



# A COLLABORATIVE APPROACH: ENGAGING COMMUNITIES IN THE FIGHT AGAINST PLASTIC WASTE

## Insights from the Circular Economy Ambassador Program (CEAP) 2024



# EXECUTIVE SUMMARY

Mind Your Plastic is a non-profit committed to tackling plastic pollution and finding sustainable solutions. Its Circular Economy Ambassador Program empowers youth to become advocates for change by teaching them about the environmental impacts of plastic waste and inspiring them to explore creative alternatives. Through hands-on activities and community engagement, the program nurtures a new generation of environmental leaders who are excited to shape a more sustainable and waste-free future. The Circular Economy Ambassador Program (CEAP) has made significant strides in addressing plastic pollution across Canada through community cleanups conducted by youth aged 4 to 18. These cleanups have yielded important data on litter composition, revealing that Plastic Pieces have overtaken Cigarette Butts as the most commonly collected items, highlighting the escalating microplastic issue. This trend underscores the urgent need for innovative strategies that go beyond traditional cleanup methods to combat the ecological and health risks posed by microplastics (< 5 mm).

Data collected from various environments, including School Properties, Parks, Beaches, Hospital Grounds, and Neighborhoods, indicates that each area presents unique waste challenges. For instance, School Properties often accumulate Take-Out Containers, while Parks are burdened with Cigarette Butts and Food Packaging due to high visitor traffic. This variance emphasizes that generic solutions are inadequate and that tailored approaches must consider local contexts and community behaviors.

The program's findings also spotlight the significant contributions of major brands to litter, particularly Tim Hortons, McDonald's, and Starbucks. This suggests a need for corporate responsibility, encouraging these companies to adopt sustainable packaging and support waste reduction initiatives. Additionally, the program faced limitations, such as the inability to collect detailed data on smaller debris and a lack of accurate weight measurements, highlighting the necessity for improved data collection methods in future cleanups.

Several Canadian provinces have initiated effective policies and bans on single-use plastics, serving as successful examples for reducing plastic waste. British Columbia, Quebec, Ontario, Nova Scotia, and Yukon have implemented regulations that include bans on items like plastic straws and bags, fostering a culture of sustainability and community involvement. These efforts demonstrate the effectiveness of regulatory frameworks in promoting environmental sustainability and reducing plastic waste.





To achieve a plastic-pollution free future, it is crucial to embrace a circular economy that emphasizes sustainable production and consumption practices, such as embracing reuse, product redesign to minimize the use of harmful and hard-to-recycle plastics, and extended producer responsibility (EPR). Furthermore, consumer education and behavioral change are essential for minimizing single-use items. Engaging communities in initiatives that promote reusable options and sharing resources can facilitate this transformation.

In conclusion, the findings from CEAP cleanups reflect the pressing issue of plastic pollution in Canada and highlight key areas for targeted interventions. By integrating tailored strategies, public education, enhanced regulations, and corporate collaboration, Canada can work towards plastic-free land and seas. The fight against plastic pollution requires a comprehensive approach that goes beyond cleanup efforts to include waste reduction in daily life, ultimately fostering a sustainable environment for all.

## OUR 2024 CLEANUPS

**470.22 lbs**  
of litter was collected

**57%**  
of sorted waste was recycled or diverted



**68%**  
of items were single-use plastics (excluding cigarettes)





# EXPLORING TODAY'S PROBLEMS

In the last few decades, plastic debris has become a global pervasive pollutant, contaminating aquatic and terrestrial ecosystems, even reaching the most remote areas, such as the Arctic (Bucci et al., 2020; Collard and Ask 2021). Driven by commercial demands, plastic has become a staple in our economy due to its lightweight, durability, versatility, and cost-effective production. These very characteristics, unfortunately, enable plastic to infiltrate various environments and persist for hundreds of years, as one garbage truck of plastic is dumped in the ocean at every minute, however there are projections stating that this rate could double by 2030 (Jambeck et al., 2015; World Economic Forum and MacArthur, 2016). This persistence adversely impacts wildlife across the food chain, harming species through ingestion, entanglement, toxin absorption and accumulation, and habitat destruction (Bucci et al., 2020; Carson et al., 2013, Mcneish et al., 2018; Nelms et al., 2019.)

## **WHILE ATTENTION IS OFTEN GIVEN TO FUTURE PROJECTIONS, SUCH AS THE ALARMING PREDICTION THAT BY 2050 THERE COULD BE MORE PLASTIC THAN FISH IN OUR OCEANS IF CURRENT TRENDS CONTINUE**

(World Economic Forum and MacArthur, 2016), it is even more crucial to shift the focus to the present. The current impacts of plastic pollution on different environments and wildlife are already significant. Microplastics (< 5 mm) are being found in 100% of sampled sharks, other fish, and birds (Wilcox et al., 2015; Granberg et al., 2020; Amelineau et al., 2016). The presence of microplastics in human organs is becoming increasingly evident, as they have been found in human hearts and blood, with little knowledge about the effects on human health and well-being (Yang et al., 2023). However, recent studies have linked the presence of microplastics in arterial tissue to increase the likelihood of stroke and heart attack by 4.5 times (Landrigan, 2024; Moris, 2024; Nature Editorial, 2024). Therefore, immediate action is essential to mitigate further damage to environments, safeguard wildlife, and protect human health. Due to the lack of appropriate and available waste management in several countries worldwide, plastic pollution is negatively impacting our economies. Several millions of dollars are lost yearly due to the cost of clean-up operations, environmental degradation, negative impacts on commercial fisheries, loss of tourism activities and increasing costs on public health systems (Jambeck et al., 2015; UNEP, 2014; McIlgorm et al., 2011; Rochman et al., 2015).



## CURRENT EFFORTS

The Canadian government has implemented several federal laws aimed at preventing plastic waste from entering both marine and terrestrial environments. These efforts include:

1. **Microbeads in Toiletries Regulations (2017)**: This regulation bans the use and production of microbeads in cosmetics, reducing plastic pollution.
2. **Canada-wide Strategy on Zero Plastic Waste**: This strategy outlines the government's plan to turn plastic waste into a resource within a circular economy.
3. **Single-Use Plastics Prohibition Regulations (2023)**: This regulation bans the production, import, and distribution of six single-use plastic items, including cutlery, straws, and shopping bags.
4. **Ocean Plastic Charter**: Canada led the creation of this charter, which commits G7 countries to goals like collecting all plastics by 2040.
5. **Federal Plastics Registry**: A Canadian government initiative designed to cut down on plastic waste and hold plastic producers more accountable. It is a key part of the country's plan to eliminate plastic waste by 2030.

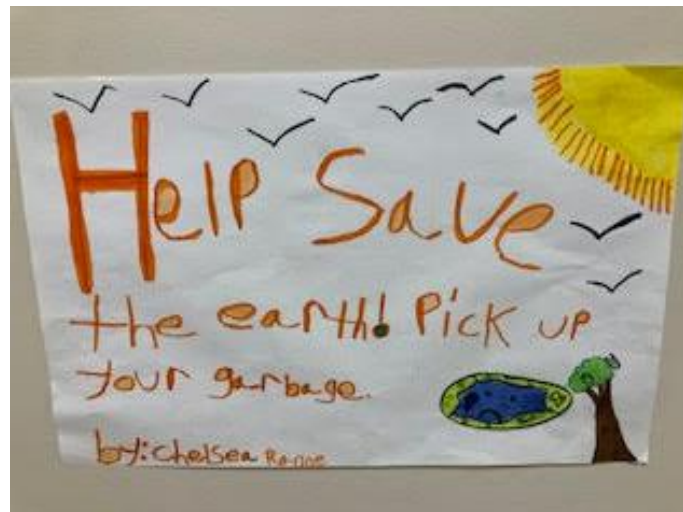
Despite these initiatives, there are challenges in enforcement, monitoring, and research that limit the effectiveness of these regulations. Additionally, the global nature of plastic pollution calls for international cooperation. Governments, industries, and individuals need to work together to address this issue, such as taking part in the upcoming Global Plastics Treaty that is expected to be finalized by the end of 2024, it aims to create a legally binding framework that addresses the full journey of plastics, from design and production to recycling. Educating the next generation on waste management could also play a key role in reducing future plastic pollution.

One of the biggest challenges in tackling plastic pollution is discovering where plastic waste comes from and identifying the corporations responsible for producing it. To address this, brand audit events have been organized for research purposes (Cowger et al., 2024). Similar to the CEAP, these events involve volunteers surveying and documenting the brands found within the collected plastic waste, with the goal of holding producers accountable. In a study by Cowger et al., 2016, from 2018 to 2022, brand audits were carried out on six continents, involving over 100,000 volunteers who followed a consistent method. The results indicated that the largest polluters in various regions were often major food and tobacco producing corporations. While this area of research is expanding, unfortunately, there is not a peer-reviewed, standardized approach for collecting and analyzing data from these audit events.

