



Belmont's Section 3A Rezoning Process Explained

By Doug Koplow

A longer version of this article is online at bit.ly/BCF-3A

Belmont is undergoing a significant rezoning process in response to the state's MBTA Communities Act, commonly referred to as Section 3A. This law, passed in January 2021, aims to increase housing stock across 177 communities served by the MBTA, including Belmont. It mandates changes to local zoning requirements to allow for increased construction of multifamily housing. It sets quantitative targets for the number of housing units, acreage covered, density, and the minimum size of a rezoned area. Because Belmont is classified as a commuter rail community, we must meet the following requirements:

- The rezoning will allow for 1,632 multifamily units, equaling 15% of our current household total. Multifamily zoning is defined as three or more units per parcel. Each area of town zoned as 3A must allow at least 15 units/acre.
- Construction is "by right" and overrules most town zoning bylaws now in place.
- Fifty percent of the units must be located within a half mile of a commuter rail station (in Belmont, either Belmont Center or Waverley Square).
- At least 27 acres must be included in the 3A zoning. Any district designated as 3A must be a minimum of 5 contiguous acres; also, one district must be large enough to include at least 50% of the total acres zoned as 3A.
- Belmont must submit a 3A-compliant plan to the state by December 31, 2024.
- Section 3A is not an affordable housing initiative; affordability requirements above 10% must be preapproved by the state. Instead, it focuses on increasing housing production. The strategy adopted by the state is likely to favor larger developers.

In response to this mandate, Belmont established the MBTA Communities Advisory Committee

to evaluate options and guide the rezoning process. The committee has seven members representing various town boards, commissions, and committees. It does not include abutters, even though the law could heavily impact that group.

The committee has faced numerous challenges. Significant technical problems with the state-provided (and mandatory) compliance model have complicated the town's options review and compressed our response timeline. The first fully compliant model runs weren't available to the committee until January 25, 2024.

Despite the scale of the zoning changes, statutory requirements for town passage of a 3A plan and state pre-review timelines mean Belmont's near-final proposal must be delivered to the state on June 13, less than five months after that model became available. The Belmont Planning Board, which has assumed responsibility for completing the 3A planning process, may decide that the June 13 deadline is unrealistic and that more review time is needed. However, this response would result in either foregoing state pre-review (increasing the risk of problems later) or missing the state's December 31 deadline for Belmont to have an approved 3A rezoning plan.

Additional challenges have included evolving state regulations, which require frequent review and coordination with state regulators, and widespread resident concerns about the potential impacts of new, larger multifamily buildings on existing residents and the "look and feel" of the town.

The committee has strived to balance the state's requirements with the interests and concerns of Belmont residents. A critical tension has arisen between people advocating for meeting the minimum requirements set by the state and people pushing to exceed these requirements in order to achieve other social and community goals. The committee ultimately decided to aim for minimum compliance plus a 10% buffer to protect against potential state disqualification of parcels.

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Belmont Citizens Forum Inc. is a not-for-profit organization that strives to maintain the small-town atmosphere of Belmont, Massachusetts, by preserving its natural and historical resources, limiting traffic growth, and enhancing pedestrian safety. We do this by keeping residents informed about planning and zoning issues, by participating actively in public hearings, and by organizing forums.

The *BCF Newsletter* is published six times a year, in January, March, May, July, September, and November. Published material represents the views of the authors and not necessarily those of the Belmont Citizens Forum.

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Other contentious issues included how to distribute the impact of rezoning across the town, protecting the town's very limited commercial zoning and associated tax base, adequately protecting neighbors against the effects of new larger buildings with much smaller setbacks, and whether to reduce or maintain parking minimums. The current proposal protects most commercial areas and historical structures, places the largest buildings away from neighbors where possible, and reduces but does not eliminate parking minimums. Although 3A zoning includes multiple town districts, compliance with 3A rules requires a single large district located in Waverley.

The process has now been handed over to the Belmont Planning Board, which will continue to review and refine the rezoning plan. The town has hired Utile, an external contractor, to help refine building standards, develop massing images to illustrate potential impacts on neighbors, conduct an economic impact analysis, and draft the final zoning language.

In the coming months, the Planning Board will likely adjust building scales and setbacks where the impact on abutting homes is particularly large, address budget concerns that arise from the economic impact analysis, and continue to work with the state on pre-approval of crucial plan elements.

The Planning Board will hold public hearings on its proposals before presenting a final option to the Town Meeting for a vote, now scheduled for November.

Doug Koplow is a Precinct 6 Town Meeting member, a member of the Cushing Square Neighborhood Association, and a Solid Waste and Recycling Committee member.



JEFFREY NORTH

Vacancy Registry Could be Good for Business

By Paul Joy and Taylor Yates

One of the key issues that both the Vision 21 Implementation Committee and the Economic Development Committees grapple with is the long-term vacant storefronts in our vital commercial areas: Belmont Center and Cushing Square.

Our committees are asked constantly about what Belmont should be doing to address these issues and drive down the vacancy rates in places like Leonard Street, which was reported to have a 20% vacancy rate by the Belmont Center Business Association. Large vacancies such as the old CVS space continue to languish as well. We agree that the situation here begs for immediate attention and innovative solutions.

To put this vacancy rate in context, the Boston Metro Area recently reported that Boston tied Miami and Raleigh for the lowest retail vacancy rate in America, a mere 2.9%, according to a report from Marcus & Millichap. This metric indicates that it is harder than ever for businesses in our region to find suitable space to start and grow.

At the same time, neighborhoods like Belmont Center struggle with empty storefronts that harm our quality of life and the stores around them. Empty storefronts don't draw foot traffic, and that lack hurts every business in the neighborhood. Not having any significant anchor businesses in either the center or Cushing Square also harms existing businesses.



JEFFREY NORTH

Why Does Belmont Need a Vacancy Bylaw?

Our committees have found several innovative initiatives that neighboring towns are implementing to tackle these problems. Take our neighbor, Arlington. Based on our discussions with their town staff, business community representatives (many of whom also have Belmont storefronts), and our personal experience with vacancy rates, Arlington has had great success with their storefront vacancy bylaw, and it remains a very popular program.

A storefront vacancy bylaw would create a storefront vacancy registration program, reducing search costs for businesses seeking locations in Belmont. Rather than drive around town looking for a promising storefront, tracking down the owner's contact information, and then waiting to get basic information from the owner, every vacant storefront can be listed online, in one place. While we acknowledge that Belmont and Arlington are not identical, they are similar enough that when Arlington pilots a successful program, it makes sense for Belmont to consider it.

Timeline to Town Meeting

We have already completed a draft of specific zoning language to tackle this issue, and we will present our proposal to the Planning Board this spring. If the Planning Board takes up this zoning bylaw change, a statutory period for review and public comment would be held, likely over the summer, to ensure we stay on track to present it at the fall Special Town Meeting. With any luck, Belmont could implement the bylaw by the start of 2025, creating an important tool to improve our town's vibrancy.

While we are thrilled that the recent override was successful, it doesn't mean that we can or should stop zoning bylaw reform. If this election taught us anything, it was that candidates, voters, and elected leaders believe that expanding the commercial tax base is critical for Belmont's long-term success.

Paul Joy is chair of the Economic Development Committee, a member of the MBTA Communities Advisory Committee, and a Precinct 7 Town Meeting member. Taylor Yates is chair of the Vision 21 Implementation Committee, a Planning Board member, and a Precinct 2 Town Meeting member.

Vision for a Better Belmont: Chris Ryan

Town Planner, Director of Planning and Building

This is the fourth of a new series of interviews with Belmont leaders about their vision for Belmont's future. Jeffrey North conducted this interview. It has been edited for length and clarity. – Ed.

Chris Ryan has served as Belmont's town planner and director of planning and building (OPB) since September 2023. With more than 30 years of experience in city planning and economic development, Chris has worked at the town, city, county, regional, and state levels in the public sector in at least 10 communities and the New Jersey Meadowlands Commission; the Metropolitan Area Planning Council; and the Central Massachusetts Regional Planning Commission. Chris was an adjunct professor of planning at Worcester Polytechnic Institute, Antioch University, and Clark University. His areas of expertise include zoning and land use regulations, master planning, community resilience and relocalization, urban design, public participation, sustainability, water resource protection, free expression, self-censorship, and energy and environmental planning.



