

Plastics & Waste Report 2024

Waste Audit, Community Compost & Shoreline Cleanup Programs



Purpose

Since 2019, Hudson River Park (“the Park”) has been committed to the Park Over Plastic initiative, which was implemented to reduce single-use plastics and educate the community about plastic pollution. The Park seeks to improve and encourage proper recycling throughout its bounds, including increasing the number of waste bins, strategically pairing trash and recycling bins with signage, and opening dialogue with Park tenants to minimize waste. To determine the effectiveness of these waste management methods, a yearly Waste Audit is conducted.

In addition to recycling plastic waste, the Park composts food scraps and horticulture waste to divert organic materials from landfills while creating healthy soil for reuse. Hudson River Park’s Community Compost Program welcomes food scraps from local residents at 10 drop-off locations throughout the Park which are then processed at our Community Compost Center and distributed to plant beds.

The Park also hosts shoreline cleanup events with corporate and community volunteers to remove and categorize trash that washes up along the recently constructed Gansevoort Peninsula shoreline.

Project Goals

- Operate and maintain 10 community compost drop-off sites.
- Process food scraps and horticulture waste into compost to support plant health and Park sustainability.
- Manage over 100 landfill and recycling bins.
- Increase recycling and improve waste management capacity.
- Engage and educate the community through programs, resources, and volunteer opportunities.
- Collaborate with tenants to reduce waste generation across areas of tourism, recreation, and commerce.
- Keep the Park’s shorelines free from debris.



Fig. 1 | Community member utilizing updated food scrap drop-off bins installed in 2022.



Fig. 2 | Hudson River Park staff counting recyclables during annual waste audit.

Methods

Waste Audit

Over two days during peak summer activity, one recycling and one landfill bag were collected from each of 13 pre-determined sample sites in the Park and analyzed as follows:

- Full bags are weighed in total
- All non-organic material is removed and categorized (e.g., plastic utensils, straws, beverage bottles, etc.)
- Each item's resin identification code (RIC) is noted, and total category weights are taken by code
- Contaminants from each bag are noted (i.e., recyclables are contaminants in landfill bags and non-recyclables are contaminants in recycling bags) as well as any unique plastic alternatives or common brands
- Liquid is collected in a bucket to be weighed and recorded at the completion of each bag



Fig. 3 | Plastics are sorted by resin identification codes (RIC) as they are weighed.

Community Composting

- Horticultural waste is collected by staff during daily maintenance of the Park's landscape, primarily carbon-rich materials (e.g., woody debris, grass clippings, fallen leaves, desiccating plants)
- Food scraps are brought by community members to the 10 drop-off locations throughout the Park, primarily nitrogen-rich materials
- All organic waste is transported to the Park's Compost Center on 33rd street where it is weighed and processed in the Park's EcoRich Rapido 2000 industrial composter
- Volunteer groups support maintenance in operations of the Compost Center
- Fresh compost is ready in approximately one to two months and returned to plant beds within the Park



Fig. 4 | Horticultural waste is mixed with community pumpkin donations during the annual Pumpkin Smash.

Methods

Shoreline Cleanups

- Volunteers are instructed on identifying recyclable and non-recyclable debris.
- Volunteers are broken up into small teams each with trash & recycling bags, data sheets, and PPE.
- 10m transects are plotted out along the south shoreline of Gansevoort Peninsula.
- Plastics and other debris are gathered, identified, enumerated, and recorded by each group of volunteers with the assistance of Park staff.
- When possible, RICs are noted as well as any unique plastic alternatives or common brands.
- Total recyclable and landfill debris are weighed.



Fig. 5 | Volunteers cleaning the Gansevoort shoreline July 2024

WasteShark

- During Shoreline Cleanups, the WasteShark is deployed by Park staff donning waders & PFDs via the kayak launch on the southwestern corner of the Peninsula.
- The WasteShark is driven back and forth within the inter-pier area (Fig. 6) to collect any floatable debris in the water.
- The WasteShark is retrieved after 20-30 minutes of deployment to empty the catchment cage onto a tarp and can then either be turned off or re-deployed.
- Debris is identified, enumerated, weighed, and recorded in the same schema as the shoreline debris for comparability.



