less attractive for damming. It has a minimum of a sixty foot perimeter and it
goes out from the culvert in an unnatural angle for damming so beavers leave it alone.

The railroad track crews had been cleaning the culverts every other day. According to the track supervisor the cost of the two protective fences was less than what the railroad was spending in one week to keep the culverts clear. They have not had to clear them since the installation.

CASE STUDY #3 - Trapping and Exclusion
Amtrak Commuter Rail, Leominster, Massachusetts

The railroad tracks in this area go through prime beaver habitat. There are several culverts which have been blocked with beaver dams repeatedly for years. The very low railbed and beaver-chewed trees near signal wires made this a “no tolerance” zone for beavers and ponding. As it was open trapping season (November 1 - April 15), no special permits were required as long as live traps were used. All the beavers in the area were trapped with Hancock traps and subsequently euthanized in a carbon dioxide chamber.

Once the beavers were removed, the culverts were protected from future damming with low-cost cylindrical fences or “culvert tubes”. *It is important when removing beaver from an area to modify the habitat whenever possible, to prevent reoccurrence of the problem.*

CASE STUDY #4 - **Pond Leveling System and Selective Removal**
Western Massachusetts Electric Company, Montague, Massachusetts

The rising height of two beaver dams made access to transmission towers increasingly difficult, especially in the event of an emergency. With approval of the local conservation commission and with breach permits from the Division of Fisheries and Wildlife, the dams were breached a small amount every morning for several mornings. This slow breaching allowed for a gentle
lowering of the ponds and prevented downstream flooding and siltation. Once the ponds were lowered by two feet, we installed a 12" pond leveler through each of the two beaver dams.

The pond was very old and the beaver colony quite large. Aggressive secondary damming downstream of one of the pipe systems necessitated selective removal of the most aggressive dam building beavers. As the trapping occurred during open trapping season and Hancock traps were used, no special permits were necessary. We placed the traps at the new problematic dam far from the beaver lodge. Several very large adult beavers were removed with this technique. The smaller beavers will remain in place to maintain the dams and the wetlands at the lowered level. No new damming has reoccurred.

Beaver Solutions
Your resource for resolving beaver-related problems in Massachusetts

Who We Are
At Beaver Solutions we specialize in resolving human/beaver conflicts. Our highly successful flow devices usually offer the most cost-effective and long-lasting solution to beaver-related flooding problems. We also offer licensed beaver removal.

What We Have Done
We have solved over 140 beaver problems in 42 Massachusetts communities and four states, for 22 Highway Departments, three railroads, towns, businesses and private landowners. Our experience in this field can help communities with permitting issues, and explain the variety of options available to resolve beaver problems. Our consultative services include the development of comprehensive beaver management plans for towns.

What Does It Cost?
Most culvert protective fence systems cost $300 to $500 installed and our beaver pond pipe systems are usually $400 to $1000 installed. Trapping typically costs from $200 to $750 per colony, but often must be repeated annually. Beaver pond pipes and culvert protective fences typically protect property for 8 to 15 years. All flow device installations include our Beaver Solutions money-back satisfaction guarantee. Beaver Solutions is fully insured.

Are Beaver Ponds Unhealthy?
No. Beaver ponds have many benefits to humans and few problems. Scientists have estimated that each acre of beaver pond delivers approximately $8000 in services to humans annually. These wetlands reduce downstream flooding, improve water quality

by reducing erosion and water turbidity, remove runoff toxins (pesticides and fertilizers), recharge aquifers, maintain the water table, and equal rain forests in the biodiversity that they support. Giardia occurs if human waste contaminates the water supply. Many animals other than beaver, such as muskrats and wading birds can then become carriers of this parasite. Due to pond-based predators there are usually less mosquitoes at beaver ponds than there are in forested areas.

Are Permits Needed?
Yes. Conservation Commission, Board of Health, and Massachusetts Division of Fisheries and Wildlife (DFW) approval are required, depending on the circumstance, for work in a wetland or on a beaver dam. Beaver Solutions is able to assist with this process. A license from the DFW is required to trap a beaver.

