VILLAGE OF NORTHBROOK
SUSTAINABILITY COMMISSION
SPECIAL MEETING

Tuesday, February 28, 2023
Terrace Room – Second Floor
Village Hall – 1225 Cedar Lane

AGENDA

5:30 P.M.

1) Call To Order
2) Review of Minutes – January 19, 2023
3) Hear From the Audience – Items not on the agenda
4) Community Planning Report
5) Gas-Powered Leaf Blower Regulations
6) No Mow May
7) Old Business
8) New Business
9) Remarks for the Good of the Order
10) Next Scheduled Meeting – March 16, 2023
11) Adjourn.

The Village of Northbrook is subject to the requirements of the Americans with Disabilities Act of 1990. Individuals with disabilities who plan to attend this meeting and who require certain accommodations in order to allow them to observe and/or participate in this meeting, or who have questions regarding the accessibility of this meeting or the facilities, are requested to contact Greg Van Dahm or Debra J. Ford (847-664-4014 and 847-664-4013, respectively) promptly to allow the Village of Northbrook to make reasonable accommodations for those persons. Hearing impaired individuals may call the TDD number, 847-564-8465, for more information.

Jeremy Reynolds, Chair of the Sustainability Commission

3648 Radcliffe Drive
Northbrook, IL 60062

February 1, 2023

Village President Kathryn Ciesla, Village Hall
1225 Cedar Lane
Northbrook, IL 60062

Dear President Ciesla,

I am hearing from neighbors that the Village is considering a ban on gas powered leaf blowers, and I thought that I should give you my opinion on what that might do to property values and to the people I hire to work for me.

I have owned my home on Radcliffe Drive for 50 years, and many of the original owners are still living here. My street has about 60 homes on it, and the owners do a wonderful job of maintaining their properties and keeping property values up. I do not have a large lot, but the tasks of mowing, weeding and raking are beyond the abilities of me and my husband, as they are for most of the homeowners on my street. I believe that only two of us on this street mow our own lawns.

The people I have hired to do my landscaping work have worked for me for 15 years. They are a Hispanic family, extremely hard working, and would never be able to afford a battery powered leaf blower. Speaking English is a problem, so I sometimes get a friend to translate. They make a small living on their seasonal business. Many of my neighbors also use them and other similar companies.

I admit that leaf blowers are noisy, but I am willing to put up with it for a clean lawn and garden.

The small amount of gas these leaf blowers use is nothing compared to the cars that are running and waiting in lines at Starbucks, Portillos, school pickup lines, etc, so I really don't believe that leaf blowers hurt the climate.

I'm sure you know about unintended consequences. My worry is that the Village will adopt leaf blower regulations that are so onerous that my landscapers will be forced to stop working for me and for my neighbors. I worry that the cost of doing landscaping will increase so much that me and/or my neighbors will let our properties go, lowering property values.

I'm sure that you have good reasons for doing Northbrook's part to save the planet by banning leaf blowers, but I urge you to proceed cautiously, and watch out for those unintended consequences.

Sincerely,

Bonnie Kaufmann

Bonnie Kaufmann

MEMORANDUM
VILLAGE OF NORTHBROOK
DEVELOPMENT AND PLANNING SERVICES DEPARTMENT

TO: SUSTAINABILITY COMMISSION
FROM: TESSA MURRAY, SUSTAINABILITY COORDINATOR
DATE: FEBRUARY 28, 2023
SUBJECT: CONSIDERATION TO REGULATE GAS-POWERED LEAF BLOWERS

In late 2021, a Regional Leaf Blower Working Group was formed to evaluate the need and impact of regulations on gas-powered leaf-blowers (GPLB's). The Working Group is made up of representatives from eleven north suburban municipalities plus several community stakeholders.

The Working Group's Final Report identifies best practices to consider should it be determined that gas-powered leaf blower regulations are appropriate for Northbrook.

The identified policy options are:

1. A seasonal gas-powered leaf blower ban from May 15 through September 30. Gas-powered leaf blowers would be banned throughout the summer months.
2. An 8-week window during the fall clean-up season and 4-week window during the spring clean-up season when gas-powered leaf blowers may be utilized. Gas-powered leaf blowers would be banned during the summer and winter months.
3. A 10-month gas-powered leaf blower ban from December through September. Gas-powered leaf blowers would be allowed only during fall.
4. Status quo: no change to regulations with continued monitoring of leaf blower technology.

Option 2 was selected by members of the Working Group that do not have existing restrictions in place as the most appropriate starting point for consideration.

At their January 10 meeting, the Village Board of Trustees directed the Sustainability Commission to review the Final Report of Regional Leaf Blower Working Group and provide the Village Board with feedback related to Option 2, with specific recommendations for implementation, messaging and outreach, and potential incentive programs to ensure equitable adoption of alternative equipment.

The Commission is asked to return its feedback no later than March 1, 2023.

At the January 19 Sustainability Commission meeting, membership started discussing their recommendations regarding Option 2. The list below details specific items to consider regarding implementation recommendations. *Statements in italics indicate the recommendations decided upon at the Commission's January meeting.* ***Statements in bold indicate requests for further information raised at the Commission's January 19 meeting, and items to be discussed further at the Commission's February meeting.***

1) Phase-out period of 1 year, 3 years, or 5 years?

The Commission was split 50-50 between recommending a 1-year or 3-year timeframe between Board adoption and effective date of GPLB regulation. An alternative approach the Commission may consider is

a phase-out period in which the effective date for operators on publicly-owned lands is sooner than for private properties, for example.

2) Enforcement recommendation?

The Commission recommends using civilian enforcement.

The Commission requested more information from the Village to assess the feasibility of enforcing the regulation using Code Officers that respond to complaints:

Highland Park and Lincolnwood are examples of municipalities that enforce GPLB regulations via Code Officers rather than Police. Both ordinances ban GPLBs from May 15-October 1.

In Lincolnwood, it is the responsibility of the code enforcement officer to enforce their GPLB restriction. When a complaint is received, this officer will stop by the site of the complaint and explain the ordinance to the homeowner or contractor. If a complaint is made on a weekend, they will follow up on the next occurring business day and let the resident know so they may inform their contractor.

A citation and fine is issued to second-time violators only if the officer is present at the time of the violation to witness and confirm that a GPLB was used.

In Highland Park, it is the responsibility of the property maintenance inspector to follow up on complaints and write citations. The property maintenance inspector's job entails patrolling the city for the majority of the day every day to ensure property maintenance code compliance.

When a complaint is called in, their property maintenance inspector heads to the scene and collects date-and-time-stamped photos of 1) the violator with the blower and 2) the drivers license of the violator. If police officers notice someone in violation of the GPLB restriction while on patrol, they will take photos for the inspector to follow up.

Highland Park requires landscapers to be licensed with the city and provides each business with as many vehicle stickers as requested for their fleet. The property maintenance inspector will check the vehicle of the violator to confirm they are licensed with the city. If they are not, they will receive a ticket for doing business without a license. They have seven days to register with the city without penalty before a fine is issued.

First offenders receive a warning notice written on a carbon copy form that documents their name, company, and the address in which violation occurred.

Second notices are a citation with direction to appear in court, sent via certified mail. If the violator appears at the court date they are typically charged the minimum fine of $100. If the violator does not appear in court they are typically charged the maximum fine of $300.

Highland Park staff describe enforcement of their GPLB ordinance as mostly complaint-based, however two times a year their inspectors will conduct a sweep in which they spend a whole day traveling around town to check for violators of this ordinance.

If a complaint is called in and the violator is no longer present upon arrival, the inspector will return next week at the same time and day of the week and will usually find the violator as they maintain regular work schedules.

3) Landscaper registration process:

The Commission recommends the Village should register landscapers, and collaborate with surrounding communities to create a list of landscapers working in the area to reach out to for registration.

The Commission recommends a Contractor Business License Application form to include an acknowledgement of the GPLB regulation, and a requirement for at least one marked vehicle to be present with indication of the name of the landscaping company while doing business in the Village.

4) Citation process

The Commission recommends that any person found in violation of the GPLB ordinance is sent a warning letter upon first offense.