Chris Ryan

BCF

Please describe your vision for the Office of Planning and Building's strategic role in fostering Belmont's growth and development.

Belmont is a unique community located within Boston's inner-ring suburbs with a mix of urban and what I would call streetcar-era suburban development. It has largely maintained this character and scale for over a half-century. The challenge is to try to preserve the quality and character of Belmont while recognizing that it cannot be preserved in amber as a museum piece and needs to evolve strategically to achieve fiscal health and community vitality.

The OPB has the opportunity to develop the capacity and knowledge to provide the technical expertise needed to face this challenge by:

- Conducting the research necessary to identify the strengths, weaknesses, opportunities, and threats that will lead to an informed vision and allow policies to be developed that position Belmont strategically within a reasonable planning time horizon.
- Using existing capacity, identifying needed additional capacity, and leveraging volunteer and external resources to continue to plan for the future and identify projects and programs that align with the established policies.
- Thinking creatively to keep up with trends and best practices that fit with Belmont's vision for the future and planning goals and strategies.

We are fortunate to be supported by a strong administration that recognizes these challenges and

encourages continued departmental progress and organizational development.

BCF

In thinking about Belmont's residential and economic character, how is the OPB working to enhance these elements for the town's overall benefit?

Belmont possesses strong elements that position the town well compared to other communities in the region. Belmont has been quite conservative related to change historically, and while this may have prevented some needed evolution, it has also prevented some of the significant mistakes that other cities and towns have made that will be difficult to pivot from. Essentially, Belmont still has an opportunity to "get it right" regarding the sensitive and thoughtful development that will be necessary to compete economically in the region and offer the range of housing needed by underserved markets such as seniors, the workforce, and others.

A key precursor to doing meaningful economic development is to gather the requisite data. I have proposed conducting a comprehensive market analysis for Belmont that would estimate development potential in all desirable market sectors and follow this up by applying a fiscal impact analysis to these sectors. This should provide a strong estimate of potential revenue that could be received through economic development activity. Such analysis could be conducted using multiple scenarios, and one such scenario could be of a proposed MBTA Communities zoning proposal.

BCF

Can you provide examples of the OPB's collaborations with other town departments and committees? How will these collaborations contribute to tangible improvements in Belmont's community life?

OPB is a new department, still making the adjustments as we work to reinvent ourselves after the restructuring of the Community Development department. We are a mix of experienced and knowledgeable staffers who know Belmont well and new staffers who bring a lot of fresh new ideas but lack the historical knowledge of the community. We hope to blend these sets of staff capital into an effective and efficient mechanism.

At this early stage, OPB has collaborated with a range of town departments and committees such as the Economic Development Committee, Vision 21 Committee, the Council on Aging, the Housing Trust, the Town Administrator's Office, and the MBTA Communities Advisory Committee, among others, to carry on existing projects and programs. In time, we envision continuing to work with these groups and others to initiate new projects which could include a new comprehensive or master plan, engage in zoning reform, improve and make more efficient the development review process, and engage in meaningful economic development activities. By working collaboratively, we can maximize the potential to leverage our collective capacities and knowledge for the benefit of Belmont.

BCF

What initiatives are being considered to enhance accessibility and connectivity within Belmont, particularly in terms of public transportation and bicycle- and pedestrian-friendly infrastructure?

OPB does not currently engage in transportation and mobility planning but stands ready to collaborate with the entities that currently are charged with those responsibilities. We understand that comprehensive planning requires consideration of the public realm and addressing economic development and zoning reform will need to consider how changes relate to the public right-of-way such as streets, sidewalks, multiuse paths, etc.

There is no question that making Belmont more pedestrian and bicycle friendly is a critical element in the pursuit of community sustainability. But a walkable Belmont will also need things to walk to and from, [and] will need an active street realm so that people can feel safe and have destinations to reach, and this requires engaging in the type of planning that considers all elements collectively.

BCF

Given the increasing concerns about climate change, how is the OPB integrating principles of environmental sustainability and resilience into future development projects?

It is encouraging to see that Belmont has municipal and non-municipal groups active in elements of sustainability planning such as the

Energy Committee and Sustainable Belmont. Others such as the Vision 21 Committee and the Community Preservation Committee could embrace sustainability principles and be critical players in working toward a sustainable future.

But genuine sustainability is far more encompassing than just energy, waste reduction, and environmental preservation. It involves a balanced consideration of the three “E’s” or Environment, Economy, and Equity, which can be more challenging to integrate into policy and practice. It would benefit from more of a systems thinking perspective to maximize the prospect to achieve this. OPB is a logical facilitator for this kind of integration and stands ready for the opportunity to join in the discussion.

BCF
In what ways are emerging technologies, such as smart city solutions and digital infrastructure, being incorporated into long-term planning efforts?

Technology could and should have a significant role in not only assisting in our consideration of creative and innovative solutions to the vexing, intractable, and challenging planning problems we face, but also in the more mundane administrative tasks we engage in every day. Employing artificial intelligence might soon offer ideas and solutions that have been challenging us for decades. Current tools such as GIS, digital design modeling, smart mobility and parking, interactive public



Apple Pay parking meter, San Jose, CA.

participation, and smart sensors can be embraced to aid in analysis. We also need to be prepared for autonomous vehicles and other technologies that might be thrust upon us.

But we also have the opportunity to consider more robust tools to assist in permits and development review administration. All of this has a cost, and this, plus a resistance to change, is the biggest barrier. My hope is we can pursue these opportunities to provide the best customer service possible, to be as efficient as we can given our limited resources, and to solve our challenges innovatively.

BCF
How does the OPB envision addressing affordable housing challenges in Belmont ensuring inclusivity, socioeconomic diversity, and compliance with new state law?

I would be glad to answer both this and the following housing-related question, as they are both important. Affordable housing is not just a Belmont problem, it is a national problem that just happens to be a bit more acute in Belmont. First, a bit of clarity to set the table. It is regrettable that the term “affordable” has become such a pejorative. In Massachusetts, the formal definition of affordable is a housing unit priced within reach of an individual or family earning 80% or the Area Median Income or AMI. As of 2023, the 80% income threshold was \$86,050 for an individual and \$110,650 for a family of three. So, in reality, this eligibility level isn’t

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that helpful for people earning less than 80% of the median.

OPB is pleased for the opportunity to be working with the [Belmont] Housing Trust to encourage not only the development of affordable units in Belmont as per the definition, but also more deeply affordable units so that a wide range of hard-working people can afford to live respectably and comfortably in Belmont, people who teach our children, plow our driveways, bag our groceries, and work in the OPB. MBTA Communities zoning is not an affordable housing law, and the affordable units that could come from that program would be based on Belmont’s existing inclusionary zoning bylaw. Other initiatives would need to be pursued to make a meaningful dent in our housing affordability crisis.

BCF
Can you provide insights into upcoming changes in zoning regulations or land use policies aimed at balancing the MBTA Communities initiative with the preservation of Belmont’s historical character?

MBTA Communities zoning is based on state legislation requiring all 177 MBTA communities to establish a viable multifamily zoning district with a density of at least 15 units per acre. Each MBTA community has a unique application of the requirement based on area, developable land, MBTA status, and other criteria. Belmont will need to zone at least 28 acres for a minimum of 1,632 units in capacity. Belmont established an MBTA Communities Advisory Committee more than a year ago to help develop a workable program for Belmont, and OPB has been working with the committee and the Metropolitan Area Planning Council, Belmont’s technical consultant, and now also the firm Utile, to assist in this endeavor.

Given the fairly strict requirements and variety of technical criteria, the Committee and its partners have been challenged to develop a draft plan of a district that not only meets all of these requirements, but also meets the sometimes conflicting needs of the community. The work continues and will likely result in a plan being turned over to the Planning Board in April to continue refining until Town Meeting in the fall. [Note: This work has been turned over to the Planning Board - Ed.] It is important to understand that noncompliance would

Form Based Codes

From the *Form Based Codes Institute*:

A form-based code is a land development regulation that fosters predictable built results and a high-quality public realm by using physical form (rather than separation of uses) as the organizing principle for the code. A form-based code is a regulation, not a mere guideline, adopted into city, town, or county law. A form-based code offers a powerful alternative to conventional zoning regulation.