Beaver Solutions
Mike and Ruth Callahan, Owners
98 Bay Road
Hadley, MA 01035
Phone: (413)-535-9145 Fax: (413)-587-9788
E-mail: mrcallhn@aol.com

The Law

The 1996 Wildlife Protection Act (Question 1) was passed by a 64% majority of Massachusetts' voters and consisted of three sections:

1. It restricts the use, setting, manufacturing or possession of body gripping traps (such as leghold traps) to capture fur-bearing mammals;
2. It prohibits the pursuit or hunting of bear or bobcat with dogs;
3. It eliminates the requirements that 5 of the 7 board members of the DFW – the agency responsible for managing wildlife – must have held sporting licenses for 5 consecutive years and that 4 members must represent trapping, hunting and fishing interests.

Section one of this law is the portion that impacts how beaver problems are solved; this section was changed in July 2000. The entire section, M.G.L. Ch. 131 § 80A, is shown below. Please note that regulations written by the Division of Fisheries and Wildlife to accompany the law are important for you to have and are included in this manual under "Regulations."

If you have any questions about the law, please contact the MSPCA's Department of Advocacy at 617-522-7400.

GENERAL LAWS OF MASSACHUSETTS

Chapter 131: Section 80A. Leghold traps and certain other devices restricted; punishment.

Section 80A. Notwithstanding any other provision of this chapter, a person shall not use, set, place, maintain, manufacture or possess any trap for the purpose of capturing furbearing mammals, except for common type mouse and rat traps, nets, and box or cage type traps, as otherwise permitted by law. A box or cage type trap is one that confines the whole animal without grasping any part of the animal, including Hancock or Bailey's type live trap for beavers. Other than nets and common type mouse or rat traps, traps designed to capture and hold a furbearing mammal by gripping the mammal's body, or body part are prohibited, including steel jaw leghold traps, padded leghold traps, and snares.

The above provision shall not apply to the use of prohibited devices by federal and state departments of health or municipal boards of health as defined in section 1 of chapter 111,
for the purpose of protection from threats to human health and safety. A threat to human health and safety may include, but shall not be limited to:

(a) beaver or muskrat occupancy of a public water supply;

(b) beaver or muskrat-caused flooding of drinking water wells, well fields or water pumping stations;

(c) beaver or muskrat-caused flooding of sewage beds, septic systems or sewage pumping stations;

(d) beaver or muskrat-caused flooding of a public or private way, driveway, railway or airport runway or taxi-way;

(e) beaver or muskrat -caused flooding of electrical or gas generation plants or transmission or distribution structures or facilities, telephone or other communications facilities or other public utilities;

(f) beaver or muskrat -caused flooding affecting the public use of hospitals, emergency clinics, nursing homes, homes for the elderly or fire stations;

(g) beaver or muskrat-caused flooding affecting hazardous waste sites or facilities, incineration or resource recovery plants or other structures or facilities whereby flooding may result in the release or escape of hazardous or noxious materials or substances;

(h) the gnawing, chewing, entering, or damage to electrical or gas generation, transmission or distribution equipment, cables, alarm systems or facilities by any beaver or muskrat;

(i) beaver or muskrat-caused flooding or structural instability on property owned by the applicant if such animal problem poses an imminent threat of substantial property damage or income loss, which shall be limited to: (1) flooding of residential, commercial, industrial or commercial buildings or facilities; (2) flooding of or access to commercial agricultural lands which prevents normal agricultural practices from being conducted on such lands; (3) reduction in the production of an agricultural crop caused by flooding or compromised structural stability of commercial agricultural lands; (4) flooding of residential lands in which the municipal board of health, its chair or agent or the state or federal department of health has determined a threat to human health and safety exists. The department of environmental protection shall make any determination of a threat to a public water supply.

An applicant or his duly authorized agent may apply to the municipal board of health for an emergency permit to immediately alleviate a threat to human health and safety, as defined in the previous paragraph. If the municipal board of health determines that such a threat exists, it shall immediately issue said emergency permit to alleviate the existing threat to human health and safety, for a period not exceeding 10 days. If denied, the applicant or his duly authorized agency may appeal said emergency permit application to the state department of public health or director. If the state department of public health or director determines that such a threat exists, it shall immediately issue said emergency permit to alleviate the existing threat to human health and safety, for a period not exceeding 10 days.