If a violator is subject to a complaint a second time, the violator is to receive a service of summons for citation by the Village.

The Commission requests more information to be collected about the Wilmette's policy to revoke the fine if presented with proof of purchase of an electric blower: their ordinance states first-time violators are to be fined $75. This is waived for first-time violators only if they provide a receipt of purchase.

5) Citation target: companies, not individual employees?

The Commission recommends specifying that if the violator is a landscaper, notice letters will be sent to the address of the landscaping company rather than that of the individual operator.

The Commission recommends alerting the homeowner or property owner if their landscape company is cited and/or fined as a result of violating the GPLB ordinance.

6) Exemptions

The Commission does not recommend exemptions for roof gutter cleaning or patch/pavement repair services on private properties.

The Commission requests more information regarding why golf courses and Park Districts tend to be exempted from GPLB regulations in our area:

Evanston, Glencoe, Lincolnwood, and Wilmette exclude both golf courses and Park District properties from their regulations. Highland Park and Winnetka exclude golf courses but not Park District properties from their regulations.

Following discussions with surrounding communities, staff found there is consensus that this exemption results from the lack of a suitable replacement to GPLBs (in terms of blowing force) to manage the size and scope of Park District operations in keeping with the current standard of property maintenance,

especially for golf courses. Golf courses are expected to remain leaf-free to preserve turf health and avoid large accumulations causing an impediment to movement of the golf ball.

Blowers are used daily to maintain athletic fields, playgrounds, walking paths, parking lots, pool decks, and golf courses. In Northbrook, the Park District manages 511 acres of land, including 2 golf courses.

7) Allowable time of use

When GPLB would be allowed according to Option 2 of the proposed policies, the Commission recommends a continuation of the current noise ordinance in terms of what times of days to allow leaf blower operation: 7:30 a.m. to 8:00 p.m. on Mondays through Fridays, and 9:00 a.m. to 7:00 p.m. on Saturdays, Sundays and nationally recognized holidays.

8) Financial incentives

The Commission did not have enough time at the last meeting to begin discussing this item. The Commission will be expected to prepare a recommendation related to how the Village may implement a program to incentivize battery-operated equipment. Page 9 of the Final Report lists best practices for buyback programs.

The Commission will want to consider recommendations regarding who should be eligible for a buyback incentive (residents only, residents and businesses, small businesses only, etc.)

The Commission may also provide a recommendation on the level of subsidy that should be provided to make a significant impact (50%, 70% of retail price of tool, or of tool plus 2-3 batteries and chargers per tool).

9) Messaging, outreach, and communications

The Commission recommends disseminating information related to the policy and its intention via e-news, print newsletters, lawn signs, and on social media.

The Commission recommends sharing information on the dangers of GPLB from multiple angles (the pollution aspect, health aspect, and threat to ecosystems). Health risks to operators should be highlighted.

The Commission suggested a poster competition for school students' involvement.

10) Additional considerations

The Commission recommends inclusion of the following statement in any potential ordinance that regulates GPLBs: "In the event of a storm, seasonal anomaly, or other emergency, upon determining that it is in the best interest of the safety and welfare of the village, the village manager may postpone or waive enforcement of the foregoing restrictions."

The Commission also recommends the following definition for what the ordinance prohibits seasonally: The use of any gasoline-powered leaf blower, whether backpack-mounted, wheel-mounted or handheld, which includes electric leaf blowers connected to portable gasoline-powered electric generators."

If time allows at the February Commission meeting, membership requests revisiting other policy options beyond Option 2. Commissioners stated interest in policy Option 3 (a 10-month ban on GPLB) and looking into alternative options.

Regional Leaf Blower Working Group
Final Report

Village of Deerfield

Deerfield Park District

Village of Glencoe

Village of Glenview

Go Green Wilmette

City of Highland Park

Illinois Landscape Contractors Association

Village of Kenilworth

Village of Lake Bluff

City of Lake Forest

Village of Lincolnshire

Mariani Landscape

Village of Northbrook

Scopelliti Landscaping

Village of Wilmette

Village of Winnetka

Submitted December 15, 2022

Purpose

The Regional Leaf Blower Working Group (referred to as the "Working Group") was formed in late 2021 to evaluate the need and impact of leaf-blower regulations to be considered by each participating municipality. The Working Group was tasked with studying the impacts of gas-powered leaf blowers, alternative technologies and how communities could mitigate the impacts of this equipment.

The Working Group recognizes that the circumstances of participating municipalities are different and thus this report does not indicate whether a community should prohibit the use of gas-powered leaf blowers. Instead, the report identifies best practices to consider should it be determined that gas-powered leaf blower regulations are appropriate in a particular community.

The information in this report has been compiled to assist each community's discussions and consideration of leaf-blower regulations*. In an effort to standardize regulations, municipalities that determine that new or expanded leaf-blower regulations are appropriate for their community are encouraged to work together on drafting of ordinances to ensure uniformity of regulations throughout the North Shore.* Because landscapers work across municipal boundaries, such cooperation will greatly enhance the effectiveness of and compliance with any policy.

Working Group Composition

To ensure a balanced and thoughtful report, the Working Group is comprised of:

- Elected officials
- Appointed officials (i.e. Sustainability Commission members)
- Professional municipal staff (Municipalities and Park Districts)
- Representatives of the landscape industry

The Working Group utilized consultants, the American Green Zone Alliance (AGZA) (https://agza.net/) & Quiet Communities (https://quietcommunities.org/)[1], to assist with technical components of the report and to review a draft of the final report.

The Working Group created three subcommittees to conduct research and consider various policy components which have informed this report. The subcommittees include:

- Municipal Research and Best Practices
- Impact of Gas-Powered Leaf Blowers
- Alternative Equipment/Technology

[1] AGZA is an organization "committed to improving quality of life for communities, working conditions for operators and best practices for the landscape maintenance industry working to create cleaner air, quieter spaces, and more harmonious and sustainable communities."
Quiet Communities is a "nonprofit 501C3 dedicated to helping communities reduce health and environmental harm from noise and pollution."

Executive Policy Summary

Reasonable Policy Options for Consideration

For communities considering expanding gas-powered leaf blower policies, as well as those considering new regulations, the following policy options are presented:

- Status Quo/Monitoring
    - For communities without existing gas-powered leaf blower regulations, the individual characteristics of their community may warrant no change to regulations with continued monitoring of leaf blower technology
- A seasonal gas-powered leaf blower ban from approximately May 15 through September 30
    - This is the most common timeframe for regional municipalities, including Working Group members, with gas-powered leaf blower regulations
- An 8-week window during the fall clean-up season (October 1-November 30) and 4-week window (April 1 – April 30) during the spring clean-up season when gas-powered leaf blowers may be utilized
    - Gas-powered leaf blowers would be banned during the summer and winter months when their efficacy is less needed to meet customer expectations
    - Given that the start of the spring clean-up season can vary each year due to weather conditions, it would be appropriate for regulations to contemplate allowance of an administrative extension to the 4-week window
- A 10-month gas-powered leaf blower ban from December through September
    - This policy would prohibit the use of gas-powered leaf blowers during the annual spring clean-up season
    - None of the Working Group members, nor any nearby communities, have experience prohibiting the use of gas-powered leaf blowers during spring clean-up and the impact on spring operations is unknown at this time
    - Depending on customer expectations, use of battery-operated technology during spring clean-up may not be economically viable for landscapers
    - This option is not supported by the Illinois Landscape Contractors Association due to the volume of debris during spring clean-up which requires the efficacy of gas-powered leaf blowers and the compressed time period for spring clean-ups. Spring clean-up leaf volumes can be further exacerbated by late leaf drops during the fall season which further justifies the need for powerful leaf blowing equipment.

The American Green Zone Alliance does not recommend 12-month gas-powered leaf blower bans for communities along the North Shore due to the robust tree canopy and need for high-powered equipment to adequately complete fall clean-up. As of the date of this report, there are no electric or battery alternatives to gas-powered that can provide the efficacy required during fall clean-up nor are these alternatives economically viable for landscapers during the fall season.

