



March 21, 2018

MyWRA supports legislation that bans or disincentivizes consumption of plastic bags provided by retail establishments to customers.

- Environmental research illustrates that single-use plastic bags are a prevalent component of litter and cause significant environmental harm.
- Encouraging use of alternatives, such as reusable shopping bags, will contribute to fewer single-use plastic bags being used and finding their way into the watershed as litter.
- Reducing plastics trash in the watershed will protect wildlife living and humans recreating in the Mystic and its tributaries.
- Recognizing the environmental danger of plastics, many communities in Massachusetts have introduced legislation to reduce the use of single-use plastic bags provided to retail customers as a way to protect the environment.

Plastic bags are widely used, rarely recycled, and over-represented in trash collections.

Despite alternatives such as reusable bags and bags manufactured with biodegradable materials, plastic bags are widely used throughout the world. Estimates put global consumption of plastic bags at one trillion bags per year (1). The United States alone disposes of an estimated 4.2 million tons of plastic bags every year (2).

Though ubiquitous, the EPA reports only 5.2% of plastic bags in the U.S. are recycled (3). Recycling efforts are economically unfavorable and technically challenging. It costs more to transport plastics to recycling facilities than the plastic is worth (4). Additionally, plastic bags often clog recycling equipment and can contaminate recycled paper streams (5, 6).

In 2008, California estimated ten percent of all its commercial and residential solid waste to be plastic; with 10% of those plastics being plastic bags (7). However, many municipalities report plastic bags as one of the most common items collected during cleanup days (8, 9, 10). Data from 20 years of California Coastal Cleanup Days confirm plastic bags as consistently one of the top three “recreational debris”-type trash collected, year on year (7). Plastic bags are often used in recreation (e.g., to carry food to outdoor parks or to carry equipment to outdoor activities), a contributing factor to the prevalence of plastic bags as litter.

Chemicals used in plastics are harmful

The timeframe for plastic bag decomposition into non-visible, though inorganic and harmful, components is thought to be 1-20 years (11); this time frame varies because the chemical composition of single-use plastic bags varies. In the decomposition process, plastics break down into small components (inorganic “microplastics”) and also leach chemical additives used to manufacture that particular bag type. These smaller particles also bond with toxins, such as pesticides and other pollutants (such as PCBs, DDE, DDT, and bis(p-chlorophenyl)-1-1 trichloroethane). When this decomposition process occurs in waterways, these chemicals move into the food chain when small organisms consume the plastic matter as food (12, 13). Additionally, the chemicals released during

Serving Twenty-Two Communities

Arlington Belmont Burlington Cambridge Charlestown Chelsea East Boston Everett Lexington Malden Medford Melrose Reading Revere Somerville Stoneham Wakefield Watertown Wilmington Winchester Winthrop Woburn

20 Academy Street, Suite 306 • Arlington, MA • 02476-6401 • (781) 316-3438 • www.MysticRiver.org

plastics decomposition are known endocrine disruptors, a chemical type that can lead to detrimental development in animal and human health (12).

Decomposition of plastic bags introduces much more harm to the environment and to animal life than do organic-based products such as paper bags.

Plastic solid waste is harmful to animals

Plastic marine debris entangles, suffocates, and poisons at least 313 species worldwide. (14) It is well documented that animals -- e.g., mammals, fish, birds, reptiles, zooplankton -- consume plastics when they mistake plastics for food (such as jellyfish) or absorb microplastics. This consumption often harms the animal (13, 15, 16, 17, 18). For example, 85% of all sea turtles will be injured or killed by plastics in their lifetime (19), including a percentage of them that will mistake a plastic bag for a jellyfish.

Communities recognize the problem and are legislating plastic bag bans or other plans to reduce to reduce plastics in the environment

Recognizing plastic bags contribute to problematic waste, and that paper bags and reusable bags offer very reasonable alternatives to carry purchases from retail establishments, local governments are beginning to establish bag bans, impose fees and taxes on plastic bags, advocate plastic-bag design changes (such as using organic materials rather than petroleum materials in bag manufacturing), require consumer education, and mandate retailer take-back programs (20). As of March 2, 2018, 61 Massachusetts communities have legislated local plastic bag reduction or ban measures (21). MA Bill H.4234 would ban single-use plastic bags at retail and restaurant establishments throughout the Commonwealth.

