

Beaver Impacts and Mitigation for Ballston Lake

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Ballston Lake Improvement Association

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Summary

The Ballston Lake Improvement Association is a voluntary group of residents dedicated to addressing lake and life quality issues for Ballston Lake landowners. Increasing lake levels and shore owner vegetation destruction, due, in part, from an exploding beaver population has prompted BLIA to address beaver management. Historically, the beaver population has been small, and the BLIA has obtained landowner and DEC permissions in the outlet area (Ballston Creek) to destroy beaver dams contributing to high lake levels. Despite this effort, shore owners report a continued steady increase in mean and peak water levels, and a reduction in the rate of receding levels after significant storm events. In recent years, beaver activity has increased the size and number of dams, and resulted in near instantaneous dam rebuilding, rendering BLIA removal activity relatively ineffective.

Within the past few years, beaver have been migrating out of the wetlands area to other wetlands in the Ballston lake watershed and onto the main body of Ballston Lake in search of food, enlarging the impacted area. It has been an ongoing goal of BLIA to encourage vegetative buffers along shorefronts for nutrient interception and shoreline

erosion control. The expanded range of beaver activity on the lake is threatening not just large ornamental trees, but shoreline woody shrubs.

It is the consensus of BLIA membership that while it is neither advisable nor practical to extirpate beaver from the watershed, that a reduction in the numbers of beaver to a level commensurate with the carrying capacity of the Ballston Creek wetlands corridor is needed to avoid further shoreline damage. While BLIA recognizes the controversial nature of beaver trapping, it also believes that the mushrooming beaver population at the lake is resulting in migration of beaver to other locations within the town where they are, or will be, trapped and that in the absence of top natural predators, human intervention is needed in heavily populated potential beaver habitat. Furthermore, while BLIA continues to consider flow control devices for circumventing high water levels caused by beaver dams, such measures, even if successful, will not protect shoreline vegetation, nor prevent the migration of beaver to other watershed locations where they will be trapped regardless.

Therefore, BLIA is supporting a program of beaver trapping within the lake watershed and in the Ballston Creek wetlands. This article summarizes our findings for the benefit of landowners from whom we seek permission to trap and/or place flow control devices and all other concerned residents.

Alternatives

The problems presented by beaver to lake residents are two fold; high water levels on the lake, and vegetation destruction along the lake shore. Beaver, most probably originating in Ballston Lake, are causing similar problems in other watershed areas. While not directly a BLIA problem, we are cognizant that we may be the source of nuisance problems elsewhere in town. BLIA has therefore investigated measures to deal with these two problems either separately or in an integrated management plan.

Lake Level

Flow control

BLIA volunteers have obtained DEC permits to remove beaver dams in the outlet areas since the early 1990's¹. An annual or bi-annual activity has been coordinated to breach the dams. Volunteer consensus is that in recent years, dams have been repaired to original height within days, thus providing only temporary relief. It is widely understood that beaver respond predictably to the movement of water and, if present, they will quickly repair dams. For this reason, many consider the breaching of dams to be a futile

¹DEC permits are issued to the landowners. BLIA has coordinated dam removal permits with Curtis LLC for many years. With the expanding numbers of beaver and dams, and with some land ownership changes within the outlet area, BLIA will need to seek additional landowners to agree to permits to continue this activity. Practically speaking, it is very difficult to identify property locations in the middle of the wetlands as there are no property markers and landmarks are generally not visible from the stream. BLIA is attempting to utilize GPS and GIS technology to identify affected landowners.

endeavor². It is unclear how depleted the local food resource must become before beaver will vacate the habitat, however, it is likely, as is true in the Adirondacks, that all preferred food will need to be removed within about 100 feet of the wetlands. Our expectation is that with the extent of the Ballston Creek wetlands and the relative abundance of woody shrubs in this wetlands, that at least a small number of beaver could be sustained indefinitely - it seems unlikely that natural starvation will eliminate beaver activity in this area.

Flow control devices are under consideration³. Flow control devices are designed to allow water to bypass a dam structure in a way that cannot be contravened by the beavers. The beaver dam remains intact with flow control device and under heavy flow conditions, water levels would be expected to rise to the dam top, before receding to the level of the flow control. In the absence of water flowing over the dam, it is expected and believed that beaver will not attempt to continuously raise the spillway elevation for the bypassed dam so that peak water elevations can probably be minimized. If the mean lake level can be reduced by about 12-18" to values typical of 1970-1980, temporary excursions up to 12-18" may be acceptable.