Recommended Best Practices

Policy Implementation, Enforcement & Public Education

Policy Implementation

Whether a community is considering implementing gas-powered leaf blower regulations for the first time, or extending a seasonal ban to a 10-month ban, phasing of the regulations is important for the following reasons:

- Allows additional time for technology advancements as blower strength and battery power continues to improve for alternative equipment
- Reduces the economic impact on service providers and customers
- Provides sufficient time for public education

Examples of phasing timelines include:

- 5-year phase out (recommended by the Illinois Landscape Contractors Association)
- 3-year phase out
- 1-year phase out

The appropriate phase out period may vary by each community's circumstances. For example, a community with a 6-month ban currently in place may require a shorter phase out period than a community without any current regulations.

Enforcement

Enforcement of leaf blower regulations can be challenging for the municipality and frustrating to homeowners who encounter violations of leaf blower ordinances. Regulations limiting noise to specific decibel thresholds can be particularly difficult to enforce as compared to blanket prohibitions. Consideration as to how municipalities will enforce any such regulations is essential when contemplating new or expanded policies.

Enforcement approaches vary by community and the following are best practices that have been recommended by individual Working Group participants based on experience:

- When staffing allows, proactively enforce the ordinance with a dedicated employee(s) rather than respond reactively to complaints
- Seek compliance prior to issuing citations
    - Issue citations after failing to comply to warnings
    - Revoke citations if a landscaper provides evidence they have purchased an electric- or battery-operated leaf blower
- Issue citations to the landscaping companies, not the individual employees or homeowners
- Require landscapers to be licensed in order to communicate regulations and provide the ability to revoke a license for continued violation of ordinances.

    - Communities that do not currently license landscapers but intend to should consider the impacts upon small businesses as well as staffing impacts to administer a licensing program.
- Require identifying information on landscaping vehicles to assist with enforcement
- Document voluntary compliance with regulations by identifying and recognizing companies which use alternative technology
- Other ideas not currently implemented by Working Group members but suggested for consideration include: 1) Develop an intake process where violations may be reported through the use of video or photos. Gas-powered equipment is used in short bursts making it difficult for law or code enforcement officials to catch violators in the act; 2) For communities which do not currently license landscapers, allow for reciprocal acceptance of landscape licenses (accept a license from another community) which may ease the administrative burden of implementing a new licensing program

Public Education

Public education is critical to the success of any leaf blower regulation and to ensure native habitats are properly maintained. Residents play an important role in reducing the impacts of gas-powered leaf blowers in the community and in making transitions to alternative equipment more economically viable for landscapers. Understanding the problems associated with gas-powered leaf blowers, impacts of any type of blowing/disturbance to the natural environment, and then using that knowledge to educate landscapers and homeowners is essential to the success of leaf blower regulations.

Template communications can be found in Appendix B with information that can be tailored to specific municipal regulations and for different audiences (landscapers, homeowners) or circumstances (Education or enforcement via social media, flyer, door hanger).

The Working Group recommends that communications utilize accessible, understandable language to reach the broadest possible audience.

Workforce Education and Training

Workforce education and training are critical to equitably and adequately resourcing leaf blower regulations. Battery electric technology is a different technology platform with its own operational and safety issues. It is essential to ensure electric tools are operated, handled, stored, and charged properly and safely, and that batteries are repurposed or recycled at the end of their useful lives. Safe and proper use of tools, batteries, and chargers also extend product life and optimize return on investment.

Environmental, Technology, Cost, & Other Considerations

The Working Group's best practices are based on an extensive review of the environmental impacts of gas-powered leaf blowers, current technology for alternative equipment and the cost to transition to more sustainable equipment.

Environmental Considerations

Environmental considerations regarding leaf blowers including noise and air pollution are discussed below. Ultimately, reducing the usage of leaf blowing in general (gas- or battery-powered), through public education and commercial education, is the most sustainable solution to protect native habitats and reduce noise and air pollution.

Noise Pollution

The issue of noise is one of the most common complaints received from community members regarding gas-powered leaf blower usage and the Occupational Safety and Health Administration (OSHA) requires ear protection for users of gas-powered leaf blowers. When measured at 50 feet away (the American National Standards Institute (ANSI) standard for measuring noise)):

- Average battery-operated blowers range from 52 - 65 dB
- Average low decibel gas-powered leaf blowers range from 60-64 dB
- Average gas-powered leaf blowers range from 75 - 83 dB

For reference, each 10 dB increase in sound is twice as loud as heard by the human ear. Refer to Appendix C for a chart from Purdue University to provide context for these decibel ranges.

A study commissioned by the City of Washington D.C. in 2018 and conducted by acoustic engineers from Arup, an international engineering firm, and Quiet Communities, found that for the commercial blowers that were tested:

- *The sound from the gas leaf blowers has a strong low frequency sound component absent from battery operated leaf blowers*
- *The low frequency component of the gas leaf blower sound carries loud sound over longer distances resulting in a greater noise impact on the surrounding community*
- *The low frequency component of gas leaf blower sound enables it to more easily penetrate through home windows and glass doors*

The report from Arup can be found in Appendix D.

While the noise from battery and electric operated leaf blowers is not as impactful as noise from gas-powered leaf blowers, they do still generate noticeable noise and none of the policy options on page two of this report will eliminate such noise in its entirety.

Air Pollution

Appendix E is a report from the US Environmental Protection Agency and Quiet Communities titled “National Emissions from Lawn and Garden Equipment”. The report finds that:

- *Commercial gas landscape maintenance equipment (GLME) is a source of high levels of localized emissions that include hazardous air pollutants, criteria pollutants, and carbon dioxide (CO2)*
- *Routine use of GLME in the vicinity of residential neighborhoods, schools, parks, and other public spaces may be exposing the public to unnecessary and preventable health risks*
- *Communities and environmental, public health, and other government agencies should create policies and programs to protect the public from gas-powered lawn and garden equipment air pollutants and promote non-polluting alternatives.*

The US EPA report referenced above was completed in 2015 and technology improvements since that time are likely to have reduced pollution emanating from gas-powered leaf blowers. However, air pollution impacts remain and the 2015 report is the most reputable and comprehensive report available to the Working Group at this time.

For reference, OSHA does not require the use of a respirator to operate gas-powered leaf blowers.

<u>Technology Considerations</u>

Currently, gas-powered leaf blowers are significantly more powerful than electric blowers. The most common way to measure the power of a leaf blower is to determine its Cubic Feet per Minute (CFM) and Miles per Hour (MPH).

CFM measures the volume of air leaving the blower. MPH measures the speed of air leaving the blower. CFM moves *more* debris while higher MPH moves heavier, wet debris.

The following table compares the operational capabilities of battery- and gas-powered commercial equipment:

Maximum Outputs	**Industry Leading Battery-Operated Leaf Blower**	**Industry Leading Gas-Powered Leaf Blower**
CFM	600	941
MPH	142 – 170	206

For industry leading battery-operated equipment, with battery backpack, the tool will generally operate for approximately one hour on maximum power (setting most likely used during fall leaf clean-up). This requires a substantial back-up battery supply for each blower in use by a landscape company.

Cost Considerations

Per AGZA and Quiet Communities, the cost to replace gas-powered leaf blowers with battery electric technology is dependent on the intensity of leaf blower usage, which is directly correlated with the expectations of customers.

The table below compares the upfront cost for a landscape business to purchase two leaf blowers per crew in Illinois:

Conventional Use (Highly manicured lawn)		**Transitional Use (Less formal aesthetic)**		**Ecological (Ecological aesthetic)**	
Battery	**Gas**	**Battery**	**Gas**	**Battery**	**Gas**
$11,225	$1,125	$7,825	$1,125	$4,350	$1,125
Requires 6 backpack batteries (3 per tool)		Requires 4 backpack batteries (2 per tool)		Requires 2 backpack batteries (1 per tool)	

**The above figures do not include the additional cost for safe and adequate battery charging infrastructure, which can range from $600 for a four plug system to $1,400 for an eight plug system.*

The above figures are based on Stihl equipment as follows (pricing example is based on Conventional Use):

2 Tools (BGA 200 blower):	$411.99 each
6 Backpack batteries (AR 3000L):	$1,499.99 each
2 Fast chargers (AL500):	$162.95 each
4 Standard chargers (AL300):	$99.99 each
Total (w/ IL sales tax):	$11,225 to outfit one landscape crew

Because it may not always be practical or effective to charge equipment on a worksite and thus a sufficient number of batteries must be on hand throughout the workday, as well as equipment to fully charge the tools overnight.