Municipalities that have banned or disincentivized use of plastic bags report reductions in consumer use of plastic bags. And, with fewer bags consumed, fewer bags are available to be disposed of inappropriately and become trash. Cities with newer bans/fees for bags report immediate and significant bag-use reduction; cities with more mature plastic bag reduction plans have data about trash reduction:

- Cambridge, MA, instituted a “bring your own bag” ordinance in 2016 and within 5 months reported a 50-80% reduction in use of single-use plastic bags (22)
- Within 3 months of implementing a single-use plastic bag fee, Chicago, IL, announced a 40% reduction in plastic bag usage. (10)
- Austin, TX, implemented a ban on “disposable” plastic bags in 2013. Within the first six months of passing the ordinance, the Austin Parks Foundation reported a 90% reduction in plastic bag litter and a 75% reduction in the use of single-use plastic bags (23)
- Washington, D.C., passed a single-use plastic bag fee ordinance in 2009. This bag reduction program resulted in a 50-60% decrease of single use bags and 50% fewer bags found in an annual watershed clean-up day. Additionally, 75% of District residents surveyed said they used fewer plastic bags to avoid the bag fee (24)

According to one study, the majority of businesses (78%) have positive or neutral opinions about single-use plastic bag reduction ordinances, because businesses benefit from reducing overhead costs associated with giving away bags for free (9).

Recommendations for Policymakers

Research shows plastic bags are harmful to the environment because a disproportionately high amount of plastic litter is single-use plastic bags distributed by retail outlets; because they decompose into inorganic “microplastics,” emitting toxins and catalyzing unnatural “estrogen activities;” and because as solid physical hazards they damage or kill animals.

Serving Twenty-Two Communities

Arlington Belmont Burlington Cambridge Charlestown Chelsea East Boston Everett Lexington Malden Medford Melrose Reading Revere Somerville Stoneham Wakefield Watertown Wilmington Winchester Winthrop Woburn

The best way to reduce the amount of plastic bags entering the waterways as litter is to reduce the number of bags in use. MyRWA recommends that communities adopt single use plastic bag bans as the most impactful tool for reducing plastic bag waste and litter. We find that disincentive programs such as fees for use are also effective and support those when bag bans are not feasible. Under either approach, MyRWA supports mitigations for the impacts of reducing bag availability for vulnerable and low income communities, particularly through providing or subsidizing access to reusable bags. MyRWA supports reasonable exceptions from plastic bag bans for sanitary purposes, such as transporting butchered meat, but recommends applying fees or other disincentives to limit excepted uses.

About the Mystic River Watershed Association (MyRWA)

MyRWA is a 501(c)(3) nonprofit organization dedicated to the preservation and enhancement of the Mystic River, its tributaries and watershed lands for the benefit of present and future generations. MyRWA seeks to protect and restore clean water and the natural environment and to promote responsible stewardship of our natural resources. In addition, MyRWA works to improve public access to water bodies and shorelines throughout the watershed, and especially for environmental justice populations whose recreational opportunities have been limited by the concentration of industrial and commercial development along the edges of the river.