# CIRCULAR ECONOMY AMBASSADOR PROGRAM

Non-profit organizations and charities have played a vital role in raising awareness about the plastic pollution crisis, educating the public on alternatives to plastic, organizing cleanups, and advocating for policy changes to reduce plastic usage and pollution. Mind Your Plastic (MYP), is a registered Canadian charity dedicated to preventing plastic pollution by advocating for municipal policy changes, partnering with businesses, and offering direct action and educational programs. Recognizing the widespread impact of plastic pollution on all living things, MYP launched the Circular Economy Ambassador Program (CEAP) and has been educating youth about the importance of circularity in resource use, especially when it comes to plastics and product consumption, since 2021. In the three years of the program over 4,000 students were engaged across Canada collecting over 29,000 waste items. Youth, who make up about one-sixth of Canada's population (Statistics Canada, 2022), play a crucial role in promoting a circular economy. Through the CEAP, students have been actively involved in gathering data, sorting waste, and recycling materials, with some even advocating for local policy changes to reduce plastic use. The program has positively impacted schools, teachers, students, and communities

MYP has made the CEAP program accessible by providing free cleanup supplies, detailed instructions for cleanups, and age-appropriate educational materials in both English and French. Teachers guide students through the program, which involves collecting and recycling plastics, helping them understand the importance of a circular economy and strategies to reduce the use of unnecessary and hard-to-recycle plastics that often end up as plastic pollution.



# METHODS

The CEAP was very successful in 2024, with 28 schools from 10 provinces and territories. However, due to a late submission of data from one school, the data analysis below represents 27 schools from 9 provinces and territories, adding up to 1938 students that participated in the program. Mind Your Plastic designed the program to be accessible to different ages in order to maximize student learning and participation. MYP advertised the program to schools and teachers within Canada using letters, posters, emails, and social media. Teachers were invited to sign up their classes, and even their entire schools, to participate in the program. Upon signing up, teachers received a welcome email with program instructions and expectations. As teachers selected their cleanup dates between spring and summer of 2024, they were sent physical (reusable bags and gloves) and digital supplies (Powerpoint presentation, digital activity worksheets, personalized information on local waste management services, etc) to help enhance student knowledge on the issue of plastic pollution.

To understand the impact of the program on both teacher and student learning, both parties were instructed to fulfill a survey prior to participating and after completing the program. However, the results of these surveys will be reviewed in a different report. The teachers were instructed to use the presentation provided by MYP to introduce the subject of plastic pollution to their students.

# DATA ANALYSIS

In order to fulfill the CEAP and collect necessary data, teachers and students were provided with three datasheets: Data Tally Sheet, the Location Datasheet, and the Sorting and Diverting Sheet. Each datasheet was designed to record different aspects of the cleanup process, allowing for comprehensive analysis of the collected waste. Once the datasheets were completed, teachers sent them to Mind Your Plastic for database entry and analysis. Data entry, organization and analysis were conducted in Google Sheets and Microsoft Excel through the usage of pivot tables, charts, and dashboards.



## SORTING AND DIVERTING DATASHEET

Out of the 51 schools involved in the 2024 program, 27 schools provided data and only 9 completed the Sorting and Diverting Datasheet, which might have led to an underreporting of the amount of waste recycled. Despite this, the data collected was valuable in showing the level of participation from the classes. The datasheet allowed schools to estimate the weight (in pounds) of various types of waste, including Total Waste Collected, Non-Recyclable Waste, Recyclable Waste, Plastic, Paper, Metal, Fabric, Glass, and Cigarette Butts. Since teachers did not have portable scales during the cleanup and some did not provide weight estimates, the reported figures likely underestimate the actual waste collected.

## DATA TALLY SHEET

The Data Tally Sheet contained the most comprehensive information, organized into predetermined categories with specific items listed. These categories included common waste items typically found in cleanups worldwide. Any items not listed on the datasheet were placed under a Miscellaneous category. The tally sheet captured the quantity of each item collected by each school. When the data was entered into the MYP database, some item names were adjusted to avoid redundancy (for example, "Children's toy" was simplified to "Toy"). Occasionally, additional details like brand names, dates, colors, materials, plastic types, and sizes were also recorded.

## LOCATION DATASHEET

The Location Datasheet collected detailed information about cleanup locations, including the school names, cities or towns, cleanup dates, number of participating students, nearby businesses and activities, and the type of cleanup. There were five categories of cleanup locations: Beach (areas near water), School Property (school grounds), Neighborhood (residential or urban areas), Park (public greenspaces), and Other (any other location that did not fit the other location type categories). Cleanups involving both school grounds and adjacent parks were classified as School Property.

When certain details were missing from the datasheets, Google Maps and Map Developers were used to fill in gaps, such as identifying nearby restaurants, parks, and other relevant municipal infrastructure. Due to inconsistencies in how teachers reported the size of cleanup areas, all areas were analyzed within 1km<sup>2</sup> using Google Maps for accuracy. If the number of volunteers was not provided, the number of participants listed on the sign-up form was used, totaling 1,938 participants.





# RESULTS

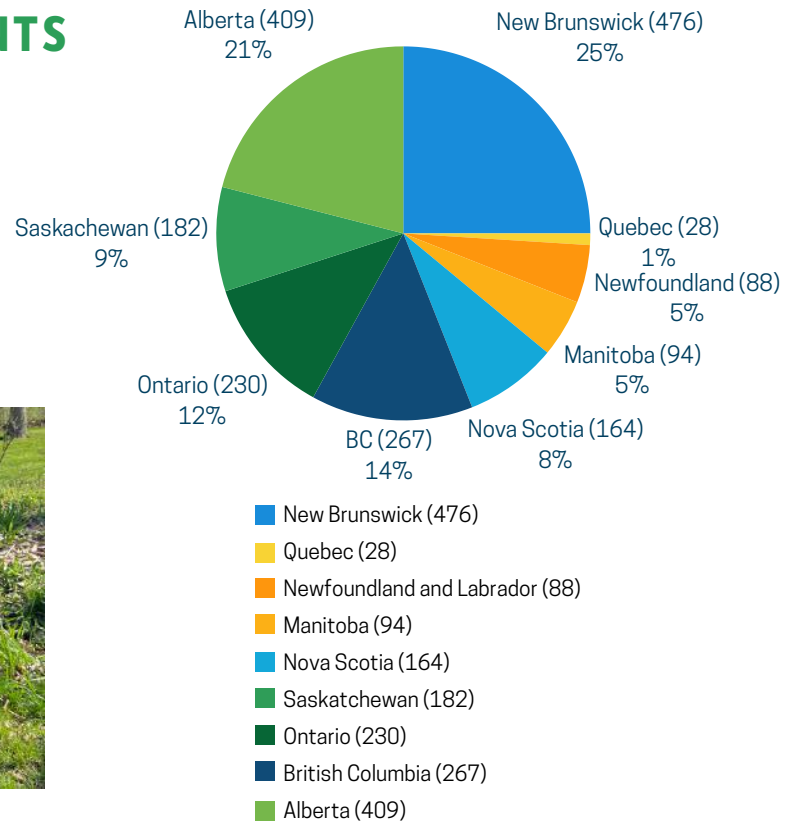


After completing cleanups with their students, teachers sent the datasheets to Mind Your Plastic. The 2024 CEAP program saw participation from 51 schools (3,671 participants) across Canada. However, only 27 schools (1,938 participants) across nine provinces were able to provide data due to various challenges faced by teachers during the school year. Participants recorded the number of items collected in each category listed on the Data Tally Sheet. These numbers were then converted into total counts and percentages to analyze different aspects of the collected waste, and location characteristics.

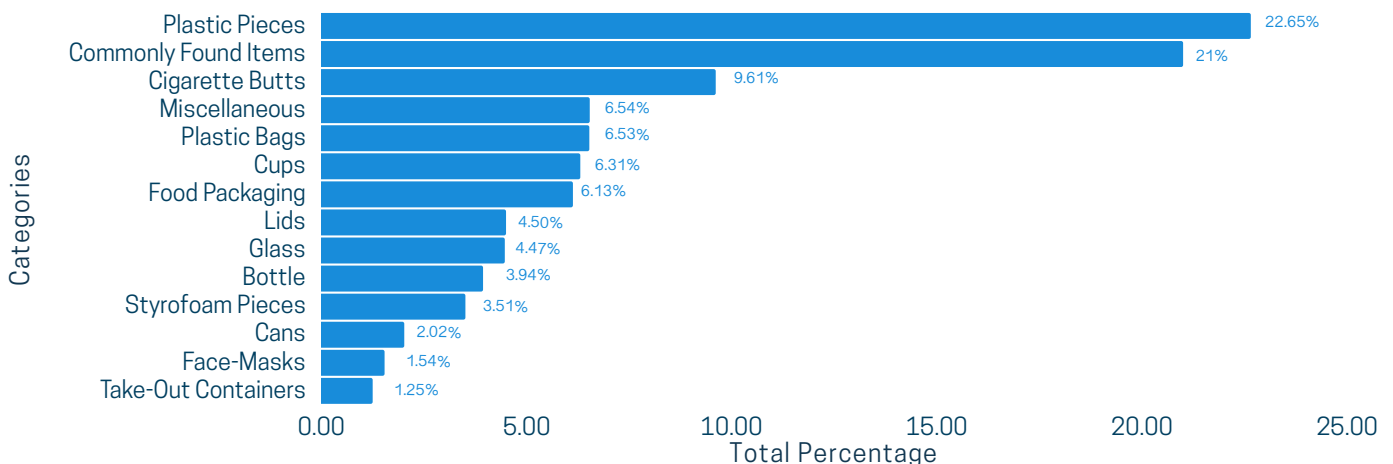
## SCHOOLS AND PARTICIPANTS

**Total number and percentage of participants in the 2024 CEAP program from each participating province and territory.**

Percentages are based on a total of 1,938 participants from 27 schools.