Per AGZA and Quiet Communities, aesthetic expectations appear to be the most important driver of investment required in battery electric equipment. Relaxing customer aesthetic expectations (through public education) and modifying landscape company practices can result in a more efficient ROI for battery electric equipment. So long as customers seek a highly manicured aesthetic, a substantial upfront investment in batteries and chargers is required, which is likely to be passed onto customers in the form of higher service prices.

Other Considerations

Exemptions

The Working Group reviewed exemptions to existing gas-powered leaf blower bans. These fall into two categories – those who use equipment in the scope of their jobs and those who use equipment to service their own properties.

Professional users:

- Municipal/government owned property
    - Some local Park Districts have expressed concern with their ability to provide service without the use of gas-powered leaf blowers
- Golf courses
- Landscape and tree care professionals
- Related trades such as gutter cleaning, driveway resurfacers, etc.
- Private land owners who use in-house landscape professionals (colleges, universities, conservation districts, public gardens, large estates, etc.)

Residential users:

- Homeowners conducting maintenance on their own property

The Working Group recommends that municipalities considering new or amended leaf blower regulations consult their maintenance staff, Park Districts (if applicable), School Districts, and other large landowners such as private golf courses to determine whether exemptions are appropriate or necessary.

Battery Charging, Recycling, and Safety

While battery-powered leaf blowers are preferable over gas-powered leaf blowers, there are environmental and safety concerns associated with large-scale adoption of battery-operated landscaping equipment. The Working Group recommends municipalities consider partnering with professional recycling firms to coordinate safe and proper disposal of lithium batteries. The Working Group has local resources available to municipalities interested in hosting lithium battery recycling programs.

While fires stemming from battery devices are rare, they have occurred, and Fire Departments and businesses should be familiar with lithium battery fire prevention and extinguishing lithium battery fires.

Financial Incentives

Under current market conditions, the upfront cost of battery-operated blowers compared to gas-powered equipment may create a disproportionate burden on low-income residents and small landscaping businesses. For this reason, buy-back programs and other financial incentives could become crucial strategies to advance the goal of phasing out gas-powered lawncare products.

Municipalities considering implementation of financial incentive programs may wish to consult with the American Green Zone Alliance who has experience developing and managing such programs across the country. The Working Group investigated rebate programs from varying governmental organizations across the country and recommends the following items for consideration in the development of financial incentive programs:

1) Funding mechanisms

- Regional rebate programs have used grant monies in the past to facilitate trade-in of similar types of lawncare equipment (such as the EPA grant for the Diesel Emissions Reductions Act, awarded to the Metropolitan Mayors Caucus in early 2000s to administer sub-grants to12 Chicagoland municipalities)
- In the absence of regional grants, municipalities could allocate money to rebate programs in their jurisdiction or through regional partnerships

2) Eligible equipment

- A “best practice” observed from existing rebate programs requires evidence that new equipment meets the most recently updated EPA standards for allowable air and noise emissions levels
- Some existing programs partner with garden centers or hardware stores to provide vouchers to purchase alternative equipment at lower cost
- Equipment eligible for rebates can vary from leaf blowers only to various types of battery-powered lawn equipment such as lawnmowers, blowers, chainsaws, string trimmers, brush cutters, leaf vacuums, as well as accessories for alternative technology, such as additional batteries and chargers

3) Eligible rebate participants

- Consider preference to minority-owned businesses and/or low-income individuals to promote equitable adoption of alternative equipment. For example, a program run through Montgomery County, Maryland includes a statement that preference will be given to minority-owned businesses and/or low-income residents. In California, the South Coast Air Quality Management District provided funding for outreach and education of small minority-owned businesses, and for substantial subsidies (70% of retail price) to offset the upfront cost of commercial battery electric toolkits (tool plus 2 – 3 batteries and chargers per tool)
- While some programs are for residential equipment replacements only, others provide incentives to landscaping companies who are either based in the community or do business in the community

4) Retired equipment turn-in required

- A “best practice” is to require the retirement of gas-powered equipment with proof of destruction or by facilitating a turn-in program to ensure such equipment is not repurposed

Future Study & Analysis

Given the rapidly changing technology for leaf blowers, municipalities participating in this study should consider reconstituting the Working Group over time to review technology advancements and the impact such advancements may have on leaf blower regulations.

Appendices

Appendix A- Working Group Members

Appendix B- Public Education Materials

Appendix C- Purdue University Chart Regarding Decibel Ranges

Appendix D- Arup Report on Leaf Blower Noise dated July 16, 2018

Appendix E- US Environmental Protection Agency and Quiet Communities report on air pollution titled “National Emissions from Lawn and Garden Equipment”.

Appendix F- Municipal Research and Resources

LEAF BLOWER REGULATIONS REGIONAL WORKING GROUP

MUNICIPAL RESEARCH AND BEST PRACTICES SUBCOMMITTEE REPORT

AUGUST 16, 2022

Summary

The Leaf Blower Regulations Regional Working Group Municipal Research and Best Practices Subcommittee surveyed numerous Illinois municipalities to determine if and how they regulated leaf blowers (see ***Appendix A***). It was determined that most Illinois municipalities do not have ordinances that prohibit or restrict the use of gas-powered leaf blowers. However, certain municipalities including but not limited to Evanston, Kenilworth, Winnetka, and Wilmette have adopted gas-powered leaf blower regulations to reduce noise and air pollution.

The Subcommittee also surveyed municipalities nationwide to identify successful programs, policies, and best practices for the Regional Working Group to consider. We found California has several communities with gas leaf blower regulations which are highlighted in the "Best Practices" section of this memorandum, along with other noteworthy municipal attempts to limit air pollutants and reduce noise pollution.

Importantly, our research assessed the success of various regulatory and enforcement strategies used in Illinois municipalities. We found:

- Police departments are the most common enforcer of leaf blower regulations; complaints of this nature are typically treated as low priority. Other enforcement agencies include Code Enforcement, Public Works, or, in the case of Evanston, the Health Department.

- To limit noise, many communities have noise ordinances that consequently limit the hours of use of leaf blowers without completely banning their use. The following communities have noise ordinances but do not specifically include "leaf blowers" in their regulation: Barrington, Buffalo Grove, Deerfield, Elmhurst, Glen Ellyn, Glenview, Grayslake, Lake Forest, Lake Zurich, Libertyville, Lincolnshire, Mettawa, Morton Grove, Mount Prospect, Mundelein, Northbrook, Northfield, Park Ridge, Riverwoods, Skokie, and Vernon Hills.

- The following Illinois communities have partial or full bans on leaf blowers: Wilmette, Evanston, Glencoe, Winnetka, Lincolnwood, Kenilworth, and Highland Park.

Illinois Municipal Regulations

Many Illinois municipalities regulate leaf blowers indirectly through the use of noise and nuisance ordinances that effectively set the acceptable hours of operation without introducing a seasonal ban. These communities, primarily on Chicago's North Shore, have engaged in more extensive regulatory efforts.

Evanston. The City of Evanston has an ordinance that prohibits gas-powered leaf blowers between May 15th and September 30th (summer) and after the first Thursday in December until March 29th (winter). Evanston will ban all gas-powered leaf blowers starting April 1, 2023 including during the seasons listed. There are no seasonal restrictions on electric-powered leaf blowers. When leaf blowers are allowed, their use is limited to Monday through Friday from 7:00 a.m. to 9:00 p.m. and on Saturday, Sunday, and holidays from 9:00 a.m. to 5:00 p.m. The Evanston Health Department enforces their regulations through progressive discipline: a written violation letter is sent upon the first offense, a $100 fine for the second offense, a $150 fine for the third offense, a $200 fine for the fourth offense, and $250 fines for the fifth and subsequent offense(s).