Fig. 6 | Park Staff deploying the WasteShark “Gulp” July 2024

Major Findings

Waste Audit

Similar to previous years' audits, contamination in recycling bins was found to be significantly lower than contamination in landfill bins. Landfill waste mistakenly placed in recycling bins accounted for an average of 1.3% of total debris by weight (minimum 0%, maximum 8.6%, **Fig. 7A**). While Manhattan Youth was an outlier with significantly higher contamination with all other sites under 2%, <10% contamination by weight is still relatively low.

As often the case, landfill bins exhibited higher rates of contamination than recycling bins with an average of 15% (minimum 0%, maximum 37.6%, **Fig. 7B**). This is higher than last year's maximum and mean contamination rates by about 5% and 10%, respectively.

Taken together, out of 138 lbs. of analyzed materials from recycling bins, only 1.2 lbs. were non-recyclable contaminants (0.9%).

Out of 149 lbs. of analyzed materials from landfill bins, 15.8 lbs. were recyclable contaminants (10.6%).

These rates are overall quite low, indicating generally effectively utilization of recycling and landfill bins by park patrons.

This audit helps to identify Park locations that may need additional signage, bins, or other resources to make it easy for Park-goers to dispose of materials in their proper receptacles.

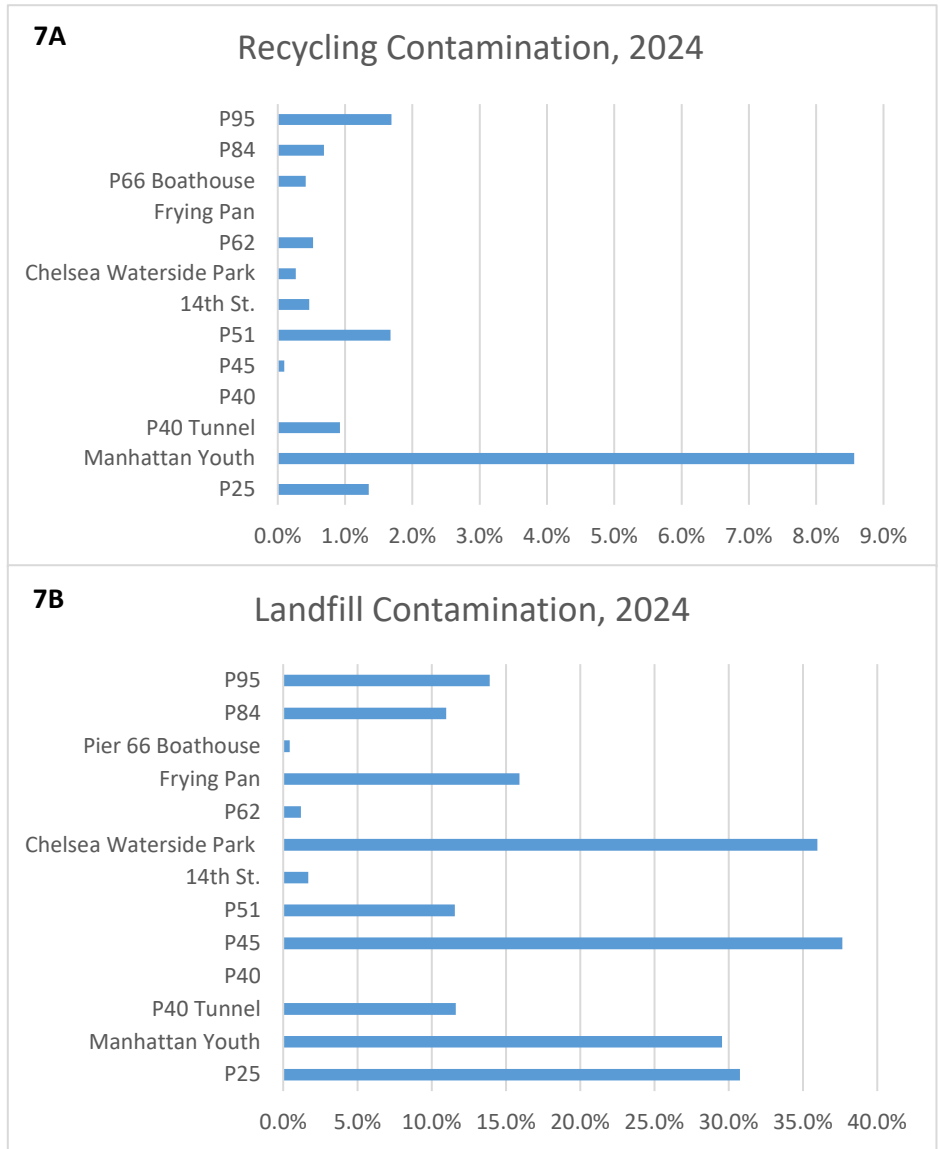


Fig. 7 | Percent of A) Recycling, and B) Landfill contamination at each site. (Landfill contamination is recyclables in trash bins and recycle contamination is non-recyclables in recycle bins.) Sites arranged North to South from top to bottom.

Community Composting

As of December 19th, 2024, the Park’s Community Compost program has composted ~82,200 lbs. of food in 2024 alone and 618,000 lbs. in total since its inception in 2018. This is a combination of collections from all 10 public drop-off locations, Pier 40 offices, boathouses, and Pumpkin Smash. Of the 10 drop-off sites, Chelsea Waterside Park, Pier 51, and Pier 46 Boathouse were the top three contributors, with a combined total of 40,419 lbs. of food scraps. This year marks the fourth consecutive year of Chelsea Waterside Park’s top contribution of compost.

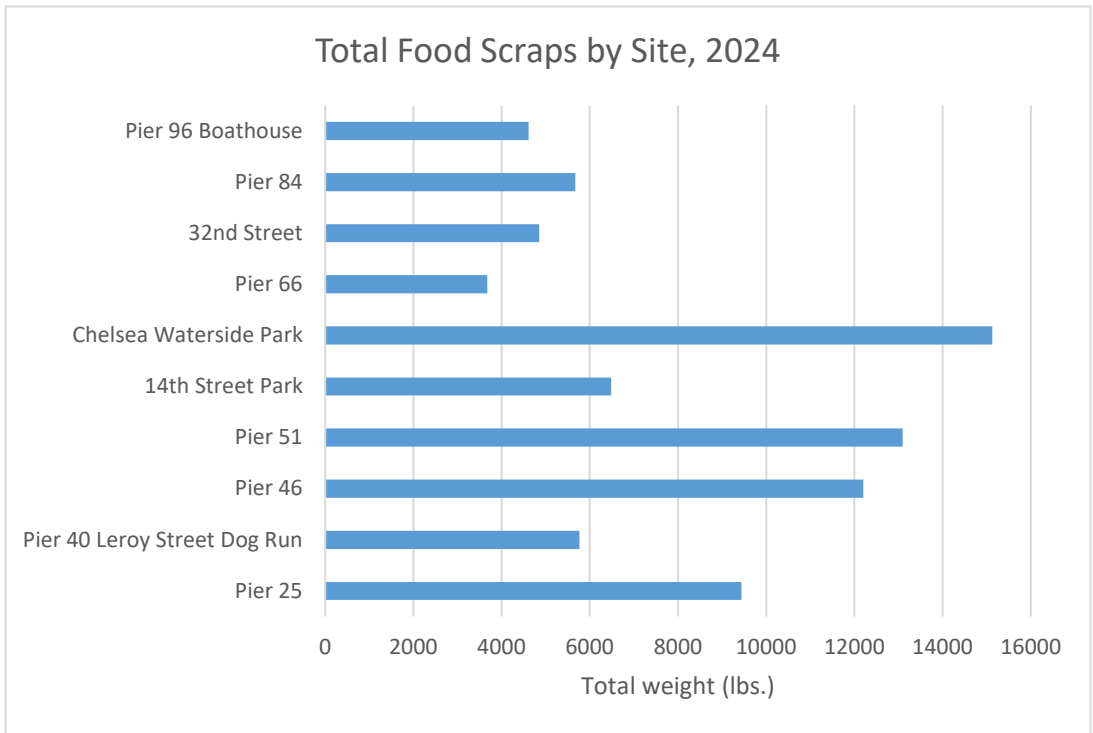


Fig. 8 | Total weight of food scraps in pounds collected across 10 drop-off sites in Hudson River Park, arranged North to South from top to bottom.