For more information, see formbasedcodes.org.

result in catastrophic loss of most grant funding from the state and likely litigation that would probably be more punitive than actual compliance.

Work on crafting the zoning language will be equally if not even more challenging than developing a map of the district. Ideally, a solid bylaw and complementary design guidelines should insure compatibility with Belmont’s existing character. A form-based code zoning solution similar to Brookline’s MBTA zoning would have been a good model to follow, but at this late stage, MBTA zoning for Belmont at least needs to have some graphical foundation, and that is what we hope to provide with the assistance of Utile.

BCF
Given your extensive experience and knowledge of how things work in other communities, what exemplary practices have you observed in well-run towns and communities that could be adopted in Belmont?

There is no way I could answer this as comprehensively as I’d want to so let me boil it down to a few key areas.

First, I would recommend a robust economic development function to not only consider sensitive opportunities for growth and development but to also provide the necessary support to Belmont’s existing businesses. Economic development does not mean mindless pursuit of expansive growth but rather a careful and selective quest for those types of businesses that would complement the quality

of life of Belmont residents, ensure that economic leakage is reduced—keeping more dollars circulating in Belmont, providing new jobs for residents, and strategically adding to the tax base. Such efforts should be informed by hard data that once obtained, can inform appropriate economic development policies and actions.

Second, I would recommend pursuing a new comprehensive plan that would serve as a blueprint for programs and policies that would lead to achieving the citizens’ vision for Belmont. Such a plan would be inclusive of areas such as land use and zoning, environmental and natural resources protection, transportation, facilities and services, economic development, historic and cultural



BCF director Vincent Stanton, Jr. displays the BCF’s Customers’ Choice award from Watertown Savings Bank. Thank you to Watertown Savings Bank and to all the BCF supporters who voted for the BCF!

resources, and other areas deemed important by residents. It should be a dynamic plan overseen by a permanent master plan committee and not a static, sit-on-the-shelf plan that would need to be redeveloped every 10 years at a high cost and no real opportunity for implementation. This plan should integrate three “S” characteristics: a systems analysis framework, scenario planning, and focus on sustainability.

Third and lastly for now, I would recommend meaningful zoning reform. As an experienced zoning professional who has seen many codes, ordinances, and bylaws, I can confidently assert that Belmont’s zoning bylaw needs urgent attention. In short, Belmont needs a new zoning map, a new zoning bylaw, and new procedures to carry them out. As others have recently advocated for, there are areas of Belmont where a form-based code would be highly appropriate. If the town is willing to invest in this, I believe it could pay significant dividends in several different ways including simplifying the review processes and providing clarity regarding likely results on the- ground.

BCF
What steps do you believe are necessary in the short-, medium-, and long-term to enhance the quality of life in Belmont and achieve a sound fiscal future that includes vibrant neighborhoods, excellent municipal services, and world-class schools?

From a planning perspective, quality of life and fiscal soundness are derivative of charting a direction based on a clear vision, developing and maintaining the capacity to implement the vision, sticking to the program but making needed adjustments, and engaging with constructive citizens in a positive and respectful manner. Sound fiscal policy requires revenue and careful spending; vibrant neighborhoods require maintenance and high standards; excellent services require sufficient municipal capacity and a quality workforce; and great schools require a commitment to this sector that understands that it is interconnected to all of the other criteria noted above.

Chris Ryan is the town planner and director of the Office of Planning and Building.

Beavers vs Us: Who Manages Stormwater Best?

By Anne-Marie Lambert

There’s a lot of complexity but not much bureaucracy involved when beavers take action to manage stormwater. Beavers don’t follow many rules and regulations to slow down a brook’s flow to a prescribed amount or filter pollutants like phosphates or nitrates. They don’t submit maintenance plans for what they will do differently when large rainstorms or new pollutants arrive. Beavers don’t wait for permit approvals or make decisions based on a checklist of laws and regulations.

Beavers have evolved to build their homes across brooks to create whole new ecosystems that support many species that have evolved to flourish in a wetland or meadow environment. They are an integral part of a dynamic and evolving ecosystem full of other species also responding to evolving conditions. More humans are also recognizing how effective nature-based solutions can be.

As far as I know, no beavers exist in Belmont. Instead, we have written a Storm Water Management Plan (SWMP) and a Municipal Vulnerability Program (MVP) Action Plan to state our intention to deal with pollution and flooding. These plans aim to abide by rules and regulations that have evolved from the 1972 Clean Water Act to address pollution and reduce flooding and other risks from climate change.

It took more than 50 years, but in 2024, we humans are finally starting to learn how helpful it can be to recreate the kind of swamps beavers used to build and maintain before we hunted them close to extinction. We call these lessons on ways to slow down and infiltrate stormwater into the soil Best Management Practices (BMPs). We’re not doing it as efficiently as beavers would, but at least we are moving in that direction.

Curbing Pollution

One remarkable thing about beavers is how they create an environment where pollution-eating bacteria can thrive. Beaver dams don’t wait for debris to collect in a cement catch basin or on an asphalt road. They pack mud and cellulose-rich material in the base of their dams, attracting bacteria that absorb nitrogen and phosphorus compounds from the water stream.

In 1972, our elected officials voted to give the Environmental Protection Agency (EPA) authority to set standards for how much pollution would be allowed to flow from the drainpipes of a town like



An overflowing cascade at Beaver Brook, March 31, 2024.

Belmont—known as a “separate storm sewer system (S4)”—into the nation’s waters (e.g., Boston Harbor).

The EPA set up a permit system called the National Pollutant Discharge Elimination System (NPDES) to do this. Under this system, Belmont has to apply for a permit to discharge stormwater from its drain pipes into the Mystic River and Charles River. This permit is known as the NPDES General Permit for Stormwater Discharges from Small Municipal S4s in Massachusetts or the MS4 General Permit.

The EPA can’t block the flow of rainwater coming out of Belmont just because it is polluted. What the EPA can do is impose a fine or threaten to impose a fine, as it did in 2017.

Of course, rain—known as “stormwater” according to the regulations—falls on Belmont and finds its way into soil and drainpipes, with or without regulations. Whether or not Belmont meets the permit requirements, gravity (with occasional help from electric pumps) ensures that the rainwater in Belmont’s drain pipes flows to the end of each pipe—known as an “outfall”—into rivers, streams, and ponds.

The EPA can’t block the flow of rainwater coming out of Belmont just because it is polluted. What the EPA can do is impose a fine or threaten to impose a fine, as it did in 2017.

From 2017 to 2022, Belmont was under an [EPA Administrative Order on Consent](#) that required Belmont to try harder to find and fix the sources of pollution or risk having to pay large fines. In those five years, through our Illicit Discharge Detection and Elimination (IDDE) program, Belmont removed an estimated 6,839 gallons per day of

sewage that had previously been discharging into our waterways. It cost \$2,336,000.

After sampling stormwater outfalls repeatedly in wet and dry weather, the town identified cracked pipes and illicit discharges. Engineers did targeted dyed-water testing and took CCTV videos inside the drains. The town’s 2020–2022 Sewer System Rehab I/I Removal Project included lining 8-to-10-inch vitrified clay pipe sewers, replacing a full-length 8-inch sewer, lining service laterals, replacing service laterals, doing point repairs, and rehabilitating manholes.

In addition, as part of the town’s Pavement Management Plan, we did point repairs to gravity sewers and storm drains and replaced sewer and storm drain service laterals and connections. We installed new sewer and storm drain manholes. In July 2021, the town began a Private Sector Sump Pump Removal & Sewer System Rehabilitation Construction Project to perform ongoing point repairs, service lateral replacements, cured-in-place main line lining, and rehabilitate or remove contamination sources (see Table 4 of the [Final Compliance Memorandum](#).)