Glencoe. The Village of Glencoe prohibits the use of gas-powered leaf blowers between May 15th to September 15th and from December 15th to March 15th. The ordinance restricts commercial lawn maintenance equipment use from 7:00 a.m. to 7:00 p.m. on weekdays and from 9:00 a.m. to 6:00 p.m. on Saturdays, and bans use entirely on Sundays and holidays. These restrictions do not apply to property owners conducting maintenance on their property. The Glencoe Police Department enforces these restrictions by issuing $250 fines to commercial landscape companies who are in violation, starting from the first offense (e.g. no warning).

Highland Park. The City of Highland Park prohibits the use of gas-powered leaf blowers between May 15th and October 1st, except for golf course maintenance or roof gutter cleaning (between May 15th and June 15th). When allowed, leaf blowers can be operated between 7:00 a.m. to 7:00 p.m. on weekdays and from 9:00 a.m. to 5:00 p.m. on Saturdays. The Highland Park Police Department and Community Development Department enforce this ban with fines ranging from $200 to $500.

Kenilworth. The Village of Kenilworth has a noise and leaf blower ordinance that prohibits the use of gas-powered leaf blowers between May 15th and September 30th. When allowed, leaf blowers can be operated Monday through Friday from 8:00 a.m. to 6:00 p.m. and on Saturday, Sunday, and holidays from 9:00 a.m. to 5:00 p.m. Gas or electric-powered leaf blowers must never exceed 75 decibels. The Kenilworth Police Department enforces this ordinance.

Illinois Municipal Regulations (continued)

Lincolnwood. The Village of Lincolnwood prohibits the use of gas-powered leaf blowers from May 15th to September 30th. When allowed, the leaf blower ordinance restricts use from 7:00 a.m. to 6:00 p.m. Monday through Friday; 7:00 a.m. to noon on Saturday; and bans use entirely on Sundays and holidays. The Lincolnwood Police Department and a Code Enforcement Officer issues violation notices upon the first offense and a citation upon the second offense. Fines are determined in court.

Wilmette. The Village of Wilmette introduced a ban on gas-powered leaf blowers between May 15th and September 30th beginning in 2006. The prohibition includes using an electric leaf blower powered by a portable gasoline generator, but not the use of electric leaf blowers plugged into permanently installed electrical outlets attached to a permanent structure. Exemptions to the gas-powered leaf blower ban include golf courses, public parks, Wilmette Park District property, for roof/gutter/downspout cleaning, and use in paving/repair/patching of public streets or related to asphalt seal coating on private property. Between October 1 and May 14, the Village permits the use of gasoline-powered leaf blowers, however, use is limited for to no more than 30 minutes in any three-hour period on lots of one-half acre or less. Enforcement is conducted proactively and citations are issued to the company violating the law, not individual employees. The fines for first time violators ($75) are typically waived upon providing evidence that a battery/electric-operated leaf blower has been purchased. Subsequent offenses have a fine of $150.

Winnetka. The Village of Winnetka has a nuisance ordinance that prohibits the use of gas-powered leaf blowers between June 1st and September 30th, except for golf course maintenance. From October 1st to May 31st, the use of gas-powered leaf blowers is limited to Monday through Friday from 8:00 a.m. to 7:00 p.m. and on Saturday, Sunday, and holidays from 9:00 a.m. to 6:00 p.m. The Winnetka Police Department enforces the ordinance and issues fines for $100 per offense. The fines do not escalate.

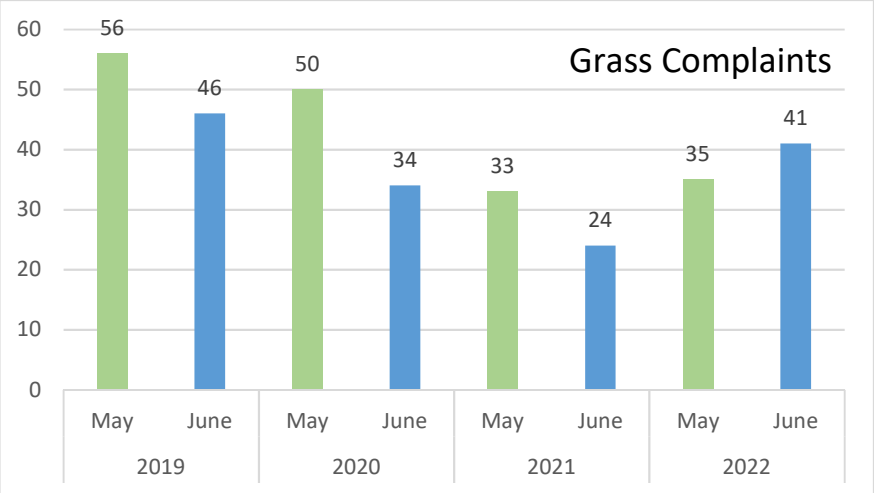
MEMORANDUM
VILLAGE OF NORTHBROOK
DEVELOPMENT AND PLANNING SERVICES DEPARTMENT

TO: SUSTAINABILITY COMMISSION
FROM: TESSA MURRAY, SUSTAINABILITY COORDINATOR
DATE: FEBRUARY 16, 2023
SUBJECT: NO MOW MAY DISCUSSION

At the January Sustainability Commission meeting, membership requested to revisit the topic of No Mow May as an additional agenda item in February.

Last year, a member of the public requested the Commission's recommendation to the Board of Trustees to participate in No Mow May through a proclamation that waives the grass height ordinance which limits grass height to the length of 8 inches. At the time, the Commission agreed to move forward with a recommendation as the initiative is in alignment with goals from the Greenspace and Ecosystems category of the Climate Action Plan to protect pollinator habitat.

The Village implemented a No Mow May program in which it was not required to register your lawn as participating, but those who did received free native seed packets. 80 participants in total registered with the Village. Some Park District properties, the Library, and all Village-maintained landscaping participated as well. In total, 85 acres delayed mowing in Northbrook during the month of May in 2022.



Over 20 residents reached out with negative feedback about the program. Additionally, the Village received 35 property complaints about grass in May 2022 that were not acted upon due to the ordinance being waived. This can be compared to 33 complaints in May 2021, when the ordinance was in place as usual. In June 2022, 41 complaints were received which is a significant increase compared to June 2021 when there were only 24 grass complaints.

If the Commission wishes to recommend No Mow May once again in 2023, Staff will consider making several revisions to the program including 1) requiring registration, 2) the procurement of informational lawn signs, 3) reminders in advance of June to prepare for heavy-duty removal of tall grass.

Attached for the Commission's consideration includes the Village webpage and FAQ page regarding No Mow May, as well as several research articles related to efficacy of the initiative. It should be noted that the major research study used last year to justify adopting No Mow May in the US for pollinators has since been retracted due to inconsistent data. The remaining papers staff found suggest that mowing every two weeks may be more beneficial than a total month-long reprieve, as insects have a more difficult time finding flowers surrounded by tall grass. Mowing once every two weeks is considered a "happy medium" where flowers can establish and are still accessible to pollinators.

NO MOW MAY

What is No Mow May?

From May 1 to June 1, the Village of Northbrook is suspending enforcement of the Municipal Code for excessive grass height and is encouraging all residents to participate in our "No Mow" initiative to voluntarily delay mowing. This may result in ground-cover exceeding the established ordinance height restrictions of eight inches which is why enforcement is suspended for May.

This practice will allow pollinators to safely emerge and early-flowering grasses and forbs to grow. The opportunity to establish beneficial insect populations (like our native bumblebees) is drastically reduced with early spring leaf litter removal and grass mowing.

Free Pollinator Sign and Seed Packet

Download a printable "No Mow May" sign here.

No action is required to participate, but residents who wish to receive recognition for their sustainable landscaping efforts can receive a free pollinator garden sign from the Village by contacting the

Contact Us

Tessa Murray

Email Tessa Murray

Phone: 847-664-4134

More Information

What Grows When You Don't

Sustainability Coordinator at tessa.murray@northbrook.il.us or 847 664 4134. You can also receive a free packet of wildflower seeds for participating in the program!

Participants are encouraged to share observations (flowers, pollinators) via email during the program period.

Why Should I Participate?