The aforementioned emergency permit authorizes the applicant or his duly authorized agent to immediately remedy the threat to human health and safety by one or more of the following options: (a) the use of Conibear or box or cage-type traps, subject to the regulations promulgated by the division; (b) the breaching of dams, dikes, bogs or berms, so-called, subject to determinations and conditions of municipal conservation commissions under section 40; and (c) employing any non-lethal management or water-flow devices, subject to determinations and conditions of municipal conservation commissions under section 40.

If said threat to human health and safety has not been alleviated within said 10 days, the applicant or his duly authorized agent in conjunction with the municipal board of health, shall apply to the director for an extension permit to continue the use of alleviation techniques, specified in this section, for a period not exceeding 30 days. If

the director determines that such a threat to human health or safety exists, as defined in this section, the director shall immediately issue an extension permit.

If director determines that said extension permit should be continued for 30 days, the director shall within 30 days of such decision develop, with the assistance of the applicant or his duly authorized agent, municipal board of health and municipal conservation commission, a plan to abate the beaver or muskrat problem using alternative, non-lethal management techniques in combination with water-flow devices, where possible, subject to the determinations and conditions of municipal conservation commissions under section 40, and if necessary, box and cage type-traps in order to provide a long-term solution . The director shall take reasonable steps to implement the plan within this 30-day period.

Compliance with the provisions of any or all of the previous four paragraphs shall not preclude the applicant from applying to the municipal board of health for an additional emergency permit, provided the applicant (a) states in writing that there exists on the property an animal problem which poses a threat to human health and safety, as defined in this section, which cannot reasonably be abated by the use of alternative, non-lethal management techniques or box or cage traps, and that the applicant has attempted to abate the animal problem using alternative, non-lethal management techniques or box or cage traps, or (b) is awaiting the director's approval for an extension permit.

An applicant or his duly authorized agent under clause (b) shall be eligible for only two additional emergency permits, the first of which shall entitle the applicant or his duly authorized agent the use of all or any of the alleviation techniques previously allowed under the initial emergency permit. Said first additional emergency permit shall expire in 10 days. If the director still has not acted within this ten day period, the applicant or his duly authorized agent shall be eligible for a second additional emergency permit. Said second additional emergency permit shall entitle the applicant or his duly authorized agent the use of all alleviation techniques previously allowed in this section, except for the use of Conibear traps. The second additional emergency permit shall expire on the rendering of a decision by the director regarding the extension permit.

The division shall provide a report annually to the joint committee on natural resources and agriculture on the creation, implementation and efficiency of such animal problem plans.

A person or his duly authorized agent may apply to the director for a special permit to use otherwise prohibited traps 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 30A. Such rules and regulations shall include, but not be limited to, provisions relative to the following:

The applicant shall apply to the director in writing and shall state that there exists on the property an animal problem which cannot be reasonably abated by the use of traps other than those prohibited by this section, and that the applicant has attempted to abate the problem using traps permitted under this section. If the director determines

that the applicant has complied with sections 37 and 80, if required to do so, and any other laws regarding trapping, and that such an animal problem exists which cannot reasonably be abated by the use of alternative, non-lethal management techniques or traps other than those prohibited by this section, the director may authorize the use, setting, placing or maintenance of such traps, not including leghold traps, for a period not exceeding 30 days during which time the applicant shall remain in compliance with the procedures for obtaining a special permit as set forth in regulations adopted pursuant to this section.

Whoever violates any provisions of this section, or any rule or regulation made under the authority thereof, shall be punished by a fine of not less than $300 nor more than $1,000, or by imprisonment for not more than six months, or by both such fine and imprisonment for each trap possessed, used, set, placed, maintained, or manufactured. Each day of violation shall constitute a separate offense. A person found guilty of, or convicted of, or assessed in any manner after a plea of nolo contendere, or penalized for, a second violation of this section shall surrender to an officer authorized to enforce this chapter any trapping license and problem animal control permit issued to such person and shall be barred forever from obtaining a trapping license and a problem animal control permit.

Dam Breaching and Wetland Ecology

Wetlands are among the most biologically productive natural ecosystems in the world. Beavers play an integral role in establishing and maintaining the wetlands that provide critical environmental functions. Beaver ponds, or impoundments, provide habitat for fish, amphibians, turtles, otters, and many other animals. Trees that are killed by beaver-induced flooding of wooded swamps provide nesting sites for great blue herons, wood ducks, and other birds. Beaver dams hold water within the landscape, maintaining local groundwater levels and providing flow to streams during even the driest portion of the summer season.