Meanwhile, overlapping with that order on consent, in 2019, Belmont was “permitted” to discharge stormwater into rivers and ponds in accordance with its MS4 General Permit. Besides the Illicit Discharge Detection and Elimination activities, this permit requires developing a plan that addresses public education and outreach, construction and post-construction site stormwater runoff control, pollution prevention, and “good housekeeping” in municipal operations. In this context, “good housekeeping” includes street sweeping and regular cleaning of our catch basins. Are we finally becoming as fastidious as beavers?

The town kept looking, and by December 2022, it identified and eliminated illicit connections on Van Ness Road and at a manhole at Oliver Road/ Staunton Road. These areas flow into Beaver Brook and Winn’s Brook, respectively.

This is a lot of progress, but there is more to do. By mid-February 2024, a full set of [documents related to its SWMP](#) was posted on the town website, including annual MS4 reports through June 2023 and the daunting 92-page [IDDE report](#). The annual MS4 report for the year ending June 2023 identified several future priorities, such as an investigation of the neighborhood surrounding

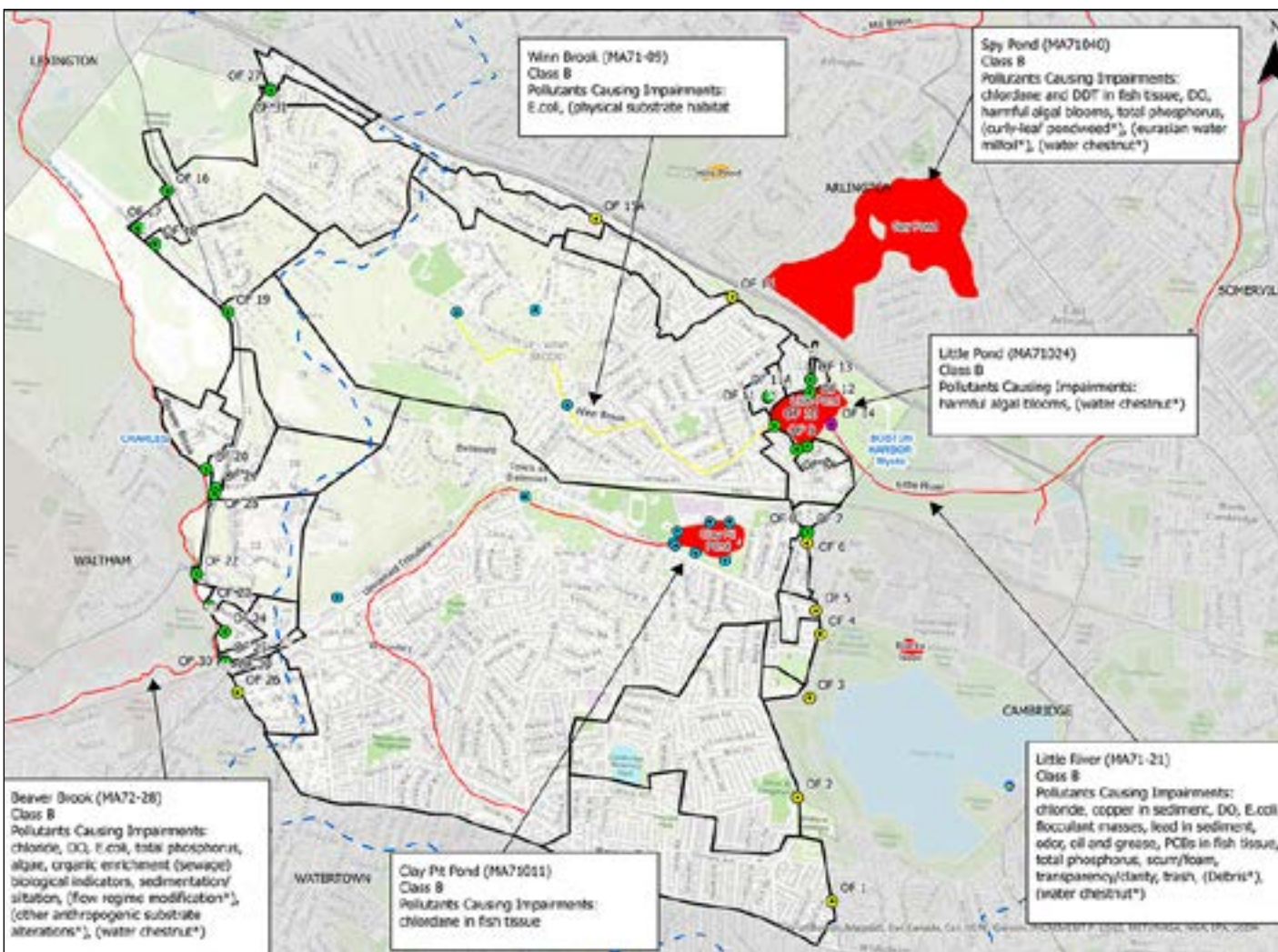
Shaw Road, a possible illicit connection on Hartley Road, and ongoing investigations to identify the source of *E.coli* pollution at Outfall 27 near Stony Brook Road (a small catchment basin draining into a wetland that drains into Beaver Brook), and at Outfall 10 (the Winn’s Brook outlet into Little Pond, one of the two largest catchment basins in Belmont). We added a storm drain layer to the town’s GIS map to provide a detailed view of the location of each outfall and drain pipe (see table on p. 53 of the [IDDE report](#)).

We paid special attention to pollutants for which a Total Maximum Daily Load has been calculated for the Charles and Mystic rivers, as required by the MS4 permit. The town now has a [20-year plan to reduce phosphorus runoff](#) to the Charles River, including applying BMPs for street design and parking lots that would serve to slow down and

infiltrate stormwater runoff into the soil—almost as effectively as beavers do.

Stormwater management designs for the new Belmont library and the Viglirolo skating rink could provide impressive examples for others. The Conservation Commission has already encouraged BMPs like the permeable pavement and rain garden they required to help treat runoff from the Belmont Manor parking lot and building extension. Five town-owned parking lots have been identified as candidates for BMPs such as retention basins and rain gardens.

It would be great if some privately owned parking lots followed these practices, such as the even larger parking lots that are associated with churches, synagogues, and private schools. BMP practices are inching Belmont towards cleaning up our waterways at a time when storms are becoming



Map showing the primary pollutants affecting significant water bodies in Belmont: Winn’s Brook, Little Pond, Little River, Clay Pit Pond/Wellington Brook, Beaver Brook, and Spy Pond in Arlington. Figure from *Town of Belmont Illicit Discharge Detection and Elimination (IDDE) Program, Revised 2023*.



Map of Beaver Brook from [DCR Brochure](#).

more frequent and more intense, and the more participation, the better.

Flooding at Beaver Brook

While beavers are known in some circles as nuisance animals that cause flooding, they can help improve what would otherwise be a much worse situation downstream. They carefully consider seasonal weather conditions, diverting tributaries and holding back water that would otherwise overwhelm downstream landscapes. Their work helps replenish water tables rather than letting rain go as fast as possible into the ocean. Without the active beaver communities of centuries past, water tables all over America are reaching some of their lowest recorded levels.

The Beaver Brook Culvert

One of the top flooding vulnerabilities in Belmont is the undersized Beaver Brook culvert under Trapelo Road. Metal plates have been positioned over the road for some time to stabilize it in case the culvert collapses. After a few days of heavy rain, I visited Beaver Brook Reservation North on March 31, and I can see why.

The flooding on the northern side was impressive as the torrent of water from the cascade upstream wended its way through an expanding warren of tributaries in about 10 acres of low marshland and woods, then along the Trapelo Road embankment and to the culvert and beyond. The erosion at the pothole by the Route 60 sign near the plates was also remarkable. It was easy to imagine beavers making their home here, as they must have over 100 years ago, slowing down and releasing all this water at a pace that would not overwhelm a bottleneck like a culvert.

For about 20 years, humans have spilled a lot of ink discussing this culvert but not fixing it. One idea was to repair it as part of the Trapelo Road/Belmont Street Restoration Project, begun in 2005. The culvert repair was scrapped when Belmont and Waltham couldn't agree on which town should pay for what. In October 2014, the city of Waltham published a request for proposals to repair the culvert or at least stabilize it.