BLIA has contacted a number of agencies and individuals about flow control devices. The responses have been very polarized: a) flow devices are a completely useless waste of money and time, or b) flow devices are a proven cost effective measure with high reliability and low maintenance. BLIA is trying to sort out this conflicting information and will be gathering additional hydraulic information in the spring to see how our situation compares with cited successes and failures of these devices. Two considerations are already well known; a) if the topography supports the formation of dams in multiple locations, then multiple flow control devices will be needed - each device simply triggering a new dam in another location, b) the Ballston Lake watershed is 30 times the size of the lake - about 9000 acres; peak water flows expected to drain the lake from a 2 inch rain storm could easily reach hundreds of cubic feet per second (CFS), well in excess of the flow capacity of the largest tested devices - placing our needs above the limit of deployed technology.

Recognizing a certain futility in lake level control by dam breaching, yet cognizant of the highly variable results from flow control devices plus their high initial cost⁴, BLIA believes that even an attempt at flow control devices requires a reduction in beaver population so that only one, or perhaps, two dams⁵ will be supported by the beaver

² Much anecdotal evidence can be cited by highway and municipal services to the effect that dam breaching is a very temporary solution. A significant service industry has evolved to design and build devices that will divert flow around or under a dam in a way that thwarts beaver dam repair. BLIA contracted a seminar by one such individual wildlife biologist (Skip Lisle - Beaver Deceivers LLC) supports the futility of such activity.

³ For instance, Laura Simon, "Solving Beaver Flooding Problems through the use of Water Flow Control Devices", proc 22nd Vertebrate Pest Conference, UC Davis, 2006

⁴ Ibid, Skip Lisle. \$2500-3000 per device (dam).

⁵ Ibid, Simon, Virtually all of the failures of beaver dam devices (as opposed to culvert devices) in the cited studies were due to the building of another dam.

population and the installation of flow control devices will not simply export the dam problem upstream or downstream⁶.

Trapping

There appears to be broad consensus that beaver trapping will not permanently extirpate beavers from a desirable habitat. There is less agreement about targeted trapping in isolated problem areas that are not easily decolonized. There also appears to be broad consensus that, in desirable beaver habitat, population control will require annual maintenance trapping after an initial intense trapping activity⁷. Given that the Ballston Creek wetlands are a desirable habitat at the intersection of five greenway systems in Saratoga County⁸, it is felt that repopulation is inevitable, and probably rapid. There should be little expectation that a trapping program will eliminate beaver in the outlet area entirely and there will, therefore, be dams. Trapping alone will, in all likelihood, not completely solve lake level problems.

Vegetation destruction

Physical barriers

Wire mesh barriers and/or grit fortified paints are recommended for discouraging beaver attack on ornamental trees⁹. As with flow control devices, BLIA has received diametrically conflicting reports about their efficacy and cost. There seems to be general agreement on the preferred food sources (birch, alder, aspen, willow, apple) and undesirable sources (cedar, spruce, hemlock), less so on the more expansive range of woody stemmed shrubs and trees (members of the dogwood family, winterberry, flowering shrubs, maples, exotic ornamentals...) that might be found on landscaped yards. Nor is it clear if invasive species (buckthorn, honeysuckle, burning bush..) are preferred or avoided food. There seems to be general agreement that beaver will not travel far from water to obtain food - no more than 100 feet¹⁰.

⁶ Mr. Lisle felt it could not be stated with any certainty that reducing the water level at a particular dam would not result in a new dam being constructed upstream. Whether such a dam would be constructed is apparently not something that can be predicted by the current state of the art. BLIA could be faced with having to construct and maintain an array of flow control devices to reduce the lake level.

⁷ Those with diametrically opposed philosophical positions ranging from the US Humane society (see Simon) to professional trappers (Mr. Jim Comstock) seem to agree on this point.

⁸ The area around Ballston Creek was designated in the Saratoga County Green Infrastructure Plan as an important natural area because it is the intersection of five greenway systems in Saratoga county - Mourningkill, Ballston Creek, Drummond Creek, Ballston Lake Valley, and the Kayaderoserras (via Mourningkill north). These routes all provide riparian migration routes for beaver.

⁹ "Solving Conflicts with Beavers". The Humane Society of the United States

¹⁰ 100 feet is cited by the Humane Society and Skip Lisle. It is consistent with the width of fir/cedar shore vegetation on Adirondack lakes surrounded otherwise by hardwood forests. Birch is clearly the first tree to go in ADK's, but all other deciduous trees will be removed in time.