Fig. 9 | Map of Community Compost Program drop-off sites in Hudson River Park. Size of circle is relative to amount of community compost has been collected at each site.

Shoreline Cleanups

In 2023, the Park opened the newly renovated Gansevoort Peninsula (formerly known as Pier 53) to the public, providing numerous amenities including a dog park, sandy bluff, water features, sports fields, restrooms, as well as a variety of ecological features such as soft riprap shorelines with tide pools and a salt marsh.

Being one of the few areas in the Park where land and water meet at a sloping edge, floatable trash often washes up and gets caught on the rocky shore. To combat the tides of trash and collect meaningful data on what kinds of refuse are found in the River, the Park organizes monthly shoreline cleanups in the warmer months.

Shoreline cleanups alternate between corporate volunteer groups and community volunteers. Volunteers collect trash and categorize debris based on modified protocol from NOAA’s marine debris monitoring program along 10-meter transects. Once data is collected, trash is separated between landfill and recycling, bagged, and weighed by transect before being disposed of by Park staff.

This year, 72 volunteers collected 5,224 pieces of debris (**Fig. 11**), much of which are foam & hard plastic fragments. These bits of plastic are likely the result of hydro-, photo-, and mechanical degradation from the water, sun, and salt. Fragments like these can pose serious health concerns for shorebirds and other animals and continue to break down into microplastics if not removed.

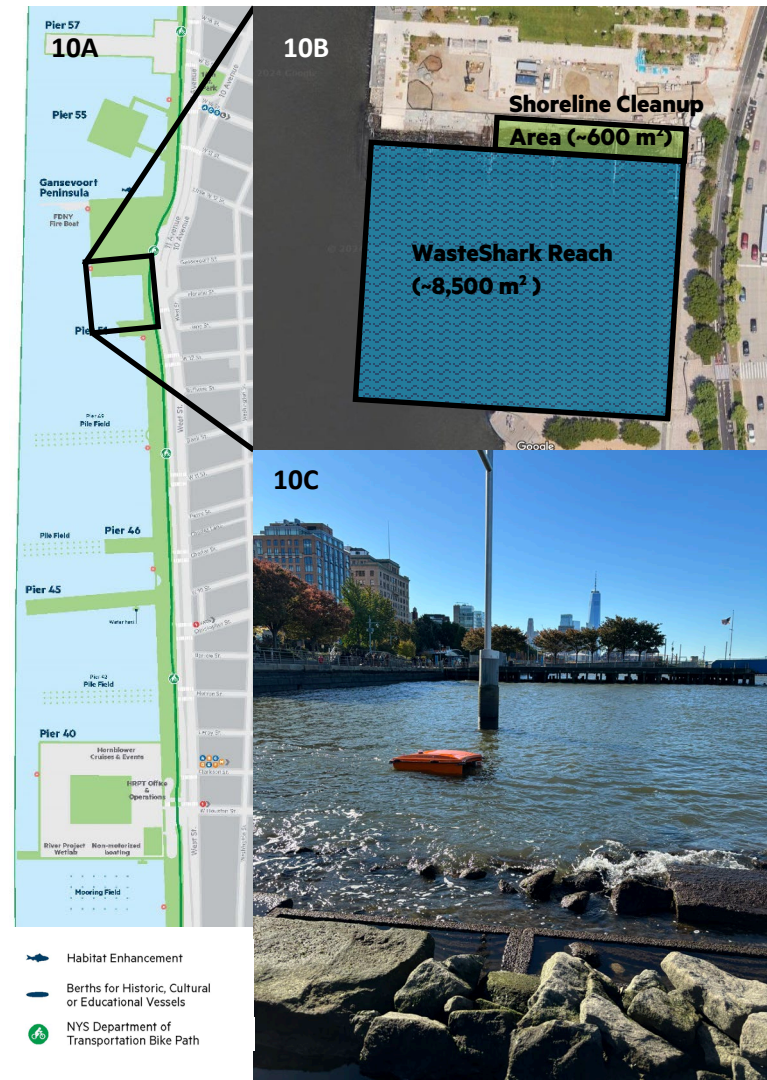


Fig. 10 | A) Map of Hudson River Park Greenwiche Village section (~1.18mi), detailing CSO locations north and south of Gansevoort Peninsula. **B)** Satellite image (Google Maps) of Gansevoort Peninsula southern edge, detailing area of Shoreline Cleanup programs compared to total water surface reachable with WasteShark. **C)** Southward view of WasteShark from Shoreline Cleanup Area, 2024.