In 2018, Belmont received an earmark from the state for \$100,000 for a larger project. The remaining funds (\$791,975) were to come from the sewer enterprise fund. In 2020, Belmont completed its Municipal Vulnerability Preparedness Assessment Report, listing this culvert as one of its top-five projects. Though that application was not successful, in July 2022, the Massachusetts House and Senate appropriated \$2 million in state funds to address the restoration of the culvert replacement.

Later in 2022, the Waltham and Belmont Conservation Commissions reviewed the project and stipulated that the project schedule should avoid the spring river herring spawning season. In October of 2022, Waltham issued a request for bids. Finally, on March 7, 2023, Waltham granted a contract to E.T. & L. Corporation, stipulating in the purchase order that Waltham and Belmont will each pay 50% of the project cost. A project plan will now break ground in the summer of 2024 after high water has subsided and any river herring has spawned.

As towns navigate rules and regulations, budgets, and culverts, more and more storms continue to arrive, increasing both the risk of Trapelo Road becoming impassable and downstream flooding in Waltham. The cascade upstream of the culvert formerly powered the Plympton Mill and other mills in the 1600s and 1700s. It is impressive after spring rains. This year, the man-made Duck Pond was so full that three “extra” waterfalls joined the cascade down the steep slope on the south side. More water was squeezing its way between the stones that comprise the dam at an alarming volume.

Suppose we are going to address the effects of climate change. In that case, we have to learn to function as an integral part of a dynamic and evolving ecosystem full of other species—and other towns—that are responding to evolving conditions.

Current programs for permitting and funding are slower than the systems they are trying to regulate, and current priorities appear blind to systemic risks that will profoundly affect Belmont citizens and infrastructure. The BMPs planned for the

new library represent a hopeful recognition of the effectiveness of nature-based systems, which hold back water before it gets channeled into a concrete culvert. They are a great start, as are watershed-based regulations that reach across municipal boundaries to take care of our rivers.

Maybe in another 50 years, we'll have a permitting system that allows us to reintroduce beavers to manage stormwater—and to teach kids important lessons about ways to recognize and respond to changes within a dynamic ecosystem.

Anne-Marie Lambert cofounded the Belmont Stormwater Working Group, a collaboration between Belmont Citizens Forum and Sustainable Belmont. She is a Precinct 2 Town Meeting member and former Belmont Citizens Forum director.



Cascade at Beaver Brook.

Managing Nature Without Pesticides

By Judy Sheldon

Whether we're growing tidy-looking lawns, tree-lined paths to meander, or flower or vegetable gardens, our yards and our parks also provide food and shelter for other creatures.

Bees, butterflies, ladybugs, spiders, and fireflies all live in our lawns, gardens, and trees. Birds eat the seeds, berries, fruits, and nuts from the plants. Some bird species get nutrients from insects, including mosquitoes and others we don't want around. Rabbits eat mostly plants; squirrels and chipmunks thrive on fruits, nuts, and acorns. Larger birds, like hawks, owls, and even eagles, also eat the small animals and birds that live among and feed on our plants and trees.

But what can we do if unwanted plants, insects, or mammals enter our environments? How can we manage our spaces to keep them the way we like them and support nature, yet keep out unwanted species, when everything is connected?

We can start with plants. Native plants are best suited to local weather conditions and easier to grow than non-natives. They provide more food and shelter for native creatures and are better at repelling intrusive species. Flowering pollinator



Monarch butterfly on boneset flower in the author's garden.

plants provide nectar to feed the bees and the butterflies, which pollinate the plants they land on.

Some insects live only on specific plants. Monarch butterflies lay their eggs only on milkweed, their caterpillars' only source of food. But a decline in the amount of milkweed has led to a drastic decline in the Monarch population. The US Fish & Wildlife Service says that a proposal to list Monarchs as threatened or endangered is "warranted but precluded by higher priority actions."

According to Douglas W. Tallamy, author of *Nature's Best Hope*, "native flowering dogwood (*Cornus florida*) . . . supports 117 species of moths and butterflies alone." Commonly planted Kousa dogwoods, native to China, support none. The Belmont Shade Tree Committee has created a [list of preferred trees](#), encouraging the DPW and Belmont residents to plant natives along streets and in yards.

Tallamy reports that oak trees support more forms of life than any other plant. In our mid-Atlantic region, oaks support 557 caterpillar species and are considered first or second in food support throughout the country. If you have a lot of room, plant an oak! Either way, plant pollinator plants, especially milkweed. Common milkweed is very aggressive, but swamp milkweed and many other varieties, with their lovely scents, are not.

Habitat loss, pesticides, and climate change are taking a toll on plants and on the wildlife they support. As our human population increases, some previously wild areas have become farms, and lands and roadsides that were covered with pollinator plants are more frequently mowed, eliminating the contiguous wild areas that many species need. The Earth's climate is changing so that some plants that once grew in particular planting zones are not doing as well there. New varieties of crop seeds have been genetically modified to tolerate pesticides, to easily allow their use. Pesticides are often used not only on farms and roadsides, but also on people's lawns.

Managing Plants

What can we do about unwanted plants?

First, we can appreciate some weeds. Dandelions are among the first plants to emerge in spring, so they support bees when there's not much else

around. Clover and violet flowers are pretty and also good for the pollinators.

If you don't want these plants in your lawn, it's easy to dig out individual plants. Unfortunately, too often, the solution is to use herbicides, many of which can cause more damage and stay around longer than intended. Some have been linked to human health issues. Glyphosates (such as Roundup) have been specifically linked to non-Hodgkin's lymphoma and banned from many European countries. Bayer, Roundup's manufacturer, has recently reformulated Roundup because of the huge amounts of money it has had to pay for lawsuits, and it recently lost another big one. Massachusetts is in the process of restricting glyphosate's use.

But what happens if you find a patch of poison ivy? What happens when a large area is taken over by plants that are nearly impossible to dig out? We helped to remove Japanese knotweed on town land, but its deep roots simply break into smaller pieces, each piece becoming a new plant.

When there is no other option, the answer is to use herbicides sparingly and carefully. Individual plants can be cut close to the ground, with just the top of the remnant stalk dipped in herbicide. Restoration specialists are using this targeted approach to remove several kinds of invasives on Lone Tree Hill, as well as planting a variety of pollinator plants.

Managing Insects

What about insect pests, like mosquitoes and ticks? There are some easy answers for mosquitoes.

To keep adult mosquitoes away, use an oscillating fan at outdoor seating areas. It's more efficient to eliminate the larvae, though. They live in water, so prevent their breeding by eliminating standing water; replace birdbath or other water sources at least once a week. You can also float mosquito dunk tablets in water. They're made of Bti, a bacteria that kills mosquito larvae and nothing else. Again,



Tiger swallowtail on Joe Pye weed in the author's garden.

unfortunately, too many people use insecticides on their lawns.

Most mosquito sprays aim to kill adult mosquitoes, so they require frequent, more expensive retreatment. They also kill all insects, not just mosquitoes. People are sometimes told that a bug spray is safe because it's organic, but that's irrelevant. A butterfly or a bee killed by a poison derived from plants is no less dead.

People rightly fear ticks; they can cause serious harm from Lyme and other diseases. But before treating for ticks, check to see if you actually have any. Ticks don't live in lawns, but in tall grasses. You might run across them when hiking. So wear long sleeves and pants, tuck your pants into your socks, and try to avoid brushing against tall weeds. If you feel the need, you can also use an insect repellent on your clothing. After hiking, make a habit of doing a tick check. Ticks take hours to implant, so remove any before they have time.

Do you remember how car windshields used to be spattered with bugs after a long drive? That's not the case any more. In a [2020 article](#), Tallamy cited "a 45% decline in insect populations in just the past 40 years."



Dr. Priya Patel with Loki the screech owl at the Massachusetts State House.