There are two complicating issues with Ballston Lake. The first complication is that with a developed shoreline of seven miles except for interspersed wetland frontage, close to 100 acres of land are within 100 feet of the shore - a very large area, with many, many trees to beaver proof. The second issue is that protecting small woody stemmed shrubs that are desired for shoreline planting is difficult, if not impossible, using these methods. Efforts dating back to the 2001 watershed study¹¹ have emphasized the need to retain and promote vegetative buffers along the lake shore for protection against nutrients and shoreline erosion. Municipal planning reflects this in the comprehensive plan adopted in 2006 and in the watershed overlay district regulation adopted in 2009. The only recommended solution for shrub predation is the planting of undesirable shrubs along the shoreline. This represents a further hurdle to achieving a recognized best practice for water quality protection.

Trapping

Vegetation is food. Fewer beavers require less food. As noted earlier, the goal of trapping is not the extirpation of beaver, but as humans acting as surrogate top predators to keep the beaver population at sustainable levels. It is felt that undeveloped shoreline and the wetlands in Ballston creek provide sufficient desirable forage for beaver in modest numbers so they will not be driven to consume developed shoreline vegetation.

It is BLIA's opinion that beaver population needs to be reduced so that undeveloped shoreline and existing wetlands provide a sustainable food source for beaver. It does not appear practical, cost effective or politically achievable to wire wrap every tree and shrub around the lake.

Regulations

DEC

NYS Department of Environmental conservation regulates stream modification and nuisance wildlife. Permits are required to remove beaver dams or to trap beaver¹². DEC recognizes that beaver increasingly constitute nuisance wildlife and therefore has a policy to prohibit the live trapping and relocation of beaver¹³. "DEC will not authorize relocation of problem beaver except under extraordinary circumstances and then only after there has been careful consideration of all other options"¹⁴ Trapping or dam

¹¹ CDRPC, "Watershed Protection and management plan for the Ballston lake watershed", 2001

¹² Permit document number or reference

¹³ August 19, 2009 letter from DEC Region 5. "The NYSDEC Bureau of Wildlife does not allow live-trapping and transfer of beavers for the abatement of nuisance beaver damage". Call 518-623-1240 for more information (Warrensburg).

¹⁴ DEC web site: <http://www.dec.ny.gov/animals/6992.html>

removal/modification permits¹⁵ are issued to landowners - landowners may assign this permit to a third party, such as a trapper. BLIA will acquire and prepare permits for landowners.

Resources

BLIA has contacted many agencies and individuals in order to assess a management plan. In many cases sources preferred to remain anonymous because of the controversy that surrounds trapping. Much information is anecdotal or imprecise. BLIA maintains membership in FOLA (Federation of Lake Associations) and FOLA members were consulted for experience and suggestions for beaver management. Listed below are some of the main agencies and individuals that have contributed information. A brief synopsis of our interaction has been provided.

DEC

DEC region 5 headquarters in Warrensburg. Marc Migliore, Deputy Regional Permit Administrator Division of Environmental Permits, Region 5. Melissa Neely, Sr. Wildlife Biologist. BLIA officers traveled to DEC headquarters to discuss regulations concerning beaver dam removal, installation of flow control devices and trapping of beaver. DEC provided a copy of its policy on nuisance beavers. DEC maintains an informative web site about nuisance beavers¹⁶

DEC EOC officer James Service, Ray Brooke, NY. 518 -897-2790. BLIA officer's have been in regular contact with Mr. Service regarding this and other matters.

USDA

US agricultural wildlife specialist Bryan Haslun was contacted¹⁷. Mr. Haslun was taken on a tour of the lake and wetlands and prepared a proposal for the managing the effects of the beavers. The USDA proposed a \$2100, 1 week, trapping program and dam breaching activity.

US Humane Society

BLIA has had multiple contacts with the US Humane society field director for Urban Wildlife Program, Laura Simon. BLIA paid for a seminar by wildlife biologist Skip Lisle

¹⁵ NYS DEC "Complaint Record and Permit Form", Permit to take destructive wildlife pursuant to Environmental conservation law 11-0521.

¹⁶ DEC web site: <http://www.dec.ny.gov/animals/6992.html>

¹⁷ Proposal dated April 22, 2009. USDA Wildlife Services, 1930 Route 9, Castleton, NY 12033-9653. 518-477-4837

of Beaver Deceivers, LLC, a USHS recommended supplier for flow control devices. USHS has also provided publications on flow control, vegetation protection and wildlife biology of beavers.

Professional Trapper

BLIA has been in contact with Mr. Comstock, a trapper recommended by the Saratoga County Environmental office. Mr. Comstock has many years experience trapping and has been involved in beaver nuisance trapping in several nearby areas.