## PERCENTAGE OF ITEMS FOUND IN EACH CATEGORY (N=6494)



**Calculated percentages of items collected in each category from the Data Tally Sheet, based on a total of 6,494 collected items**

# WASTE ITEMS COLLECTED

In 2024, Circular Economy Ambassador Program students sorted and counted waste items collected from different environments. Percentage values were calculated based on the total amount of items collected (N=6494)



**Plastic Pieces**  
22.7%

LARGE PLASTIC PIECES (>30CM) - 2.5%  
MEDIUM PLASTIC PIECES (10-30CM) - 6.5%  
SMALL PLASTIC PIECES (<10CM) - 13.7%



**Commonly Found Items**  
21.0%

PAPER - 9.3%  
BOTTLE CAPS - 3.3%  
STRAWS - 2.5%  
OTHER - 5.9%



**Cigarette Butts**  
9.6%



**Plastic Bags**  
6.5%

GARBAGE BAGS - 0.9%  
PLASTIC BAGS - 2.0%  
SHOPPING BAGS - 1.5%  
ZIPLOC BAGS - 2.1%



**Miscellaneous**  
6.5%

ALUMINUM - 3.0%  
RUBBER PIECES - 1.6%  
ROPE - 0.9%  
OTHER - 1.0%



**Cups**  
6.3%

HOT CUPS - 2.6%  
COLD CUPS - 2.2%  
OTHER - 1.3%



**Food Packaging**  
6.1%



**Glass**  
4.5%

GLASS BOTTLE - 1.2%  
GLASS PIECES - 3.3%



**Plastic Lids**  
4.5%

COLD DRINK LIDS - 2.8%  
HOT DRINK LIDS - 1.7%



**Plastic Bottles**  
3.9%



**Styrofoam Pieces**  
3.5%



**Cans**  
2.0%



**Face Masks**  
1.5%

DISPOSABLE - 1.3%  
REUSABLE - 0.2%



**Takeout Containers**  
1.2%

## TOP 10 ITEMS

62.2% of all items collected (N=4,049)



**1. Small Plastic Pieces**  
COUNT: 891 | PCT: 13.7%



**2. Cigarette Butts**  
COUNT: 624 | PCT: 9.6%



**3. Paper**  
COUNT: 607 | PCT: 9.3%



**4. Medium Plastic Pieces**  
COUNT: 421 | PCT: 6.5%



**5. Food Packaging**  
COUNT: 398 | PCT: 6.1%



**6. Plastic Bottles**  
COUNT: 256 | PCT: 3.9%



**7. Styrofoam Pieces**  
COUNT: 228 | PCT: 3.5%



**8. Bottle Caps**  
COUNT: 217 | PCT: 3.3%



**9. Glass Pieces**  
COUNT: 211 | PCT: 3.3%



**10. Aluminum**  
COUNT: 194 | PCT: 3.0%

# LOCATIONS



## LOCATION TYPES

Participants in CEAP 2024 represented schools from nine provinces: Alberta, British Columbia, Saskatchewan, Manitoba, Newfoundland, New Brunswick, Nova Scotia, Quebec, and Ontario. Each participating school organized cleanups in accessible locations close to or on the school property. The cleanup areas were categorized into four main types: School Property, Park, Beach, Neighborhood. Any cleanups conducted in areas outside of these categories were labeled as Other to accurately reflect their locations.

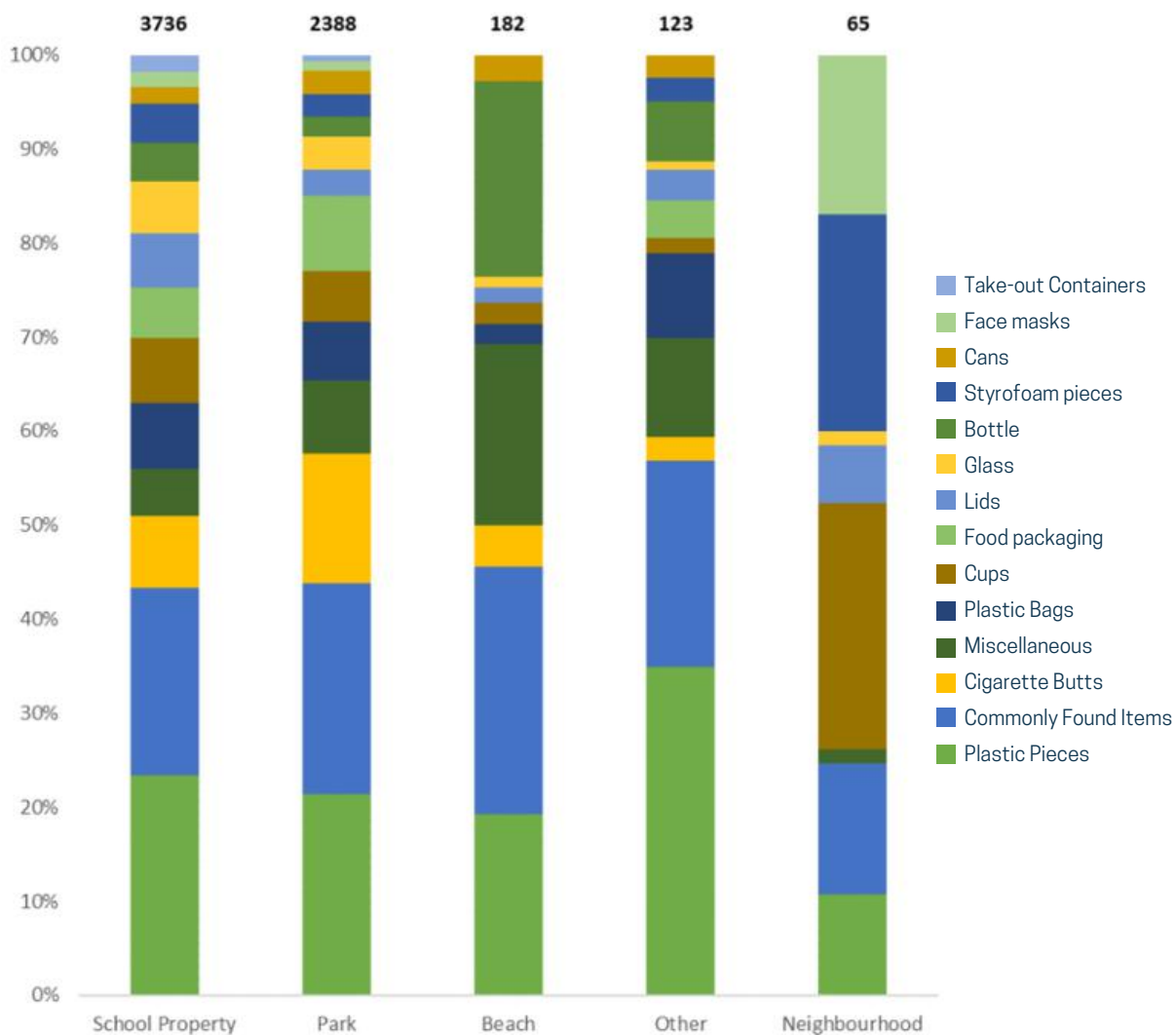
Among the cleanup locations, over half of all the items collected this year were collected on School Property (57.5%,  $n = 3,736$ ), followed by Parks (36.7%,  $n = 2,388$ ). While Beach and Other cleanups contributed to 2.8% ( $n = 182$ ) and 1.9% ( $n = 123$ ), respectively, of all the items collected. The least amount of items collected were in cleanups conducted in Neighborhood (1.0%,  $n = 65$ ).

Consistent with the findings from 2022/2023 CEAP, Plastic Pieces, Commonly Found Items, and Cigarette Butts were the most prevalent categories across all location types. Since the majority of the cleanups were conducted on School Property and in a Park, which also had the highest number of participants, these locations had the highest concentration of items within each waste category. Food Packaging and Take-Out Containers were mostly collected from School Property and Park cleanups. Moreover, School Property had the highest percentage of Take-Out Containers, while Park locations held the highest percentage of Food Packaging. Notably, both categories were absent in cleanups conducted on Beaches and Neighborhoods.

The highest percentage of plastic items was recorded on School Property (59%,  $n = 2,991$ ), while Neighborhood had the lowest percentage of plastic items (1.15%,  $n = 58$ ). Beach and Other locations contributed 2.18% ( $n = 110$ ) and 2.02% ( $n = 102$ ) of the total plastic items collected ( $n = 5,027$ ), respectively.

School Property also had the highest percentage of Take-Out Containers and Glass among all the location types. Park cleanups led in the collection of Cigarette Butts, and Food Packaging. Beaches accounted for the highest percentage of Cans, Commonly Found Items, Bottles and Miscellaneous, though it had the lowest percentage of Lids. Notably, no Face-masks, Food Packaging, Styrofoam Pieces, and Take-Out Containers were found on Beaches. Neighborhood locations had the highest percentage of Cups, Lids, Face-Masks and Styrofoam Pieces, but the lowest percentage of Miscellaneous, and Plastic Pieces, however, no Take-out Containers, Plastic Bags, Food Packaging, Cigarette Butts, Cans or Bottle were found in Neighbourhood cleanups. Other, recorded the highest percentage of Plastic Pieces and Plastic Bags, the lowest percentage of Glass and Cups, and no Take-Out Containers or Face-Masks.