No Mow May encourages biodiversity, sequesters carbon, reduces energy consumption, improves drought tolerance and robustness of lawns, and helps us consider how our actions are impacting the world.

Mow?

When May mowing is delayed in Northbrook, you may find clover or common blue violets flowering in your yard. Our native bees rely on spring blooms for food and energy to start their colonies for the season. As scientists urge that the decline in insect populations is a concerning trend for biodiversity, your yard can make a difference to help the survival of vulnerable species like the Rusty-patch Bumblebee!

Refer to https://www.northbrook.il.us/1057/Pollinator-Habitat for more information on the Rusty-patch Bumblebee.

FAQ Page

1. What is No Mow May?

Northbrook's Village President made a proclamation in late April 2022 to declare this month as "No Mow May". Until June 1, the Village of Northbrook is suspending enforcement of the Municipal Code for excessive grass height and is encouraging all residents to participate in our "No Mow" initiative to voluntarily delay mowing.

2. Who does this apply to?

Any resident who wishes to participate can choose not to mow all or a portion of their property. The Village is participating on all Village-owned properties and spaces in Northbrook maintained by the Village. The Library and some Park District properties are participating as well.

3. Why is Northbrook doing this?

Northbrook committed to the initiative because of community concern about declining populations of wildlife due to habitat loss. "No Mow May" is to allow pollinators to safely emerge and early-flowering grasses and forbs to grow. The opportunity to establish beneficial insect populations (like our native bumblebees) is drastically reduced with early spring grass mowing.

4. Is Northbrook the only village doing this?

The concept started as a citizen science project in the UK and has been adopted by several US organizations including Xerces. Appleton WI was an early adopter, and Westmont in IL started in 2021. Now there are many other villages in the Chicagoland area that have adopted or are considering adopting No Mow May or versions of it (like No Mow until Mothers' Day).

5. Is there evidence that delayed mowing helps pollinators?

A 2018 study from the USDA Forest Service found an association between delayed mowing in suburban spaces and an increased abundance and diversity of bee species. A 2020 study published in the National Library of Medicine yielded similar results looking at the town of Appleton Wisconsin that adopted a No Mow May proclamation, confirming pollinators make use of key floral resources during early spring in the Midwest. Note: the 2020 study has since been retracted after finding inconsistencies between the published summary data and raw data.

6. How do I participate?

No action is required to participate, but community members who wish to pick up a free pollinator yard sign and seed packet may do so by stopping by the front desk of Development and Planning on the second floor of Village Hall (1225 Cedar Lane).

7. Can I only do a portion of my yard?

Yes, every little bit helps!

8. What if I think my grass is getting too long?

You can mow some of it or all of it! This initiative is about habitat, but also about bringing attention to how we, as stewards of the land, can do things better, not only for pollinators, but also for ourselves. Studies indicate that the optimal mowing cycle to specifically benefit pollinators, is every two weeks. Even though the program is designed to go through May, you are not required to not mow the entire time. Some years No Mow May might be fine before the first mow, and other years it may be too much but that is a decision is for you to make on your own property or parts of your property.

9. Dandelions are non-native weeds, why should I let them grow?

Do what works for you! The following answer is in regard to how to best support pollinators: If you have native landscaping but there are dandelions growing that may outcompete your native species, you should cut them! If you and a lot of your neighbors have a classic turf grass, then wildlife will indeed use dandelions for food and nesting materials. Birds use dandelions for nests, and bees will gather dandelion pollen when other pollen is not available. https://extension.illinois.edu/blogs/flowers-fruits-and-frass/2020-04-17-welcome-dandelion-and-violets-your-lawn

10. What should I do about dandelion seed heads in my yard?

You can cut them. Dandelion seed heads have no further benefit to pollinators, so cut them down, but cut them high, as to not mow other flowers below them.

11. My neighbor is participating, and I don't like it.

The natural aesthetic can take a bit of getting used to. Feedback on this trial, both positive and negative is welcomed. Email sustainability@northbrook.il.us.

12. What about ticks?

Ticks that carry Lyme disease are more likely to be found along forest edges compared to our residential lawns, but they can be found wherever there are suitable hosts. Because a benefit of natural landscaping is that it provides habitat for wildlife, attracting insects will also attract insect-eaters. As Northbrook continues to restore healthy ecosystems with sustainable practices, more tick-eating animals like birds and amphibians will be present. The best prevention against Lyme disease is proper clothing and a careful check of body and clothes after being in an area likely to have ticks.

13. I have allergies, should I be concerned?

Unmown grass does not typically begin to flower (which produces the pollen) until June or later in our area depending on the species. Your health is important – do what works best for you.

14. What happens after No Mow May for enforcement?

Participating properties are expected to comply with ordnance when the enforcement pause ends on June 1. The maximum height with enforcement is 8 inches. Enforcement of the grass height ordinance begins again in June. The ordinance is enforced by municipal code officers in the department of development and planning. The process is as follows:

1) Someone files a complaint on a property for violating the municipal code. This can be done online (https://www.northbrook.il.us/256/Service-Requests) or by calling 847 664 4050.

2) Municipal code officers confirm the violation and send a letter that notifies the property owner that a complaint has been filed and that they must mow within 5 days.

3) Municipal code officers revisit the property to ensure the violation is resolved. If it is not, the Village will send out our landscaping contractors to mow, and the property owner is charged for this service.

15. Does the Village grass height ordinance refer to all grasses?

No! Grass height restrictions only apply to non-native grasses, such as Kentucky Bluegrass that originates from Europe. Native grasses like bluestem, sedges, and ryes may grow to any height unless they are planted in an area that could interfere with visibility of motorists.

16. What else can a property owner that cares deeply about pollinators be doing?

- Leave your leaves in the fall – they provide habitat for overwintering species; or if there are too many in certain spots, gather some and mulch them with your lawn mower
- Leave perennials standings when perennials die back in the fall; the stems provide shelter for insects and the seed heads provide food for birds
- Avoid using pesticides and herbicides - lawns may support diverse plant communities and floral resources if we refrain from using herbicides to kill 'weeds' such as dandelions and clover
- Plant native plants whenever you can - either in a dedicated space or interplanted with ornamentals and non-natives
- Grow flowering plants in groups is more impactful than spacing them far apart
- Plant a wide variety of flowering plants that bloom at different time throughout the year so that there will be something for pollinators from spring through fall
- Plant trees, herbs, flowering fruits and vegetables, natives are best for wildlife, but as long as you avoid invasive species you will be providing habitat
- Leave some areas, even small areas, undisturbed- long grass, log piles, brush piles for winter shelter for insects that later provide high protein for birds
- Only fertilize your lawn when necessary rather than routinely, organic products preferred
- Create nesting shelter for birds

ISSUES

The surprising downside of #NoMowMay

Sheila Colla
May 13, 2022 5 min

Not cutting your lawn and letting dandelions grow for a month is touted as an easy way to help bees. But one-size-fits-all solutions don't work for conservation.

Don't be fooled by all that dandelion pollen. This bee deserves better. Photo: OliBac/Creative Commons

This article is by Sheila Colla and Lorraine Johnson, authors of forthcoming book A Garden for the Rusty-Patched Bumblebee: Creating Habitat for Native Pollinators: Ontario and Great Lakes Edition, and biologist and author Heather Holm.

Dandelions elicit extreme reactions. They're considered the bane of lawn care, hated with a fervour used to justify the massive chemical onslaught (fed by the lawn-care industry and advertising) that has been enlisted for decades to solve the "scourge" of this yellow flower. Anyone allowing a few dandelions to tarnish the greensward of lawn risks community shaming.

There's a movement afoot to redeem the dandelion. Like the plant itself, the movement started in Britain and has been imported to North America. Under the banner of a catchy slogan, #NoMowMay urges people to let the lawn grow with freedom for one spring month, and to celebrate the spontaneous vegetation that appears, in order to "feed the bees."

This initiative may have value in the U.K., where it originated and where local bees have co-evolved with those plants. But North American lawns, maintained with pesticides and fertilizers, don't support native plant and native bee populations. There's huge value in challenging monocultural lawns and the enormous ecological damage they have caused, but offering a feel-good moment of aesthetic rebellion risks obscuring, and even undermining, the bigger goal.