Beaver FAQ

How many are there?

No precise numbers appear possible. Disparate sources ranging from professional trappers to wildlife biologists opine that a precise measure of the population is essentially impossible. Because they are underwater, nocturnal and sequestered in lodges a direct count is next to impossible. The number of lodges is not considered to be proportional to beaver population as many are not active. Direct simultaneous sightings suggest a minimum of 10 beaver, but estimates range as high as 50. Trapping in other county locations with nuisance beavers in similar sorts of environments have killed 20-40 animals. Typically 20-30 the first year - half to a third of the first year take the second year. Ten lodges have been counted on the lake and wetlands – at least 5 of these appear active. A typical family unit consists of 6 to 12 individuals: parents and two years of offspring – on this basis we might also estimate 30 to 60 beaver.^{18, 19}

How long would trapping take?

BLIA has collected money to hire a trapper on a per effort basis. Approximately 2 weeks of trapping time has been funded, although the actual duration of trapping depends greatly on the number of beaver, number of locations and the quality of the trap setting locations (which in turn will be affected by the number of participating landowners). BLIA anticipates that two rounds of significant trapping will be required, probably about 1 year apart. A maintenance trapping program to remove a few beaver every year or every other year is anticipated. There is no set trapping season for nuisance beavers on

¹⁸ Canada Museum of Nature. 10-12 individuals. <http://www.nature.ca/notebooks/English/beaver.htm>

¹⁹ Mass. Department of Fish and Wildlife: 6-8 individuals,
http://www.mass.gov/dfwelc/dfw/wildlife/facts/mammals/beaver/beaver_natural_history.htm

private land. BLIA is continuing to evaluate flow control devices. No flow control device would be attempted until a first round of trapping was completed.

What are the trapping method(s)?

USDA proposed bodygrip and foothold traps. The proposed contract trapper will use conibears²⁰ primarily and snares as a secondary method. Conibears kill, and snares usually capture alive. Footholds would rarely be used. Live capture traps may be dispatched with a shot to the head. No guarantees can be made that beaver will not be drowned in the trapping process, but this is a rare event and not planned. Traps are visited on a daily basis. As noted earlier, live trapping and relocation is not permitted in NYS.

What do we know about beaver natural history?

A beaver pair will produce 4 kits per year on average. Kits are born between April and June. Two year olds are forced to relocate from the family unit; it is believed that new beaver colonies in the water shed area (Forest Road area, in and about the bike path, Round lake road area) represent migration from Ballston Lake (or Round Lake). With suitable food supply and habitat, population can grow at 20 to 30% per year. Wolves and wolverines are the only predators of full grown beaver. Bear, coyote, lynx, fisher and otter may predate young beaver. Only coyote and fisher have any presence in the Ballston Lake area. DEC states that, overall, natural predation probably has little effect on beaver populations in New York State.²¹ Road kill is a significant source of mortality. Alligators are predators, but unsuited for our area. Beaver life span estimates range from 6-7 years in the wild, to 12 years²². Life span up to 20 years in captivity. Average adult beaver weights 30 to 70 lbs. We are unaware of any methods of birth control for beaver.

The sound and force of moving water stimulates beaver to dam building activity. Dam breeches produce the sound and motion needed to stimulate activity; water flowing over a dam stimulates activity with beavers plugging the biggest leak, inexorably rising the level of the dam. Beavers prefer to dam from above - allowing water flow to help position dam building material. Flow control devices act to diffuse both the sound and motion of the water so that beaver instincts will not be triggered. Beavers will seek to build dams at natural pinch points in stream corridors; not all sections of a stream will be equally susceptible to damming - it is our hope that stream sections upstream from current dam locations will be unattractive to beaver and that flow control devices might prove practical. Beaver will avoid high gradient streams - thus little or no beaver activity is

²⁰ <http://www.dnr.sc.gov/wildlife/beaver/beavermgmt.html>

²¹ DEC web site. <http://www.dec.ny.gov/animals/6992.html>

²² Nature's Hydrologists: From chapter 2, "Nature's Hydrologists" in Water: a natural history by Alice Outwater. Copyright 1996 by Alice Outwater. See http://www.shawsheen.org/Beavers/Natural_History_of_Beavers/natural_history_of_beavers.html

located on Ballston Creek between Eastline Road and I-87. Beaver will not be stimulated to dam on nearly stagnant flow, thus beaver dams in the outlet have (so far) been mostly confined to the end near Eastline road where flows begin to accelerate.