## CLEANUP LOCATIONS VS. CATEGORIES OF ITEMS



**Distribution of waste categories across the different Location types.** Each bar in this figure represents 100% of the total value of items found within the designated Location type. Percentages were derived from the total count of items found within each category for each Location type which can be found above each bar.

## PROVINCES

The results demonstrated that Alberta contributed 19.34% (n = 1,256) of the 6,494 items collected across all the provinces. Notably, 80% of the items collected in Alberta were plastic (n = 1,041). British Columbia and New Brunswick followed as the second and third largest contributors accounting for 17.8% (n = 1,156) and 15.4% (n = 1,001) of the total waste items collected, respectively. Similar to Alberta, 70% of items collected in both British Columbia and New Brunswick were composed of plastic (n = 812; n = 701, respectively). Overall, across all provinces, 77.4% (n = 5,027) of the total waste collected was composed of plastic.

**Province based comparison between total number of items collected, total number of plastic items, total weight of collected waste and diverted waste, and items and plastic items collected per participant.** Please note that out of the 3,671 participants, only 1,938 provided data. Consequently, only those who provided data are included in the calculations of this table.

PROVINCE	NUMBER OF PARTICIPANTS (SIGNED UP)	NUMBER OF ITEMS COLLECTED	NUMBER OF PLASTIC ITEMS	TOTAL WASTE WEIGHT (LBS)	TOTAL DIVERTED WASTE (LBS)	ITEMS PER PARTICIPANT	PLASTIC ITEMS PER PARTICIPANT
New Brunswick	476	1001	701	57	7	2.10	1.47
British Columbia	267	1156	812	112	101.5	4.33	3.04
Ontario	230	834	677	75.09	16.99	3.63	2.94
Nova Scotia	164	699	523	30	6	4.26	3.19
Manitoba	94	621	538	27.9	2	6.61	5.72
Alberta	409	1256	1041	18	2	3.07	2.55
Saskatchewan	182	556	421	130.23	0	3.05	2.31
Quebec	28	344	296	20	10	12.29	10.57
Newfoundland	88	27	18	0	0	0.31	0.20
<b>Grand Total</b>	<b>1938</b>	<b>6494</b>	<b>5027</b>	<b>470.22</b>	<b>145.49</b>		

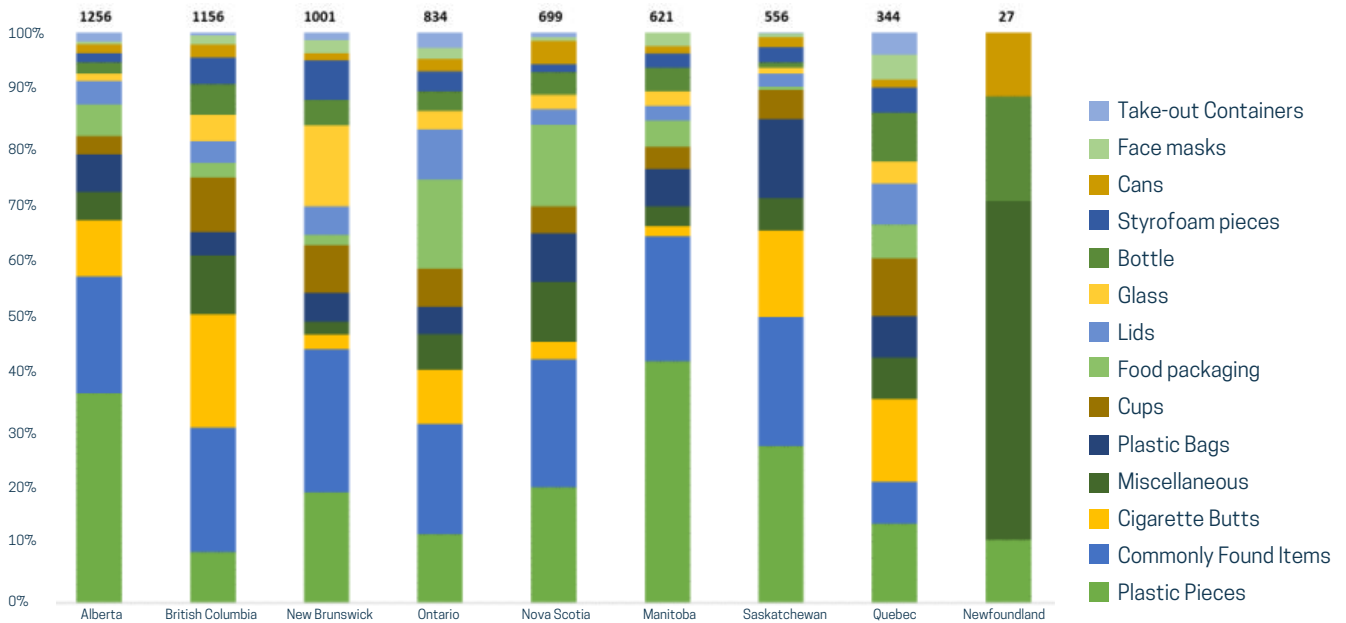
The participants also weighed, sorted and diverted the waste collected during cleanups, however, not all participating provinces provided this data. Based on the available data, Saskatchewan diverted 130.23 lbs (27.7%) of the total weight of collected waste of 470.22 lbs. British Columbia followed, collecting 112 lbs of waste and diverting 101.5 lbs, which accounted for 69% of the total diverted waste (145.49 lbs).

**British Columbia** recorded the highest percentage of Cigarette Butts but had the lowest percentage of Plastic Bags and Plastic Pieces. In contrast, Saskatchewan had the highest proportions of Plastic Bags, though Bottles and Food Packaging were collected in lowest proportions. Lowest proportions of Cigarette Butts were found in Manitoba, whereas Plastic Pieces were present in highest percentages in comparison to other provinces.

**Alberta**, on the other hand, did not stand out in terms of leading in the collection in any category, but had the lowest proportions of Face-Masks as well as Cups.

**New Brunswick** accounted for the highest percentage of Commonly Found Items and Glass and the lowest amount of Cans. **Newfoundland and Labrador** led in the collection of Cans, Miscellaneous and Bottle items categories. In contrast, **Nova Scotia** had no specific category that stood out in terms of their proportions but had the second highest percentages of Food Packaging following Ontario. **Quebec** yielded the highest collection of Cups and Face-Masks.

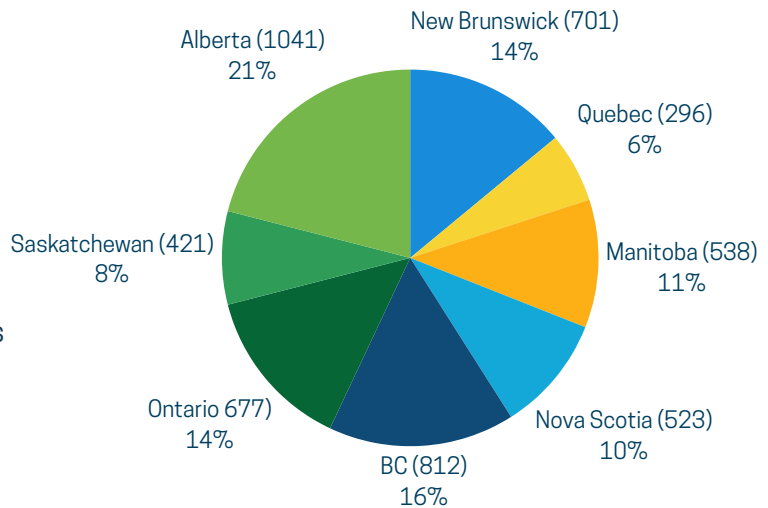
## PROVINCE VS. CATEGORIES OF ITEMS



**Distribution of various Categories of Items collected across all the participating Canadian Provinces.** Each bar represents 100% of the total value of items collected within the designated Province. Percentages were derived from the total count of items found within each category for each province/territory which can be found above each bar.

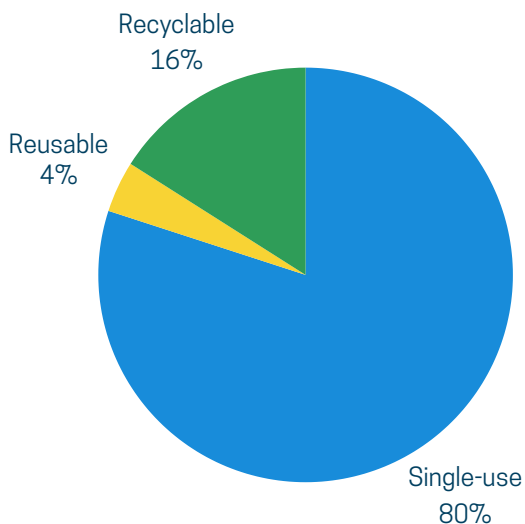
## PLASTIC ITEMS VS. PROVINCES

All participating provinces reported high percentages of plastic items collected during cleanups. The top three provinces with the highest numbers of plastic items were: Alberta (21%, n = 1,041), British Columbia (16%, n = 812), and New Brunswick (14%, n = 701). It is important to note that collectively, these three provinces accounted for more than half of the total amount of items collected (n = 6,494), however, this could be due to the fact that these three provinces also had the highest number of participants. On the other hand, the provinces with the fewest plastic items collected were: Newfoundland and Labrador (0.36%, n = 18), Quebec (6%, n = 296), and Saskatchewan (8%, n = 421).