The wetlands that beavers create support not only an abundance of animal and plant life, but they also serve many vital functions that benefit humans as well. Beaver habitat improves water quality by acting as a settling basin, controls flooding and reduces erosion by slowing water movement, processes organic wastes, removes toxins like pesticides and fertilizers, filters runoff, and protects against droughts. Beaver created wetlands are dynamic, rich environments that go through regular cycles with different ecological values at each stage. For example, after wetlands age and beavers abandon them, they are transformed into fertile meadows supporting a myriad of plant and animal life.

Partially or completely breaching beaver dams can have negative impacts on all of the species inhabiting the impoundment. Conservation commissions should allow only the minimum amount of beaver dam removal necessary to abate an immediate public health, safety, or property damage threat. Usually, this means allowing the removal of a small section of the top of the dam, down to a specific elevation (typically no more than two feet below the top of the dam).

Seasonal issues should be addressed in conservation commission's conditions. For example, in the fall turtles and amphibians enter a resting state for the winter season. Many of these animals will be present in shallow muddy areas around the edges of the beaver pond. If the water level is drawn down during the fall or winter, these animals can be killed due to exposure to freezing conditions. Similarly, if water levels drop below the entrances to the beaver's lodge, they too will be exposed to freezing air. Beavers also may lose access to their food caches, either because the cache is exposed and freezes, or because the lodge entrances are now above frozen, lower water levels. This is an inhumane way to address the beaver problem, leaving them to a slow death from cold and starvation. Whenever possible, fall and winter drawdowns should be strictly conditioned and limited to prevent these kinds of impacts.

GIARDIA

Giardia lamblia is a common, single-celled parasite, which can cause an illness of the intestines known as Giardiasis. The disease can be found throughout the world and is widespread among mammalian, avian, and reptile species; including humans, companion animals, wildlife, sheep and cattle, and wading birds. Giardia goes through two stages: during the trophozoite stage, or "active" stage, it is in the intestine of the host and cannot survive on its own. It becomes infectious when it enters the tough,

protected cyst stage, and is shed in the feces of the host. In the cyst form, Giardia can be killed between 54-56º C (dies instantaneously at boiling point, 100º C), but it can last 2-3 months in cold water (<10º C).

When humans become sick with Giardia, the Giardia parasite is predominantly spread via person-to-person contact. Due to poor hygiene practices, it can often result in transmission in developing nations, day-care facilities, and institutional settings. Contamination of food and water sources from human or animal infected fecal material is also a means of transmission. Symptoms of the disease usually appear from nine to twelve days after exposure; however, they can appear within five to twenty-five days. Some people don't show any signs of illness at all although they may still shed the parasite. The disease is characterized by numerous intestinal symptoms that can last from one week to a few months, and may include diarrhea, flatulence, abdominal cramping and discomfort, fatigue, and weight loss. Treatment is available through prescribed antibiotics. Some individuals recover without the need for medication.

Giardia and Beaver

Research has shown that Giardia of human origin can be transmitted to several wildlife species. More research is needed, however, to determine the role wildlife plays in transmitting Giardia to humans. Being a highly visible species in watersheds, the beaver has often been unfairly implicated as the source of Giardia contamination of fresh water resources. The term "beaver fever" is often used to describe waterborne outbreaks. However, current research shows that contamination from humans is regarded as a more probable source. In fact, humans are now considered to be the most common reservoir, as they shed 900 million cysts per day. There has never been a proven, documented case of a human contracting Giardia from beaver. Many studies claiming to have done so lack any scientific evidence in support of the claims. Giardia from human sources can enter waterways by many different methods, such as washed-out septic systems, untreated human sewage discharged into waterways, cabin toilets, and backpackers and campers who inadvertently deposit contaminated feces in the environment that is washed away by rain and ends up in rivers and streams. Near highly used human recreational areas, studies are showing that there are increased Giardia cysts in surface water and wildlife.

Prevention

You can protect yourself and your family from Giardiasis using preventative measures, such as good personal hygiene including frequent hand washing and wearing gloves when handling possible contaminated materials. Careful disposal of sewage wastes and protecting water supplies from human, companion animal, and wildlife contamination is also important. Avoid drinking water that has not been treated or filtered, and carry treated water (boiling water is most effective) or equipment for purifying water with you when you are hiking or camping.