As insects decline, so do the birds that eat them. A recent article in the [Washington Post](#) describes a conversation with researchers from the Cornell Lab of Ornithology. The lab manages eBird, a huge database of detailed observations from a million birders around the world. You can enter the name of a town and see how its bird species have fared. Belmont's changes range from a decrease of 68% of our American tree sparrows to 21% of house sparrows and black-capped chickadees and 19% of American robins.

It's not all bad news. Blue jays, which will eat just about anything, have increased by 22%, downy woodpeckers by 12%, and northern cardinals by 11%. But on average, nearly 30% of the North American bird population has been lost just in the last half-century.

That 21% decline in the population of black-capped chickadees in Belmont might be partly explained by a statistic from Tallamy's book, *Nature's Best Hope*. He tells of a researcher who counted parents bringing 350 to 570 caterpillars

a day during a typical 16-day nesting period. Depending on the number of chicks, that's 6,000 to 9,000 caterpillars per clutch, plus more after the young leave the nest! Fewer butterflies and moths means fewer caterpillars, which means less bird food.

Managing Mammals

Our small mammals are usually not a problem. While rabbits can be a nuisance, eating our hostas and vegetables, careful fencing can keep them out of gardens, and they might also be dinner for a hawk—or a fox or a coyote!

We can plant other things for them to eat instead. Their favorite food is clover, which we

can use instead of grass for our lawns. No clovers are native to Massachusetts, but white clover has become naturalized, and low-growing microclover needs less water and mowing than grass and grows well in partial shade. Other low-growing plants like creeping thyme, with its aromatic flowers, stand up to foot traffic and make a nice grass substitute. Rabbits dislike strong scents, so a wide variety of flowering plants deter them, or at least don't get eaten. As a bonus, many of the flowers are good for pollinators.

Belmont has had a [problem with rats](#), which can carry dangerous diseases. The first step is to make sure you're not leaving food out for them. Remove dog food bowls, check compost bins, and (sob!), stop filling bird feeders and even birdbaths. According to the [Humane Society](#), you can try to repel rats with strong-smelling herbs or peppermint oil, but the least inhumane way to kill rats is with traps. Use traps that produce an electrical charge or wood and metal snap traps. All traps must be

covered with a box or a milk crate to protect birds and other animals. Glue traps cause a slow, painful death and are just cruel.

Relatively new second-generation anticoagulant rodenticides (SGARs), often placed in bait boxes, do not kill rats immediately. Instead they are meant to be taken back to the rats' nests to kill the rest of the rat families. Unfortunately, those animals are food. Poisoned rats end up where raptors and larger mammals find and eat them, poisoning the predators too, as well as posing a threat to pets and even children. Last March, [a bald eagle in Arlington died](#), believed to have been from ingesting rodenticides. Owls have been killed there the same way, so rats' natural predators are incidental victims. [Save Belmont Wildlife](#) is working to raise awareness of the dangers of SGARs and to impose a ban or a restriction.

Massachusetts has several bills in the works to limit pesticides. One would allow Arlington and other towns to regulate pesticides at the town level if the state does not restrict them. Last May, we went to the State House to support passage of [10 pesticide bills](#). Dr. Priya Patel, a wildlife vet and the medical director at the New England Wildlife Center, held a small screech owl named Loki as she testified about the increasing difficulty of treating poisoned raptors. Care that used to take a few months can now require up to two years because of the severity of their illness from these new rodenticides.

Supporting Nature

Healthy plants help support healthy insects, both of which support healthy birds and animals. What can we do to help this natural population? Again, start with plants.

Tallamy wants to create a [Homegrown National Park](#). He proposes that we restore biodiversity by doing things like reducing the size of our lawns, planting native plants, reducing nighttime light, planting ground covers and leaving leaf litter under trees for caterpillar pupae, and avoiding all insecticides and herbicides and most fertilizers.

Locally, the [Mystic Charles Pollinator Pathways Group](#) has a map of pollinator-friendly spots; you can add your own location to the map. The [Massachusetts Pollinator Network](#) also works to protect pollinators and reduce pesticide use and provides a lot of resources.

Other organizations also promote creating contiguous areas of native, wildlife-supporting plants. The [National Wildlife Federation](#) is working with highway departments to promote pollinator habitat; they also have a native plant finder. Many sources can help you find native plants, even [plants that deter rabbits](#).

Homegrown National Park includes a [map of the country](#) divided into ecoregions (8.1 for us) and lists examples of keystone trees and shrubs for each, which support the most species. MassWildlife has a [list of native shrubs](#) to attract insects and birds. Xerxes Society for Invertebrate Conservation has a [list of native plants for pollinators](#), as well as a good amount of information on conservation of pollinators and endangered species.

Finally, you can stay aware of and help promote the passage of pesticide regulations in Massachusetts. The process of making laws is very long, but some changes are winding their way through it. The Northeast Organic Farming Association's Action Network has a [list of current pesticide reform bills](#). You can continue to ask your representatives to support them.

There's a lot we can do to support nature in our community. It's up to us to decide what we want to do.

Judy Sheldon is a Belmont resident, a retired technical communicator, and a member of the Belmont Garden Club's Conservation Committee.



Great horned owl fledglings at Habitat, 2016.

Belmont Has a New List of Preferred Trees

By Eva Hoffman

Belmont’s shade tree committee, in conjunction with the Department of Public Works (DPW) and the tree warden, has developed a list of preferred native trees for planting by the town on public property, for contractors planting street trees, and for residents who are seeking information for their gardens.

The [Belmont Preferred Trees List](#) contains information on the size, characteristics, and growing conditions for each species. Twenty of the 45 recommended trees are marked “street tree,” which means they can be planted between the sidewalk and the street. But they aren’t exclusively street trees. They

are adaptable, reliable trees that also work well in yards and parks.

To compile the list, committee members consulted a variety of sources, including municipal guides from [Cambridge](#), [Arlington](#), and [Plainfield](#), Massachusetts, as well as the state Department of Conservation and Recreation (DCR). DCR was an essential source for identifying invasive and prohibited trees to omit from the list such as the black locust. Publications from the [Wild Seed Project](#) and the [Native Plant Trust](#), two New England organizations that specialize in native plantings, revealed a wealth of native species to choose from.



Black walnut—a tree featured in the Belmont Preferred Tree List—Fulton County, AR.

We chose to focus on native trees and shrubs because they support our local ecosystem. All trees on the list are native to the United States, and most are native to Massachusetts.

“We need more trees like the native oaks, which support hundreds of native caterpillars and insects that are a food source for native wildlife, versus the non-native ginkgo trees, which support fewer than 10.”

Native plants have symbiotic relationships with native wildlife as habitats and as irreplaceable food sources for insects and birds. Grow Native Massachusetts offers a [list of keystone plants](#), defined as “plants that host a significant number of caterpillar species and therefore have an outsize impact on the functioning of food webs in their ecosystems.”

Lucia Gates, a longstanding member of the Shade Tree Committee, says, “We need more trees like the native oaks, which support hundreds of native caterpillars and insects that are a food source for native wildlife, versus the non-native ginkgo trees, which support fewer than 10.”

The preferred trees project began in early 2023, shortly after the town completed its first official town wide tree inventory. In 2022, the DPW contracted with Davey Resource Group to identify and map all trees along our streets in public parks, around public buildings, and in cemeteries. More than 8,000 trees were identified, with an estimated value of \$17.3 million. The inventory’s findings and recommendations inform the preferred tree list.

Michael Santoro, Belmont’s new tree warden, says, “The town tree inventory indicated that 45% of trees on town property are maples, so we need to diversify our future plantings.” Having many different types of trees planted in town reduces the risk posed by pests and diseases. Our goal is to limit any one species to 10% of the town’s tree canopy and any one genus to 20%.

The [Belmont Tree Inventory](#) is available on the town website under the Department of Public Works. If you’re choosing a tree to plant and are interested in seeing a specimen, you can search for a species in the inventory to see whether it’s growing on public property in Belmont and, if so, where you can view it.

Local nurseries sell native plants and shrubs. Some examples are Bigelow Nursery, Butterfly Effect Farm, Kings Tree Farm, Native Plant Trust, Northeast Nursery, and Weston Nurseries.