Total Count and Percentage of Plastic Items collected across various participating Provinces. The percentage was calculated from the total number of plastic items collected (n = 5,027).

## SINGLE-USE AND REUSABLE ITEMS



**Total Percentage and Count of Single-use, Reusable, and Recyclable items collected by CEAP participants.** Cigarette Butts, Plastic Pieces, Styrofoam Pieces are considered as Single-Use Items for this calculation. Percentage was calculated from the total number of items collected (n = 6,494).

All items were categorized into three major groups: Single-use, Reusable and Recyclable. When considering Cigarette Butts, Plastic Pieces and Styrofoam Pieces as Single-use Items, 79.8% (n = 5,182) of all the items collected fell into the Single-use Items category. In contrast, only 4% (n = 250) of the items collected across all participating provinces were classified as Reusable. However, it is important to note that 16% (n = 1,062) of the waste collected from the environment during the cleanups could have been Recyclable.

It is important to mention that the Recyclable items in the figure above only considers all single-use items collected. A further analysis into the plastic items collected revealed that 90% (n = 4,925) of the Plastics collected (n = 5,027) were also Recyclable, while the remaining 10% (n = 498) were Garbage.

## SUSPECTED LITTER ORIGINS

The data indicates that plastic waste continues to be the leading type of litter in different environments. During the three years of the CEAP, students across Canada have consistently found Cigarette Butts and Plastic Pieces to be in the top three most common items in their cleanups. During this third year of the program, these two items made up 32.26% of all the waste collected, with plastic waste overall comprising an alarming 77% of the total, which is a 3% increase from last year's results!

Students across nine Canadian provinces collected a total of 6,494 items. When examining these results, it is essential to consider how various factors may affect the results: the number of participants at each location, the extent and type of area cleaned, the presence/absence of litter, and the surrounding activities and structures. It is crucial to recognize that the items collected during the cleanups represent just a small fraction of the total litter likely present in the environment.



LOCATION TYPE	SCHOOL COUNT	ITEMS COLLECTED	RESTAURANT COUNT	SUPERMARKETS/ STORES ON SITE	STORM DRAINAGE FACILITY	RECYCLING FACILITY	SCHOOLS/PARK	ROADS	OTHER ACTIVITIES
School property	13	3736	52	21	2	12	10	11	Healthcare Facilities & Medical Services Dental clinics Hotels & Accommodations Worshipping facilities Petrol Pumps & Gas Stations Community Centres & Playgrounds Animal Clinic Public Library Daycare and Childcare facilities Cemetery Auto-repair Shops Shopping Malls Golf Clubs Fire Stations & services
Park	11	2388	26	12	6	8	9	3	Healthcare Facilities & Medical Services Dental clinics Worshipping facilities Petrol Pumps & Gas Stations Playgrounds Animal Clinic Daycare and Childcare facilities Cemetery Shopping Malls Public Washroom Fire Stations & services
Beach	2	182	2	1	1	2	1	1	Worshipping facilities Public Library Community Centres Fire Stations & services
Other	1	123	1			1			Smoking Snacking Church Hospital Gas Station
Neighborhood	1	65	12	5	1	1	1	1	Worshipping facilities Animal Clinic Golf Club Healthcare Facilities & Medical Services
<b>Grand Total</b>	<b>28</b>	<b>6494</b>							

**Cleanup location details.** Details from the cleanup location types were provided by participants and obtained by viewing a map within an area of ~1km<sup>2</sup>. Please note that although there were 27 schools participating, one school did two cleanups in which one cleanup was in a Park and the other on School Property, hence the 28 schools present in the total.



# EXPLORING NEW PATHS

## CIGARETTE BUTTS AND PLASTIC PIECES

For the past two years of the CEAP Cigarette Butts have led the board of being the top item to be collected in cleanups, however, this year, Small Plastic Pieces (0-10 cm) surpassed Cigarette Butts! Cigarette Butts are the most common form of litter collected in global cleanup efforts, and they contribute significantly to plastic pollution, since they contain plastic within their filters! During the International Coastal Cleanup, Cigarette Butts made up about 32% of all collected debris, with millions being retrieved from beaches annually (NOAA, 2023). Additionally, in 2023, Ocean Wise reported that over 174,608 cigarette butts were collected during its national cleanups, making them the top item on Canada's "Dirty Dozen" list (Ocean Wise, 2023). While plastic pollution is widespread, Cigarette Butts seem to outnumber plastic fragments in many cleanups (OceanCare, 2023; Keep America Beautiful, 2021; OceanCare, 2023). Their small size and ease of disposal make them particularly pervasive in natural environments. However, Cigarette Butts, due to their plastic filters, are still a form of plastic litter.

While Cigarette Butts often dominate cleanups by sheer numbers, this does not account for the estimated 170 trillion of microplastic particles that are currently present in our oceans alone (Van Sebille et al., 2023; The Pew Charitable Trusts, 2023). These microplastics, invisible to the naked eye, slip through traditional cleanups and pose an equally, if not more, severe threat to ecosystems. Therefore, while Cigarette Butts are visibly prevalent, the unseen accumulation of microplastics presents an even more widespread and insidious environmental challenge.

**Therefore, as Small Plastic Pieces have surpassed Cigarette Butts this year by 4.1% in the CEAP cleanups, it underscores the increasing severity of the microplastic issue.**



This shift not only reveals the vast extent of microplastic pollution but also highlights the limitations of traditional cleanup efforts, which tend to focus on larger, more visible debris. These minuscule particles have infiltrated oceans, rivers, and soils, where they pose significant risks to wildlife and ecosystems.

Moreover, they are now entering the human food chain through contaminated water and marine organisms (Persiani et al., 2023). What makes microplastics particularly troubling is their persistence. These tiny particles can remain in the environment for centuries, releasing harmful toxins and accumulating within living organisms over time (Ali et al., 2020; Baeza et al., 2020). Despite their widespread impact, microplastics largely go unnoticed by the casual observer, making their environmental harm more insidious.

**British Columbia** recorded the highest percentage of Cigarette Butts. This could be due to a combination of social and environmental factors. Smokers tend to hide while smoking, especially where smoking is restricted, and therefore, discard their butts in places where they cannot be seen, which exacerbates littering behavior (Nellemann & Interpol, 2016; Castañeda et al., 2019). Despite awareness campaigns and recycling efforts, in Vancouver, approximately one million Cigarette Butts are discarded as litter each day! (“Cigarette Litter Reduction”). In cities like Vancouver, various initiatives, such as installing cigarette disposal canisters and distributing pocket ashtrays, aim to reduce Cigarette Butt litter (Moore & Hovell, 2019). However, there are still challenges to overcome. Some parks and public spaces may resist placing disposal units due to concerns that it might encourage smoking. Additionally, the plastic components of cigarette filters take years to break down, which significantly contributes to environmental pollution in the province (Novotny & Wang, 2018; UNEP, 2021).

Reducing cigarette litter in *British Columbia* can be accomplished through several effective strategies. One important approach is to increase the availability of disposal units in public spaces, which encourages proper disposal. Research shows that more disposal canisters significantly reduce littering behavior (Moore & Hovell, 2019). Additionally, distributing pocket ashtrays can help mitigate litter, as studies indicate that these portable devices lead to fewer butts left on the ground (Moore & Hovell, 2019). Public awareness campaigns aimed at educating smokers about the environmental impact of cigarette butt litter can also positively influence attitudes and behaviors (Castañeda et al., 2019).



Implementing and enforcing stricter regulations on littering can deter improper disposal, and increased fines have been shown to lower litter rates (Harrison et al., 2016). Furthermore, collaborating with local businesses to promote disposal units and incentivize responsible smoking practices has proven effective in enhancing environmental sustainability (Roth et al., 2017). Finally, ongoing research and monitoring of these strategies can help refine approaches and ensure their effectiveness over time (Novotny & Wang, 2018).

Although the lowest proportions of Cigarette Butts were found in Manitoba, Plastic Pieces were present in the highest percentages in comparison to other provinces. Manitoba may tend to have lower amounts of Cigarette Butts found as litter compared to British Columbia for several reasons, including differences in public policies, community engagement, and cultural attitudes toward smoking. Manitoba has implemented stricter regulations on smoking in public spaces, which can reduce the prevalence of cigarette litter under the Non-Smokers Health Protection and Vapour Products Act (Government of Manitoba, 2021). Comprehensive smoke-free laws discourage smoking in areas with limited disposal options (Pérez et al., 2017). Additionally, Manitoba may actively engage communities in anti-litter campaigns and clean-up events, fostering a sense of responsibility among residents. Research shows that community involvement significantly reduces littering behavior (Thompson et al., 2015).