Instead of encouraging #LazyLawns what we need to do, urgently, is to steward, tend and nurture landscapes for native biodiversity and ecological integrity. A month of long lawns filled with dandelions and other non-native weedy species just doesn't cut it. It's the ecological equivalent of opening a fast-food restaurant on every corner – for a short amount of time. At best, burgers and fries for a while, but not a sustained full-service menu of healthy nutrition and habitat for pollinators.

At best, in North America this is just junk food for pollinators. Photo: Creative Commons

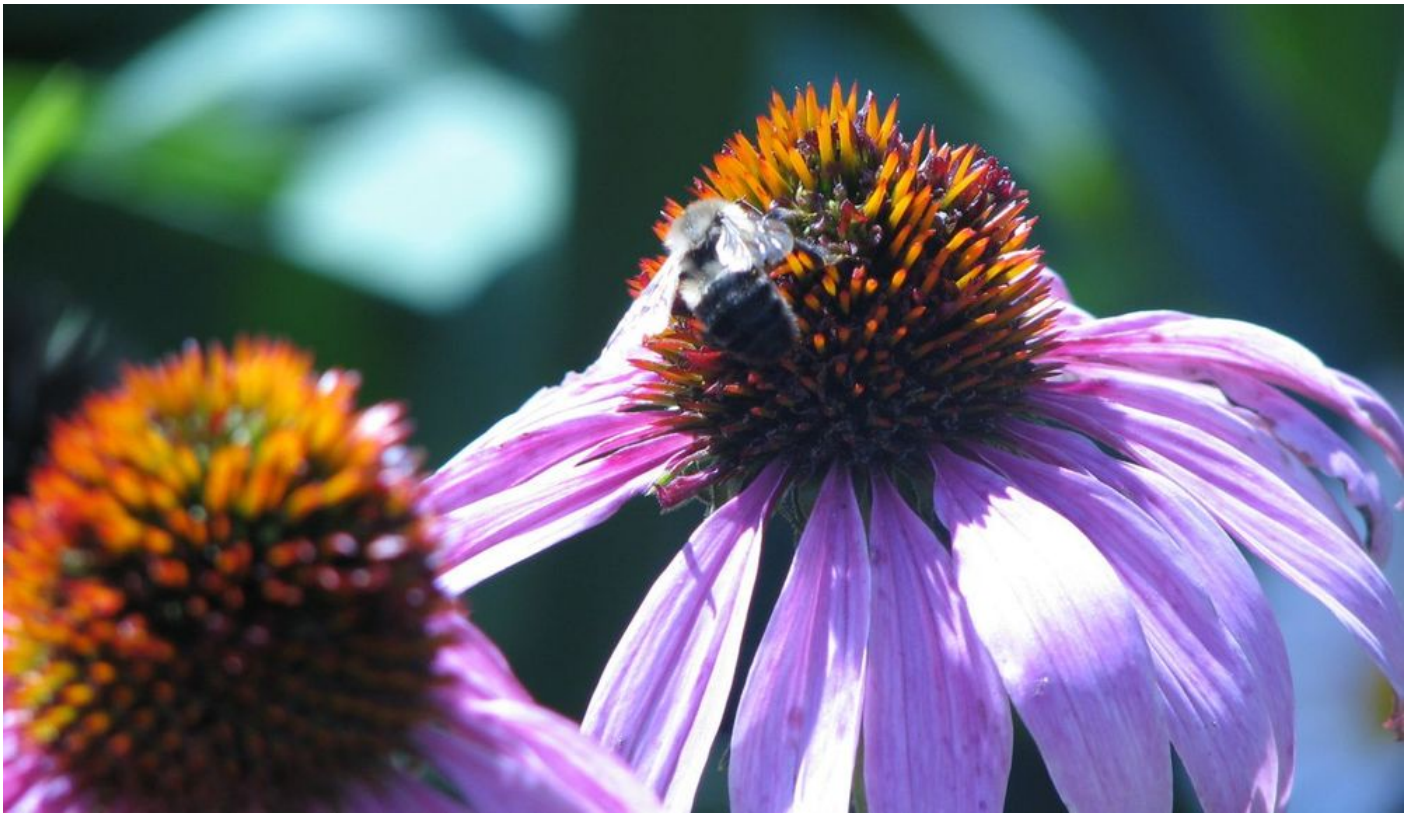
While we need to loosen the grip of the lawn on our collective landscape imaginings, here's what the little research done to date on dandelions tells us. Dandelion has allelopathic pollen, a scientific term that basically means the pollen of dandelions can reduce reproductive success in native wildflowers, disrupting the native plant communities it invades. Another study showed that queen bumblebees (some of the early emerging wild bees that pro-dandelion campaigns say dandelions help) resorted to eating their own eggs when fed a diet of protein-deficient dandelion pollen.

This is not an argument for vilifying the dandelion or dismissing the value of rethinking manicured lawns. Indeed, one of the benefits of #NoMowMay is that it undermines the conventional lawn aesthetic and, in doing so, helps to normalize acceptance of "messy-looking" habitats that support pollinators (dead leaves and dead plant stalks, for example). Another benefit of the campaign is that not running the lawn mower will reduce noise and air pollution.

But #NoMowMay is not a one-stop solution to the loss and degradation of pollinator habitat.

The co-evolved relationships between native plants and insects matter. These are the intricate, complex associations that support all life on earth. Lawns, even lawns with dandelions and the dozens of other introduced weedy species that will spontaneously appear, simply don't contribute in any significant way to supporting these relationships.

When we fill the landscape with introduced plants – as we have done deliberately in gardens and inadvertently in natural areas with invasive species that are the result of global trade, horticulture and other factors – we are disrupting these long-evolved and crucial relationships. It is yet another form of colonialism writ large on the landscape.



Native coneflowers provide a proper meal for bees in Canada. Photo: Meredith Leigh Collins

Conserving wild bees is hard work full of nuance. It requires unpacking messy systems and countering widespread misinformation. This complex work is hindered by simplistic messaging that perpetuates the notion that non-native weedy species are good for all bees. No. There are several hundred species of wild bees, each with its own ecological

requirements and behaviours. They are beautiful and important creatures, worth understanding beyond oversimplified slogans.

While it may be comforting to think that we can replace pieces of a complex puzzle and still meet the needs of all pollinators, the more we learn about the ecology of these co-evolved relationships the more we know that this is not the case. There are just too many unknowns.

What we do know is that our inattentiveness to these intricate, complex associations has led to the biodiversity crisis we find ourselves in. Dozens of species of pollinators are declining, at risk of extinction, or have disappeared altogether. What we need to be doing is stewardship, the concerted – and joyous –work of participating in an active relationship and connection with natural systems.

So here are a few simple messages to get behind. Not mowing in May (and beyond) is good. Manicured, monocultural lawns are pollinator deserts – the less lawn the better. Replace part of your lawn with densely planted native plants. Plant early-flowering native trees such as willow, red maple and any of the gorgeous native cherry species. Support pollen-specialist bees by planting native goldenrods, sunflowers, asters and coneflowers. Eat any dandelions that appear in your uncut lawn (they're delicious!). Spend the mowing time you've saved pulling out invasive species such as garlic mustard and dog-strangling vine, and planning your lawn-conversion project to a native pollinator planting. Embrace the "mess" of decaying leaves and dead plant stalks that provide crucial pollinator habitat.

Engage, tend, nurture and cultivate the natural communities we're a part of and depend on. Coming back from the biodiversity crisis will require active stewardship, not neglect, of altered landscapes. Spread this message.