We hope Belmont’s preferred trees list will help you decide which trees to plant and where to plant them.

Eva Hoffman is the chair of Belmont’s Shade Tree Committee.

Belmont Conservation Volunteers

The Belmont Conservation Volunteers will lead group efforts to control non-native plants that disturb our native plant communities.

Join our spring weekend morning garlic mustard pulls in high-priority natural areas of Lone Tree Hill and Rock Meadow in May and June—and knotweed control efforts, too! Learn to know, love, and protect our local native plants and share the experience with others!

For more information and to sign up for emails about events, including after-rain knotweed pulls, go to: www.sustainablebelmont.net/belmont-conservation-volunteers/

Restoration Resumes on Lone Tree Hill

By Jeffrey North and Joseph Hibbard

A crew of 18 technicians, crew leaders, designer, and managers gathered on Lone Tree Hill early on the misty morning of March 15. They were there for the third and final day of their work season kick-off with a day of training on Belmont conservation land.

The Land Management Committee (LMC) for Lone Tree Hill (LTH) had granted permission to allow the Parterre Ecological Services “Class of 2024” to conduct an invasive species removal training session for field technicians. Their target zone was a section of the southeast corner of the Great Meadow. The training area offered a hands-on workspace for training in plant identification, hand cutting, safe chainsaw use, and stacking brush in habitat piles. Belmont resident and landscape architect Joseph Hibbard represented the LMC while working alongside Parterre staff.

The day included a review of the [LTH land management plan](#), a talk about the site history, tool setup, instructions on debris piles (to provide housing for wildlife), herbicide signage, safety, seeding, and identification of invasive and native plants in the work area. The group received training

and reinforcement of prior lessons in the step-by-step techniques of removing and treating invasive plants (cutting, dabbing, girdling, and spraying).

The result? This training exercise on LTH has produced a more capable group of field technicians, and another area of LTH has been cleared of invasive plant species, pro bono. Parterre work groups will return to LTH at intervals during the growing season to continue the [ecological restoration work that began in 2020](#).

During orientation and training, the team completed an initial removal operation of invasive plants in one of the high-priority areas. They removed or cut back common buckthorn, glossy buckthorn, winged euonymus (burning bush), bittersweet, and honeysuckle. Visitors to the site can see the large brush piles stacked nearby.

After the Parterre team had cleared the buckthorn, bittersweet, burning bush, and honeysuckle, a stand of quaking aspen (poplar), *Populus tremuloides*, came newly into view.

Quaking aspen is probably North America’s most widely distributed tree. Its range extends from Alaska to Mexico and eastward across Canada and the northern United States to Newfoundland.

Populus is also one of the most important genera serving as host plants for a wide range of caterpillars, a principal summer food source for migratory songbirds. According to [a 2009 study by Douglas W. Tallamy](#), poplars host 367 species of caterpillars. Only four other genera of trees (oaks, willows, cherry, and birch) are more important than poplars as potential caterpillar host plants.

An aspen grove has been badly damaged by Asiatic bittersweet, a vine that can climb to the tops of trees and outcompete the aspen for sunlight. Aspen is exceedingly intolerant

of shading, so it will perish if not rescued from the invader. As the bittersweet vine has covered the Lone Tree Hill aspen canopy, many trees have already been shaded to death by the vines.

Clearing the invasive species has now freed the aspen grove from foreign competition, allowing these aspen trees to prosper. This reference aspen grove is located at the top of the field, just below Mill Street, about 100 yards north of the main drive to the Rock Meadow parking lot. This majestic stand of aspen is what our LTH aspen grove will look like after its recuperation!

Other native trees in the area include hickory, oaks, gray birch, white birch, and a mature stand of sassafras, *Sassafras albidum*, a native woodland border tree with spectacular red fall color. Along with sugar maple and black tupelo trees, sassafras probably has the best fall color of our native trees. This stand is unique at LTH.

Future Restoration Plan Work for 2024

Volunteers will complete the clearing the area.

Parterre will apply herbicide to resprouting invasive plants in late summer or fall of 2024. The Judy Record Conservation Fund agreed to fund half of the cost of Parterre’s services.

Some new evergreen plantings may be included in proposals for revegetating the area outside the aspen grove. This initiative could be a natural continuation of the 2024 evergreen

plantings planted during BCF volunteer days this spring.

The plan for 2025 is to continue removing invasive species from the rest of B5 along the southern border of the meadow.

The Belmont Citizens Forum and the [Land Management Committee for Lone Tree Hill](#) are deeply grateful for the ongoing support from the [Judy Record Conservation Fund](#).

Jeffrey North is the managing editor for the Belmont Citizens Forum Newsletter. Joseph Hibbard is a landscape architect and Belmont resident.



Parterre Ecological Services employees begin training.



Area 5 before (top) and after removal of invasive plants.

How to be a Biodiversity Builder

by Jean Devine

An open mind, eagerness to learn new things, a willingness to work with peers from different schools, and a tolerance for hot weather, a bit of rain, and getting dirty are all it takes to be a Biodiversity Builder.

Youth don't join Biodiversity Builders (BB) to fill out their resume. They join because they're curious about nature and maybe gardening, they worry about climate change, and they want to do something positive to help the planet. Youth who become Biodiversity Builders learn how to solve environmental and societal challenges, get down and dirty removing invasive plants and planting native ones, and run a business all while making friends and having fun!

BB is a six-week, paid environmental education summer program serving high school students from Arlington, Belmont, and Cambridge. The program is designed to inspire and empower high school students to be Earth stewards and make ecological impacts in their communities while understanding the connectivity of watersheds, soil, native plants, pollinators, wildlife, and human health.

Our students learn how to:

- Build and restore biodiversity and local ecosystems
- Identify, install, and remove native and invasive plants
- Design gardens using native plants
- Operate a business where they collectively define mission, vision, and values and implement a large native plant sales event
- Advocate for nature-based solutions to climate change

"I think the program really managed to excite and inspire the students, myself included, regardless of prior familiarity with plants or gardening." – Ryan Yang, summer 2023 student

We created BB in late 2021 to give students agency in environmental projects and policy. BB is a small operation. For most of the year, it is run by Jean Devine and program advisor Skye Schirmer and is fiscally sponsored by the Tiny Seed Project, Inc. The Project's mission is to "empower community-led projects that conserve the

environment, encourage creativity, and strengthen communities." We raise funds for student and staff salaries, plants, printed materials, tools, and transportation. In the past we've had generous support from the Humani Foundation, the Judy Record Fund, individuals, and the Belmont Cultural Council.

Because we operate across three towns, students learn to be flexible and adaptable while gaining the confidence to speak up about successes and failures each week. This youth-directed model allows students to explore nature and eco-careers, express their concerns about the natural world and their futures, and feel empowered to make a difference in the health of their community. We are proud to see many BB alums establish environmental advocacy and action groups at their high schools, study adjacent fields in college, and transfer their enthusiasm and knowledge about nature-based solutions to friends, family, and community members. We stay in touch with many of our students, and Jean often writes recommendations for students applying for jobs, colleges, and scholarships.

"I was so glad I was able to have a hands-on summer job with bosses who gave me a seat at the table and allowed me to share my opinions. I am super excited to use the skills and knowledge I learned from both of you [Jean & Skye] in my life at college and beyond." – Krista Chan, college mentor 2023

BB stands apart from other programs in that it exposes youth to real ecological restoration projects and introduces them to ecologists, activists, and niche community leaders. The students also work in the field to advance their understanding of ecosystems, plant-pollinator connections, policies, and actions that support nature. Youth also practice entrepreneurship (as a problem-solving tool) and devote an hour or two per week to an independent research project.

"Every person and community plays such a key role in environmental change, and that idea is demonstrated through our activities. Students learn what they are passionate about in a non-judgmental environment where asking questions is promoted." – Ellie Espelin, summer 2023 student



2023 Biodiversity Builders with Representative Dave Rogers (top left) and Executive Director Jean Devine (front, second from left).

Each BB session builds upon the successes from the prior year and the public and private projects Devine has secured during the off season. For 2024, we aim to have 18 students: six each from Arlington, Belmont, and Cambridge. Devine and two college student mentors will guide them.