Cultural perceptions of smoking may also play a role; in Manitoba, there may be a stronger social stigma associated with smoking, which leads smokers to be more conscientious about properly disposing of their butts (Castañeda et al., 2019). A report by Surfrider in 2024 highlights several thoughtful approaches to tackle cigarette butt litter. It emphasizes the importance of educating the public about the harmful effects of cigarette waste, making proper disposal easier by providing more bins, and holding manufacturers accountable through federal and provincial regulations through the Extended Producer Responsibility program and adding cigarette butts to the Single-Use and Plastic Waste Prevention Regulation. These strategies aim to foster a cleaner and healthier environment for our oceans and waterways. Furthermore, the availability of cigarette disposal units can vary by province/territory. If Manitoba has more accessible disposal options than some parts of British Columbia, this could further contribute to lower cigarette litter rates.



**Manitoba** may have the highest amount of Plastic Pieces collected as litter compared to other Canadian provinces for several reasons, including population density, waste management practices, public awareness, and environmental policies. Higher population density in urban areas like Winnipeg, can lead to increased litter generation, as studies show that crowded environments often exacerbate littering behavior (Kollmuss & Agyeman, 2002). Additionally, differences in waste management and recycling programs can impact the amount of plastic litter. If Manitoba's recycling programs are less effective or less utilized than those in other provinces, this could result in higher levels of plastic litter in the environment (Dahl & Wexler, 2017). The level of public awareness about plastic pollution also plays an important role. Regions with strong educational campaigns about the impacts of plastic waste tend to experience lower litter rates, suggesting that a lack of effective outreach in Manitoba could contribute to its higher littering levels (Reiter et al., 2018). Furthermore, differences in provincial and municipal regulations regarding single-use plastics can influence litter accumulation. Provinces with stricter regulations and proactive measures to combat plastic waste generally see reduced littering behavior (Pérez et al., 2018). Finally, the extent of community initiatives promoting responsible plastic disposal can significantly affect litter levels. If Manitoba has fewer community-driven efforts for plastic pollution compared to other provinces, this may lead to higher plastic litter accumulation (Thompson et al., 2015).

Reducing plastic litter in Manitoba can be tackled through several creative solutions. One effective approach is to implement incentivized recycling programs, such as deposit-return schemes for plastic containers, which encourage people to recycle and significantly cut down on litter (Eubanks et al., 2019). Additionally, engaging local artists to create community art projects using collected plastic can raise awareness about plastic pollution and foster a sense of environmental stewardship (Snyder et al., 2020). Organizing educational workshops in schools and neighborhoods can also make a difference by informing residents about the impacts of plastic waste and offering alternative materials (Rogers et al., 2018). Encouraging community members to participate in plastic-free challenges can motivate them to rethink their plastic use, often leading to positive behavioral changes (Hahn et al., 2020). Collaborating with local businesses to reduce single-use plastics by promoting reusable products can have a significant impact as well (Mason et al., 2018).



## PLASTIC ITEMS

**Top ten Items collected in the cleanups conducted by CEAP students in 2024.**

Percentages were calculated using the total number of waste items collected (n = 6,494).

ITEM	TOTAL PERCENTAGE	TOTAL COUNT
Plastic Pieces Small (0-10 cm)	22.28%	891
Cigarette Butts	15.60%	624
Paper	15.18%	607
Plastic Pieces Medium (10-30cm)	10.53%	421
Food Packaging	9.95%	398
Plastic Bottle	<b>6.40%</b>	<b>256</b>
Bottle caps	<b>5.43%</b>	<b>217</b>
Glass Pieces/Fragments	<b>5.28%</b>	<b>211</b>
Aluminium/ Tin Foil	<b>4.85%</b>	<b>194</b>
Cold Drink Lids	<b>4.53%</b>	<b>181</b>
<b>Grand Total</b>	<b>100.00%</b>	<b>4000</b>

## TOP THREE ITEMS COLLECTED IN EACH PROVINCE

PROVINCE	CATEGORY	TOTAL %	TOTAL COUNT
<b>Alberta</b>	Plastic Pieces	7.11%	462
	Commonly Found Items	3.96%	257
	Cigarette Butts	1.92%	125

<b>British Columbia</b>	Commonly Found Items	3.87%	251
	Cigarette Butts	3.53%	229
	<b>Miscellaneous</b>	<b>1.86%</b>	<b>121</b>

<b>New Brunswick</b>	Commonly Found Items	3.87%	251
	Plastic Pieces	3.00%	195
	<b>Glass</b>	<b>2.19%</b>	<b>142</b>

<b>Ontario</b>	Commonly Found Items	2.48%	161
	Food packaging	2.00%	130
	<b>Plastic Pieces</b>	<b>1.56%</b>	<b>101</b>



<b>Nova Scotia</b>	Commonly Found Items	2.42%	157
	Plastic Pieces	2.19%	142
	Food packaging	1.54%	100

<b>Quebec</b>	Cigarette Butts	0.77%	50
	Plastic Pieces	0.74%	48
	Cups	0.54%	35

<b>Manitoba</b>	Plastic Pieces	4.05%	263
	Commonly Found Items	2.09%	136
	Plastic Bags	0.62%	40

<b>Newfoundland</b>	Miscellaneous	0.25%	16
	Bottle	0.08%	5
	Plastic Pieces	0.05%	3

<b>Saskatchewan</b>	Plastic Pieces	2.36%	153
	Commonly Found Items	1.94%	126
	Cigarette Butts	1.29%	84



Global plastic production is expected to reach around 460 million metric tons in 2024, continuing the trend of increasing production rates over the past few years. This reflects an annual growth rate of about 4-5% since 2019 (OECD, 2023; Statista, 2023).

**This year’s CEAP results showed that, when including Cigarette Butts, 77% (n = 5,027) of all the waste collected (n = 6,494) was composed entirely or partially of plastic material. Furthermore, seven out of the Top Ten Items collected are also composed of plastic, and plastic waste was collected from all Location Types...**

and all participating provinces. When not considering Cigarette Butts and Plastic Pieces, the next top plastic items collected was Food Packaging and Plastic Bottles, however, Plastic Bags were also collected in high amounts.

**Ontario** and **Nova Scotia** might see more Food Packaging litter compared to other Canadian provinces for several reasons. One major factor is the level of urbanization in Ontario, with cities like Toronto and Ottawa having a dense population and numerous commercial areas. These urban settings often have more fast-food restaurants and convenience stores, which can lead to a greater amount of Food Packaging waste being generated (Pretty et al., 2003). In both provinces, the growth of food delivery services and take-out options has also increased the use of disposable packaging. Research shows that more people are ordering food through delivery apps, which has resulted in a rise in single-use containers and wrappers (Davis et al., 2021). Tourism also plays a significant role, especially in Nova Scotia. During the peak tourist seasons, there is an influx of visitors who may rely on packaged food while on the go, contributing to more litter in public spaces (Parkes et al., 2017). Lifestyle preferences and convenience also drive consumption of single-use items in these regions. Studies suggest that communities with a strong preference for convenience foods tend to have higher levels of packaging waste (Rochman et al., 2013).

**Nova Scotia**'s coastal location could also contribute to higher amounts of litter. Wind and water currents can easily carry trash from inland areas to the coast, leading to an accumulation of food packaging waste along the shoreline (Ocean Conservancy, 2020). Additionally, provincial regulations and policies can make a difference. If enforcement of littering laws or plastic reduction policies are less strict, it may result in more packaging waste ending up as litter (Pérez et al., 2018). Providing incentives for restaurants and food delivery services to use eco-friendly packaging can help reduce single-use items. Public awareness campaigns can educate residents and tourists about the impact of packaging waste and promote reusable containers. Stricter regulations on single-use plastics and improved waste management infrastructure are also essential. Collaborating with delivery services to encourage the use of personal containers and organizing community clean-up events can foster a sense of responsibility among residents. By implementing these strategies, Ontario and Nova Scotia can create a cleaner and more sustainable environment.

**Newfoundland** and **Labrador** likely have higher amounts of Plastic Bottles collected as litter compared to other Canadian provinces for several reasons. The province's coastal location makes it prone to plastic debris from both local and distant sources due to ocean currents and winds that may carry Plastic Bottles from both local and international sources onto shorelines. Fishing and marine activities can also contribute to this problem (Law et al., 2010; Rochman et al., 2013). Additionally, many rural and remote communities in Newfoundland and Labrador have limited access to recycling facilities, making proper waste disposal challenging (Wilson et al., 2015). High consumption of bottled beverages exists, partly due to convenience and perceptions of tap water quality, which further adds to the issue of Plastic Bottle litter (Cairns et al., 2014). During peak seasons, tourism



may also contribute to Plastic Bottle litter, as visitors rely on bottled beverages in areas where recycling bins may be scarce (Parkes et al., 2017). Finally, while the province has a deposit-return program, rural areas often face difficulties accessing collection points, resulting in fewer bottles being returned and more ending up as litter (Morawski et al., 2017).

To tackle plastic bottle litter in Newfoundland and Labrador, several solutions can be implemented. First, expanding recycling infrastructure and enhancing the deposit-return program can make it easier for residents to dispose of bottles properly. Public awareness campaigns can educate both locals and tourists about the environmental impact of plastic waste. Collaborating with businesses to provide refill stations and encouraging discounts for customers who bring their own containers can also reduce reliance on single-use plastics.