References

1. Los Angeles County. "An Overview of Carryout Bags in Los Angeles." Los Angeles County Board of Supervisors Staff Report. August 2007.
2. CalRecycle. "At-Store Recycling Program: Plastic Carryout Bags." 6 April 2011. Web. 23 July 2011. <<http://www.calrecycle.ca.gov/Plastics/AtStore/default.htm>>.
3. US Environmental Protection Agency (EPA), Wastes, Non-Hazardous Waste, Municipal Solid Waste. November, 2008.
4. Wilson, Stiv J. "In Defense of Plastic Bag Bans." TheHuffingtonPost.com, 29 Dec. 2011. Web. 11 June 2012. <http://www.huffingtonpost.com/stiv-j-wilson/plastic-bag-ban_b_1175143.html>.
5. "[Can I Recycle Plastic Bags in the Recycling Bin?](#)". *Plastics Make It Possible*. Retrieved 2016-03-13.
6. WCMS, Webboy.net. "[Why Are Plastic Bags So Bad For Your Recycling Bin?](#)". *National Recycling Week*. Retrieved 2016-03-13.
7. Plastic Debris in the California Marine Ecosystem: A Summary of Current Research, Solution Strategies and Data Gaps. 2011. C. Stevenson, University of Southern California Sea Grant. Synthetic Report. California Ocean Science Trust, Oakland, CA.
8. Ocean Conservancy. Trash Travels. International Coastal Cleanup Report. 2010.
9. "Case Study on Litter Management for Drainage Systems in Washington, DC, U.S.A," 10 March 2012. https://fergusonfoundation.org/wp-content/uploads/2012/12/DC-case-study-for-World_Bank_3-10-12_FINAL.pdf
10. "Preliminary study suggests Chicago's bag tax reduces disposable bag use by over 40 percent ." April 2017. https://www.ideas42.org/wp-content/uploads/2017/04/Bag-tax-results-memo-PUBLIC.FINAL_.pdf
11. Ocean Conservancy. Trash Travels. International Coastal Cleanup Report. 2010.
12. Teuten, E.L., et al. (2009) Transport and release of chemicals from plastics to the environment and to wildlife. *Philosophical transactions of the Royal Society of London. Series B, Biological sciences*, **364**, 2027-45.
13. EPA, "Impacts of Mismatched Trash." 2017. <https://www.epa.gov/trash-free-waters/impacts-mismatched-trash>
14. Plastic Waste: Ecological and Human Health Impacts." Science for Environment Policy, Nov. 2011. Web. 11 June 2012. <<http://ec.europa.eu/environment/integration/research/newsalert/pdf/IR1.pdf>>.
15. Moore, C. J.; Moore, S. L.; Weisberg, S. B.; Lattin, G. L.; Zellers, A. F. A comparison of neustonic plastic and zooplankton abundance in southern California's coastal waters. *Mar. Pollut. Bull.* **2002**, 44: 1035-1038.
16. "Plastic bag killed beaked whale", 2012-02-10 [http://www.marineconnection.org/archives/marine_impacts/plasticbag.htm]
17. Lazar, B. and R. Gracan, "Ingestion of marine debris by loggerhead sea turtles, *Caretta caretta*, in the Adriatic Sea." 2011. *Marine Pollution Bulletin* 62: 43-47.
18. United Nations Environmental Programme. "Marine Litter-Trash that kills". 2001.

Serving Twenty-Two Communities

Arlington Belmont Burlington Cambridge Charlestown Chelsea East Boston Everett Lexington Malden Medford Melrose Reading Revere Somerville Stoneham Wakefield Watertown Wilmington Winchester Winthrop Woburn

20 Academy Street, Suite 306 • Arlington, MA • 02476-6401 • (781) 316-3438 • www.MysticRiver.org

19. "Marine Problems: Pollution." WWF Global. N.p.. Web.
<http://wwf.panda.org/about_our_earth/blue_planet/problems/pollution/>.
20. Wagner, T. P. *Waste Manag.* 2017 Dec;70:3-12. doi: 10.1016/j.wasman.2017.09.003. Epub 2017 Sep 19.
21. <http://www.massgreen.org/plastic-bag-legislation.html>
22. City of Cambridge Department of Public Works, "Cambridge Businesses, Residents, and Local Organizations Come Together to Make Bring Your Own Bag (BYOB) Ordinance a Success." 31 Aug. 2016.
<https://www.cambridgema.gov/theworks/newsandevents/news/2016/08/byob120days.aspx>
23. Waters, Aaron, "Environmental Effects of the Single Use Bag Ordinance in Austin, Texas," 10 June 2015
<https://www.austintexas.gov/edims/document.cfm?id=232679>

Sincerely,



Patrick Herron
Executive Director

Serving Twenty-Two Communities

*Arlington Belmont Burlington Cambridge Charlestown Chelsea East Boston Everett Lexington Malden Medford
Melrose Reading Revere Somerville Stoneham Wakefield Watertown Wilmington Winchester Winthrop Woburn*

20 Academy Street, Suite 306 • Arlington, MA • 02476-6401 • (781) 316-3438 • www.MysticRiver.org