Our home base is the teaching garden on the north side of Alewife Reservation, called the Alewife Showcase Pollinator Biodiversity Garden. Students will travel to work on projects or explore ecosystem restoration sites twice weekly in Cambridge and twice weekly in Arlington or Belmont. On Fridays, students are dismissed from school early to pursue independent projects or conduct citizen science research at one of our work sites.

We are working on a new module to increase youth understanding of green infrastructure solutions to stormwater management, and we plan to include new activities around foraging, native plant substitutions for invasive plants, and environmental justice.

"It brought me so much happiness to be outside with everyone and in a fun group of young people with some amazing college mentors and Jean. I am very happy with the program this summer, and I'm going to miss it very much."

– Matteo Kennedy, summer 2023 student

We are now accepting applications for BB Summer 2024! For more information, please visit www.devinenativeplantings.com/biodiversity-builders-education.

Jean Devine is a Belmont resident, cofounder of the Mystic Charles Pollinator Pathways Group, and is executive director of the Biodiversity Builders youth environmental education program and Devine Native Plantings, LLC.

Profiles in Belmont: Farmer Tim

By Elissa Ely

Choosing a favorite vegetable or melon, if you happen to be Farmer Tim Carroll, is like choosing a favorite child. If he's eating a cantaloupe from his farm, cantaloupe is his favorite. When he's eating a cherry tomato, the cantaloupe steps aside. "I'm not a fennel guy," he says, but with such respect that no fennel could resent him.

There are dozens and dozens of vegetable children in Farmer Tim's world. Since 2015, his Dudley, MA, farm has grown multiple varieties of up to 50 kinds of produce each August through October. The season starts aboveground with an act of faith; community-supported agriculture (CSA) customers in Belmont, Watertown, Newton, and Dudley buy their farm shares. Those who can't afford regular prices can buy Solidarity Shares—augmented by full-paying customers—or use SNAP cards and the Healthy Incentive Program for funding.

So begins the process of CSA symbiosis; customers feed Tim's farm financially, and, months later, his farm feeds them literally. When conditions are agreeable (and some conditions are beyond human control), 50 to 100 pounds of locally purchased seeds become 25,000 to 50,000 pounds of food. "The plants want to grow," Tim says, simplifying what is surely a complicated process. "Just get out of their way."

For 20 weeks, three days a week, boxes are packed on the farm ("They crank up the tunes and pack 90 boxes in less than an hour,") with six to nine kinds of vegetables per box. All those favorite children are moved out of the soil and into farmer's markets—



Tim and Rona Carroll.

in Belmont, on Concord Avenue every Sunday afternoon. And because more food is intentionally grown than can be sold, the excess goes to food pantries in Belmont and Watertown, thousands of pounds each year. "Hunger is a problem I can't solve," Tim says. "But I'm growing food. I can do a little bit."

He did not start out on a farm. He started out in Southern California, the son of a trucker who "chased where the work was." As a child, he thought he might want to become a garbageman. In the little boy's view, "they rode on a big truck and only worked one day a week."

Instead, in high school, he discovered chemistry. "This is magic," he remembers. "You can change matter." Despite sensible trepidation about the temperatures, he moved to the frigid Northeast and got his PhD. Research followed, including creating

a compound that became the premiere nuclear medicine drug for decades.

Eventually, research evolved into research management, marketing, and business development, which required returning to school at night for an MBA. As the head of operations for Merck in Boston, Tim was "in charge of everything in the building except the science." Operations moved into finance, and finally, into financial planning analysis for biotech companies. Financial skills and science knowledge in a single person is like being bilingual.

Meanwhile, there was a backyard garden in Belmont for Tim's son and daughter. It started as one raised bed and grew to 13. The kids loved the peas and carrots, and Tim did all the weeding. Gardening took hold. His daughter's college application essay described how her life was not so different from the life of a tomato plant.

When the kids moved up and out, it was the father who struggled with an identity crisis. "I looked out my backyard," Tim recalls. "What do I want to do with the rest of my life? I grow food. Wouldn't it be cool to really grow food? Being the person I am, I took a course."

As he discovered, through classes and then through a quarter acre of practice land (not unlike a postdoctoral position for farmers), gardening is not farming. "Both grow vegetables," he says. "That's where it ends. What's reasonable in a garden isn't reasonable on a farm." You cannot weed a farm by hand, and you cannot run a tractor through a garden. For that matter, a dozen carrots are not 5,000. "I was doing square-foot gardening," he says. "I had to learn on scale."

In 2015, the commitment was solidified: he bought 92 acres of a former dairy farm in central Massachusetts. Here was quintessentially New England land: shallow soil, rocky, "not a flat part on the entire property—and compacted by 200 years of hoofs." Nine years later, rocks are still harvested as often as vegetables.

The first year, working on half an acre, Tim grew food for 12 CSA members. Most

were friends. "They were pity purchases." This year, growing on what will be more like 10 acres, there are more than 200 CSA members.

Many CSA members know he uses no GMO seeds, minimizes fossil fuels (one small gas tractor, one small diesel tractor), rotates crops to avoid pests, and uses living mulch like hairy vetch and rye to prevent erosion. There are no chemical pesticides, herbicides, or fertilizers.

Sometimes, this approach runs the risk of losing a crop. Two years ago, potato beetles in a drought killed off the potatoes early—"then they went after the eggplant, and that made us mad . . . but on the other hand, we had terrific tomatoes." This is where a box of CSA produce can be like a hand of poker. It requires the long view—next month, different bounty.

Farming is science and finance ("farm spreadsheets are just as complex as spreadsheets for biotech businesses"), and also philosophy. "A farmer is the ultimate expression of optimism," Tim says. A farmer has to believe that his seeds will become food. A farmer knows that he can't control life, but he can control the response. Optimism has reached out of the rocky land and into this particular farmer. "If all of us in this crazy world are looking for affirmation," he says, "you can't do better than being a vegetable farmer. Just walking on the property, I feel better. This weekend, I'm picking up a manure spreader."

Elisa Ely is a community psychiatrist.



10th Annual Lone Tree Hill Volunteer Day

By Radha Iyengar

See more photos at bit.ly/LTH-2024
On Saturday, April 27, a glorious sunny day, the Belmont Citizens Forum (BCF), in conjunction with the Judy Record Conservation Fund, held its 10th annual Lone Tree Hill Volunteer Day. The volunteers included Girl Scouts Troop 82339, Cityside Subaru employees, and citizens from Belmont and the surrounding communities.

Many hands made light work. At the Meadow Edge Trail, volunteers removed garlic mustard and planted 40 white pine saplings. In a few years, the trees planted will be a greenery screen for the houses on Summit Road.

At the other end of the property, the volunteers collected 11 bags of garlic mustard and a total of 20 bags of trash (10 bags of trash were disposed of in the Cityside Subaru dumpster).

BCF is grateful to David Ropes, Shawn, Seth and Cole of Tree Specialists, Inc. for supervising the planting, and the Judy Record Conservation Fund

for funding their ongoing work and purchasing the saplings. And a big shout-out goes to Joe Hibbard for suggesting this white pine planting project and marking the planting location ahead of the Volunteer Day, to Nancy Kougeas for obtaining permission from the Woodland Trustees so that Tree Specialist could park their trucks on Summit Road, to Leonard Katz and Art Kreiger (Belmont Conservation Volunteers) for supervising the removal of the invasives, to Vincent Stanton, Jr. and Dean Hickman for supervising the Cityside Subaru volunteers picking up trash, to Anna Churchill for signing in volunteers at the bottom of Coal Road, to Scott McCue, Erika Harimoto and Hannah Fletcher for sending Habitat volunteers to help with the tree planting, to Jay Marcotte, DPW director, and his staff, for picking up the trash bags.

It took a village to have a successful volunteer day.

Radha Iyengar is treasurer of Belmont Citizens Forum and organizer of the BCF Volunteer Day.



Lone Tree Hill Volunteer Day volunteers. From left to right: Jeffry Pike, Art Krieger, Anna Churchill, Radha Iyengar, Dean Hickman, and Leonard Katz

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