Saskatchewan may have higher Plastic Bag litter due to limited regulations on single-use plastics, as the province has not implemented stringent bans like other regions (Cohen et al., 2021). The mix of urban and rural areas complicates waste management, especially in rural communities with fewer recycling facilities, leading to improper disposal (Government of Saskatchewan, 2018). Lifestyle choices also play a role; many residents rely on plastic bags for convenience, which increases litter (Sustainable Development Solutions Network, 2019). The agricultural sector contributes further, as plastic bags



used in farming can become litter if not disposed of properly (Lysyk, 2020). Environmental factors, such as wind patterns, can easily carry plastic bags into open areas, making them more visible as litter (Moore et al., 2020). Additionally, tourism in natural areas can lead to increased littering, especially if visitors do not dispose of their waste responsibly (Parkes et al., 2017). Finally, a lack of public awareness about the environmental impacts of plastic bags can result in continued littering behavior (Davis et al., 2021). By addressing these issues through better education, regulations, and waste management practices, Saskatchewan can work towards reducing plastic bag litter.





## SINGLE-USE ITEMS

When Cigarette Butts, Plastic Pieces and Styrofoam Pieces are included, the Single-Use Items category accounts for 76.8% (n = 4,988) of all the waste items collected. When not considering Cigarette Butts, Plastic Pieces and Styrofoam Pieces, CEAP participants collected a staggering 2,859 Single-Use Items, with over 34% of the total collected waste being Single-Use Plastics (n = 2,254). Food Packaging items made up the majority of this plastic waste 6.13% (n = 398) which is often made from materials that are not easily recyclable (Williams & Rangel-Buitrago, 2019). When these items enter the environment, they can break down into smaller particles, known as microplastics (< 5 mm), which pose a risk to wildlife and can contaminate the food chain (Andrady, 2011; Law & Thompson, 2014). In Canada, data shows that single-use plastics are a significant component of plastic pollution. The Great Canadian Shoreline Cleanup reported that single-use plastics made up about 17% of all debris collected during shoreline cleanups (ECCC, 2020).

This trend mirrors what is being observed on a global scale, where single-use items continue to be a primary source of pollution (Ocean Conservancy, 2021).

The problem with single-use plastics is that many, such as polyethylene and polypropylene, are extremely resistant to breaking down and remain in the environment for decades. As they degrade, they fragment into microplastics, which are small enough to be ingested by marine organisms. Research has shown that these microplastics can disrupt the normal functions of marine species and may even pose health risks to humans who consume seafood contaminated by these particles (Geyer et al., 2017; Rochman et al., 2015). Addressing this issue requires more than just individual efforts; it demands a collective response that includes stricter regulations, improved recycling technologies, and increased public awareness.



## PAPER

Canada produces about 8.5 million tonnes of paper annually, but unfortunately, a large portion of this material ends up as waste (Statistics Canada, 2024). Approximately 4.7 million tonnes of paper are discarded, which means that nearly 55% of the paper produced is not recycled or repurposed (Paper Advance, 2024; Statistics Canada, 2024). Despite ongoing efforts to improve recycling rates, Canada faces challenges, with only around 28% of total waste being recycled (Statistics Canada, 2024). New Brunswick had the highest proportion of Commonly Found Items, which is mainly composed of Paper. New Brunswick may face higher levels of paper litter compared to other Canadian provinces because of the province's recent shift to an extended producer responsibility (EPR) model for packaging and paper products. This change requires manufacturers to take responsibility for managing the recycling of their products, which could lead to an increase in paper waste until the new recycling systems are fully in place (Circular Materials, 2024).

Moreover, urban centers in New Brunswick are seeing a rise in convenience-oriented lifestyles, resulting in more single-use paper products being consumed. This trend may contribute significantly to littering in the area (González & O'Reilly, 2019). Seasonal tourism also impacts the situation, as the influx of visitors raises the demand for take-out food and disposable paper products, leading to an increase in litter in public spaces (Clement & MacDonald, 2020). These interconnected factors highlight the need for effective waste management strategies to address the growing issue of paper litter in New Brunswick especially since 96% of Canadians have access to recycling programs, a considerable amount of paper is still being wasted (Made in CA, 2024).

## ALUMINUM/TIN FOIL AND CANS

Canada is one of the largest producers of aluminum globally, with annual production often over 3 million tonnes (Environment and Climate Change Canada, 2021). Approximately 1.5 billion aluminum beverage cans are recycled each year, resulting in a recycling rate of around 75% (Aluminum Association of Canada, 2021). While specific statistics for aluminum foil are not mentioned often, it generally falls under the category of aluminum packaging, which has a recycling rate of about 50% (Statistics Canada, 2021). Unfortunately, a significant portion of aluminum packaging of about 20-30% ends up in landfills rather than being recycled (Environment and Climate Change Canada, 2021). Newfoundland and Labrador also showed the highest proportions of Miscellaneous Items and Cans. Miscellaneous Items were mainly composed of Aluminium/Tin Foil. Newfoundland and Labrador's higher levels of aluminum and tin foil litter can be attributed to the possible reliance on take-out food in rural and remote areas, where there are limited dining options, resulting in increased use of single-use aluminum packaging (Bishop & Campbell, 2020). Additionally, the province's booming tourism industry, especially during peak seasons, can contribute to more litter as visitors rely on convenient food options (Parkes et al., 2017). This combination of factors makes it challenging to manage litter effectively.

However, since New Brunswick had the lowest proportion of Can litter levels compared to other Canadian provinces, it can possibly provide potential solutions for Newfoundland and Labrador. The low percentage of Cans collected in New Brunswick may be due to the current changing mindset of residents toward.

littering. Many New Brunswick residents seem to engage in what is called "tidy littering," where they neatly place their litter instead of tossing it carelessly, showing an increasing awareness of environmental issues (Lay, 2013). Furthermore, the province's extended producer responsibility (EPR) initiatives may help improve waste management, which can reduce overall litter, including Cans (Circular Materials, 2024). Additionally, effective recycling programs in urban areas tend to encourage proper disposal (González & O'Reilly, 2019)

## BRANDS

The cleanup efforts conducted by Canadian students in the CEAP yielded a diverse range of litter, with notable contributions from several prominent brands. Tim Hortons led the list with 50 pieces of litter collected, followed closely by McDonald's at 46. Starbucks also contributed significantly, with 22 items recorded. Other brands with substantial amounts of litter included Quaker (17), Gushers (15), and Pepsi (12).

The large amount of litter from brands like Tim Hortons, McDonald's, and Starbucks can be attributed to several intertwined factors that reflect both consumer behavior and industry practices.

These brands are among the most frequented fast-food and coffee chains in Canada, drawing large crowds daily. For instance, Tim Hortons has an extensive presence with thousands of locations, resulting in a substantial volume of disposable items that are likely to be discarded carelessly (Garry, 2021; Statistics Canada, 2023). Another critical factor is the reliance on single-use packaging. These brands primarily use disposable items, such as coffee cups, food wrappers, and straws, for convenience, which increases the chances of these items becoming litter (Ellen MacArthur Foundation, 2016; World Economic Forum, 2018). Furthermore, the fast-paced nature of the food and beverage industry encourages on-the-go consumption. Customers often consume their food and drinks while walking or traveling, leading to items being easily dropped or left behind (Brennan et al., 2015). Many consumers may not fully understand how their actions contribute to plastic pollution. Additionally, some areas may lack sufficient waste management infrastructure, making it easier for litter from these popular brands to accumulate (Parker, 2019). These factors highlight the urgent need for brands to implement more sustainable practices, such as promoting reusable containers and improving waste management strategies, to help mitigate litter and its detrimental effects on the environment.



# BLUEPRINT FOR A WASTE-FREE FUTURE

## RECOMMENDATIONS FOR DITCHING SINGLE-USE ITEMS

Embracing a circular economy in Canada's provinces and territories has the potential to significantly decrease the use of single-use items by fostering more sustainable production and consumption practices. This shift moves away from the traditional linear model of "take, produce, use and dispose" towards a system that emphasizes resource efficiency, material reuse, and waste prevention.

One key strategy involves product redesign and innovation. A circular economy promotes creating products with longevity and reusability in mind, thereby enabling the replacement of single-use items with more durable alternatives. For instance, companies can develop reusable and refillable packaging systems for consumer goods, which diminishes the need for single-use plastics (Ellen MacArthur Foundation, 2013; UNEP, 2014). Additionally, innovative packaging solutions, such as compostable or biodegradable materials, can be explored as viable alternatives to conventional single-use items (Rujnić-Sokele & Pilipović, 2017).

Extended Producer Responsibility (EPR) may be another effective approach. Under EPR policies, the burden of waste management falls on producers, incentivizing them to minimize packaging and adopt sustainable practices. In Canadian provinces, implementing EPR frameworks can encourage businesses to create circular products, establish take-back programs, and support recycling systems that manage challenging-to-recycle items, including single-use plastics (OECD, 2016; Government of Canada, 2019). Such measures can significantly lower the amount of single-use items entering the waste stream.

Moreover, a focus on increased recycling and reuse rates is essential for closing the material loop within a circular economy. This approach ensures that products and materials are reused and recycled multiple times. Enhanced recycling infrastructure can accommodate more complex materials, such as multilayered packaging typically found in single-use items, thus reducing the demand for virgin materials and curtailing waste generation (Andrady, 2011; Geyer et al., 2017).