Biological Conservation
Volume 221, May 2018, Pages 160-174

To mow or to mow less: Lawn mowing frequency affects bee abundance and diversity in suburban yards

Susannah B. Lerman [a b], Alexandra R. Contosta [c], Joan Milam [b], Christofer Bang [d]

Show more

https://doi.org/10.1016/j.biocon.2018.01.025

Abstract

Green spaces embedded within the urban matrix, particularly residential yards, could mitigate negative aspects of urban development and provide pollinator habitat. Lawns represent a dominant green space, and their management consists of frequent mowing to inhibit the growth of ostensibly "weedy" species (e.g., dandelions and clover). Since widespread population declines of bees and other pollinators from habitat loss are a growing concern, these spontaneous flowers could provide pollen and nectar sources throughout the growing season. We experimentally tested whether different lawn mowing frequencies (1, 2 or 3 weeks) influenced bee abundance and diversity in 16 suburban western Massachusetts yards by increasing lawn floral resources. Lawns mowed every three weeks had as much as 2.5 times more lawn flowers than the other frequencies. Interestingly, lawns mowed every two weeks supported the highest bee abundance yet the lowest bee richness and evenness. We suggest these patterns were driven by a combination of more abundant floral resources (compared with 1-week yards), easier access to lawn

flowers due to shorter grass and a more drastic impact on grass biomass and floral resources (compared with 3-week yards), and the dominance of a few generalist bees overwhelming our samples, thus driving richness and evenness. Our results highlight a "lazy lawnmower" approach to providing bee habitat. Mowing less frequently is practical, economical, and a timesaving alternative to lawn replacement or even planting pollinator gardens. Given the pervasiveness of lawns coupled with habitat loss, our findings provide immediate solutions for individual households to contribute to urban conservation.

Introduction

Bees and other pollinators provide essential ecosystem services in agricultural and pristine landscapes (Gallai et al., 2009; Ollerton et al., 2011), and are experiencing severe declines on a global scale (Vanbergen et al., 2013). Loss and alteration of habitat primarily due to urban development together with the intensification of agricultural practices (e.g., increased applications of pesticides, tilling, monocultures, reduced season-long floral resources) largely contribute to these declines (Goulson, 2013; Harrison and Winfree, 2015; Vanbergen et al., 2013; Winfree et al., 2009). However, recent urban research has documented cities supporting a surprising level of bee richness and abundance (e.g., Fischer et al., 2016; Frankie et al., 2005; Harrison and Winfree, 2015; Matteson et al., 2008; Pardee and Philpott, 2014; Threlfall et al., 2015), suggesting that public parks, ruderal grasslands, meadows, community gardens and flower gardens in private yards have the capacity to serve as bee refugia (Hall et al., 2017). Some cities may even harbor more diverse and abundant populations of native bees compared with nearby forest preserves and other natural systems (Baldock et al., 2015; Fetridge et al., 2008; Winfree et al., 2007). Consequently, green spaces embedded within the urban matrix could mitigate negative aspects of urban development, by providing pollinator and other wildlife habitat (Goddard et al., 2010). However, it is unclear how bees respond to one of the most pervasive urban green spac lawns.

Lawns cover >163,000 km^2 in the US and include golf courses, athletic fields, commercial and industrial parks and urban and suburban yards (Milesi et al., 2005). High proportions of lawns are located in yards, and serve both social and environmental functions. From a historical and social perspective, the lawn represented a status symbol of upward mobility and more recently, a platform for self-expression of, or projecting adherence to social norms (Nassauer et al., 2009; Robbins, 2007; Robbins and Sharp, 2003). Lawns also provide important ecosystem services. Depending on soil texture, storm water can infiltrate pervious lawns and can serve as a reservoir for some of the run-off (Mueller and Thompson, 2009). Lawns might also mitigate the urban heat island by regulating humidity, particularly

when irrigated (Hall et al., 2016). A suburban lawn's capacity for storing carbon (C) and nitrogen (N) can exceed that of non-urban grasslands (Pouyat et al., 2006; Raciti et al., 2008).

In addition to ecological benefits, the intensive management that lawns require can negatively impact urban and suburban ecosystems. Typical lawn management consists of irrigating, applying chemicals and mowing, and is carried out by millions of individual households and neighborhood associations whose actions have ecological and social consequences (Cook et al., 2012). For example, Americans use up to 48 gal of water per day for irrigating lawns and gardens (Environmental Protection Agency; www.epa.gov/waterwise↗). In arid regions, this kind of water use diminishes scarce natural resources. In addition, fertilizers and other chemical applications can degrade water quality and contaminate groundwater (Law et al., 2004), while gas-powered lawn mower exhaust fumes elevate CO_2 emissions (Zirkle et al., 2011). Although not every household irrigates or fertilizes (Polsky et al., 2014), most households mow to conform to societal expectations, city ordinances, and the personal satisfaction of a neat and tidy yard (Robbins, 2007). Many municipalities even enforce 'weed laws' to ensure conformity of the lawn ideal by restricting grass height (e.g., a Chicago ordinance prohibits lawn vegetation from exceeding 24.4 cm; Municipal Code of Chicago: §7–28-120). Intensive lawn management requires time and financial commitments, and are often driven by aesthetics and social norms to adhere to ideals of orderly, weed-free, lush carpets of green grass (Jenkins, 1994; Nassauer, 1995; Nassauer et al., 2009; Robbins, 2007).

One of the outcomes of frequent lawn mowing is a simplistic vegetation configuration. Consequently, many ecologists and wildlife organizations have dismissed the habitat potential of lawns, referring to these lawn-dominated yards as 'sterile environments for biodiversity' (Gaston et al., 2005: 3342). However, even with it's simplicity, lawns can support rich and diverse plant communities. A survey of 52 residential lawns in Sheffie UK recorded 159 species of vascular plants (Thompson et al., 2004). However, floral richness and abundance in these lawns might depend on lawn management behaviors and disturbance (Bertoncini et al., 2012; Grime, 1974; Wastian et al., 2016). Research on bees in New York residential yards that had extensive flower gardens showed that frequent lawn mowing (and herbicide application) depleted lawns of floral resources for bees (Fetridge et al., 2008), suggesting that less frequent mowing and avoiding herbicides could have the opposite effect.

Lawns lacking applications of herbicides and other chemicals generally support spontaneous flowers, such as common dandelion *Taraxacum officinale* (Asteraceae) and

white clover *Trifolium repens* (Fabaceae) (Bertoncini et al., 2012). This has potential habitat implications for bees (Larson et al., 2014) given their dependence on pollen and nectar resources from flowering plants (Frankie et al., 2005). However, frequent (e.g., weekly) lawn mowing generally prohibits plants from flowering (Fetridge et al., 2008). Because declines in native bees and other pollinators are largely caused by habitat loss (Vanbergen et al., 2013), nectar and pollen from these and other 'weedy' species have the potential to support bee conservation in urban areas. In this study, we manipulated lawn mowing behaviors in suburban yards to test the hypothesis that decreasing mowing frequency may result in increased lawn floral resources, and in turn, increased bee abundance, bee richness and bee diversity. Testing the effects of alternative lawn care management practices on floral resources may have important implications for bee and other pollinator populations given the cumulative area of lawns in urban and suburban areas in the U.S. and the millions of people that manage these systems.

Section snippets

Study sites

We conducted the study in 16 single-family, owner-occupied suburban yards (sites) in Springfield, Massachusetts, USA. Because we were working with private households, we relied on volunteers that we recruited via a local tree planting organization. Parcels ranged in size between 0.03 and 0.18 ha (typical of medium-density housing stock within Springfield), and houses were built between 1921 and 1957. We required that the yards not be treated with herbicides or irrigated during the study, or…

Bee community composition

The effect of mowing on the bee assemblage was evident in total bee abundance and bee richness. We collected a total of 4587 bees representing 93 species during the ten sampling rounds (see Appendix A1 for complete list and associated life history traits including origin, nesting substrate, behavior and body size). Summarized bee abundance and richness in relation to lawn mowing treatments were as follows: weekly mowing = 1425 bees representing 72 species, mowed every two weeks = 1903 bees…

Discussion

By manipulating lawn mowing frequency, we established that lawns with the three-week mowing treatment had significantly greater floral abundance than the one or two-week treatments, and that the two-week mowing regime supported the highest bee abundance yet the lowest bee richness and evenness (Fig. 2; Fig. 4b, c, d). With the inclusion of site-level (i.e., yard flowers in planted beds and lawn size) and neighborhood influences (i.e., percent canopy cover) in our models, we accounted for some…

Acknowledgements

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N.M. Williams *et al.*

Local habitat characteristics but not landscape urbanization drive pollinator visitation and native plant pollination in forest remnants

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