In terms of policy and regulatory measures, provincial and territorial governments can introduce policies that restrict or ban specific single-use items, such as plastic straws, cutlery, and bags, while simultaneously promoting alternatives. These regulations can be bolstered by circular economy strategies that incentivize businesses to adopt reusable items, contributing to a reduction in single-use products overall (ECCC, 2020).

Finally, consumer education and behavioral change play a critical role in minimizing single-use items. A circular economy encourages communities to embrace reusable options, share resources, and engage in product take-back schemes. Educational campaigns that highlight the environmental impact of single-use products can inspire consumers to make more sustainable choices (Brennan et al., 2015; European Commission, 2020).

Scientific studies indicate that implementing circular economy principles can lead to significant reductions in plastic waste and its environmental consequences. For example, research has shown that effective circular economy models could reduce global plastic leakage into the ocean by over 80% by 2040 (Pew Charitable Trusts & SYSTEMIQ, 2020). Moreover, a shift towards reusable packaging systems could decrease the demand for single-use plastics and lower greenhouse gas emissions by as much as 25% (Ellen MacArthur Foundation, 2016).

In conclusion, by adopting circular economy practices, Canadian provinces and territories can effectively reduce the prevalence of single-use items. This transformation not only addresses the environmental challenges posed by plastic waste but also supports sustainable economic growth and enhances resource efficiency.

## FOCUS ON EXAMPLES OF EFFECTIVE CANADIAN POLICIES AND BANS

Several provinces and territories in Canada have taken significant steps to implement effective policies and bans on single-use items, resulting in positive outcomes for both plastic waste reduction and sustainability.

British Columbia has emerged as a leader in reducing plastic waste with its Single-Use Plastics Regulation. This regulation bans several single-use items, including plastic straws, cutlery, and bags. Additionally, the province has established Extended Producer Responsibility (EPR) programs that require manufacturers to take responsibility for the entire lifecycle of their products. As a result, the province has reported an estimated 15% decrease in single-use plastic items since these regulations were enacted (Government of British Columbia, 2020; ECCO, 2020). This initiative demonstrates the effectiveness of comprehensive regulatory frameworks in promoting environmental sustainability.

In 2018, Quebec introduced its Action Plan on Plastic Waste, which includes a ban on plastic bags, straws, and stir sticks set to take effect by 2023. The goal of this ambitious plan is to reduce plastic waste by 70% by 2025. This initiative has gained considerable support from municipalities and businesses, leading to a noticeable increase in public awareness and a shift toward sustainable alternatives. Early assessments indicate a marked decline in the use of plastic bags and a rise in the adoption of reusable bags across the province (Government of Quebec, 2019; RECYC-QUÉBEC, 2020).

Ontario's Plastic Waste Reduction Strategy encompasses various initiatives aimed at minimizing plastic waste, including restrictions on single-use plastic bags in certain municipalities and educational campaigns that promote recycling and reuse. For instance, the City of Toronto has enacted a by-law to ban plastic straws and encourage the use of alternatives in city facilities. Initial reports suggest a positive trend toward reducing single-use plastics in public spaces, which contributes to cleaner environments (City of Toronto, 2020; Ontario Ministry of the Environment, Conservation and Parks, 2019). These efforts highlight the importance of local action in addressing broader environmental challenges.

Nova Scotia has established a Solid Waste Resource Management Strategy that includes bans on plastic bags and polystyrene foam food containers. The province's commitment to waste reduction has led to a reported 22% decrease in plastic waste since the introduction of these policies (Nova Scotia Environment, 2019). Furthermore, public engagement initiatives and community clean-up efforts have seen an increase, helping to foster a culture of sustainability and community involvement.

In Yukon, the Single-Use Plastics Reduction Strategy aims to phase out single-use plastic items through community engagement and partnerships with local businesses. These efforts have raised awareness about plastic pollution in the community, leading many local businesses to adopt sustainable practices and alternatives (Government of Yukon, 2021). The focus on community involvement underscores the critical role that local stakeholders play in achieving sustainability goals.

These examples demonstrate that targeted policies and bans on single-use items can significantly reduce plastic waste across Canada. The collaborative efforts of provinces and territories not only address pressing environmental issues but also promote a shift toward a more sustainable economy and lifestyle. By fostering a culture of sustainability and encouraging responsible consumption, these initiatives pave the way for a healthier planet.

## LIMITATIONS

Environmental cleanups can be incredibly valuable, but they do face some limitations. In the CEAP, young participants aged 4 to 18 took part in collecting waste, which brought its own set of challenges. When they encountered debris that seemed unsafe, they were advised to avoid touching it. This meant that only larger, visible litter was collected, likely underestimating the amount of smaller, fragmented debris that might be hidden beneath the surface. Additionally, the program did not capture detailed information about the types and colors of plastics or the brand names of the specific items collected. This data is crucial for understanding where the waste comes from and how to address the issue effectively (Rochman et al., 2013; Thompson et al., 2009). Furthermore, the estimated weights of the collected waste and the measurements of the cleaned areas were not very accurate. This was largely due to the lack of portable scales and recorded area dimensions, with some schools not providing any weight or distance estimates, which made it difficult to gauge the impact of the cleanup accurately. To improve future efforts, the program plans to incorporate these additional details into the data collection forms. By gathering more comprehensive information, CEAP will be better equipped to analyze the data and contribute to a clearer understanding of plastic waste in our environment.



# CONCLUSION

The findings of this year's CEAP cleanups provide valuable insights into the state of plastic and litter pollution in Canada.

## **The most significant shift observed is that Plastic Pieces have now surpassed Cigarette Butts as the most commonly collected item.**

This trend highlights the growing severity of the microplastic issue, which is largely invisible to traditional cleanup efforts, yet poses immense ecological and health risks. The persistence of microplastics, coupled with their potential to infiltrate food chains and water sources, underscores the urgent need for innovative strategies beyond standard cleanups. The results also show that plastic pollution is still a major concern across Canadian communities, despite ongoing efforts by students and volunteers. Over the past three years, plastic waste has consistently been the most common type of litter found, and during this year's cleanup efforts, plastic made up a staggering 77% of all items collected, which is a 3% increase from last year, and a 25% increase from the program's first year in 2021 (52.2%). Cigarette Butts and Plastic Pieces remain some of the most frequently found items, highlighting just how widespread the issue is.

The data also revealed that different environments, such as School Properties, Parks, Beaches, Hospital Grounds, and Neighborhoods, each have unique waste challenges. While School Properties often deal with litter like Take-out Containers from nearby businesses, Parks see more Cigarette Butts and Food Packaging due to high visitor traffic. Beaches are troubled by litter left behind from social gatherings and drifting debris, while Hospital Grounds face a particular challenge with plastic packaging and bags. Simply having more waste and recycling bins is not enough to solve the problem. Reducing the amount of single-use plastic products we use and encouraging sustainable alternatives, like reusable containers and durable items is needed. This means that students, teachers, community members, local businesses, and governments need to work together to find solutions that tackle the issue at its source.

Furthermore, the provincial breakdown of litter data reveals that local contexts play a substantial role in shaping litter profiles. British Columbia continues to struggle with Cigarette Butt litter despite numerous public awareness campaigns, while Manitoba is grappling with an overwhelming presence of Plastic Pieces. Similarly, Nova Scotia's coastal environment appears to be disproportionately affected by Food Packaging waste, while Newfoundland and Labrador are facing high levels of Plastic Bottles and Aluminum packaging litter.

**These provincial nuances emphasize that one-size-fits-all solutions are inadequate and tailored approaches must consider regional characteristics and community behaviors to be truly effective.**

Municipal governments play a vital role in this transition by introducing policies that restrict or ban specific single-use items, while promoting sustainable alternatives. These local efforts can pave the way for broader policies at the provincial and territorial levels, ultimately fostering a more sustainable future for everyone.

Finally, the identification of specific brands contributing to the litter problem, namely, Tim Hortons, McDonald's, and Starbucks, suggests that corporate responsibility must be a critical part of the solution. The predominance of litter from these brands indicates that further engagement with the private sector is necessary, encouraging these companies to adopt more sustainable packaging and support waste reduction initiatives.







Overall, the findings from this year’s cleanups not only reflect the current state of Canada’s litter landscape but also highlight key areas where targeted interventions and sustained action can make a difference. By combining tailored regional strategies, public education, enhanced regulations, and corporate collaboration, we can work towards creating cleaner, healthier communities across the country. Raising awareness through education and community engagement can help shift behavior, but it is also crucial to implement stricter policies and provide clearer guidance to ensure proper waste disposal.

**The fight against plastic pollution requires us to look beyond just cleanups and consider how we can reduce waste in our daily lives. It is not just about picking up litter, it is about changing habits and rethinking how we interact with our environment, so we can create a Canada with plastic-free land and seas.**

## ACKNOWLEDGEMENTS

We extend our heartfelt appreciation to the schools, teachers, and students who participated in the Circular Economy Ambassador Program (CEAP) and organized community cleanups. We also want to thank our recycling partners, corporate and individual supporters and all members of the Mind Your Plastic charity for their invaluable contributions to the success and growth of the CEAP program. Your dedication and support have made a significant impact on our initiatives.



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