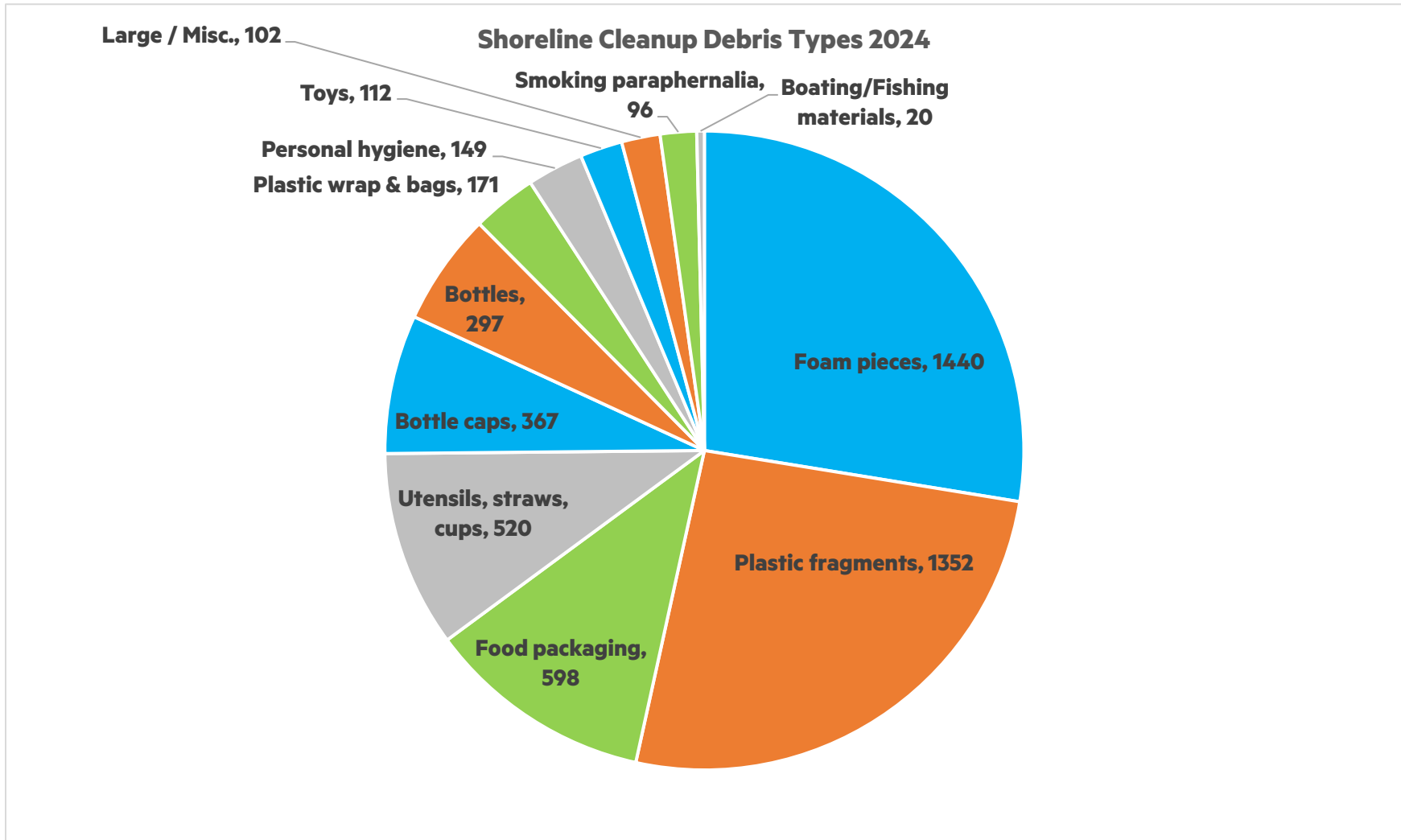


Fig. 11 | Total shoreline debris collected from May-September 2024 (n=5,224), broken down into common categories.

WasteShark

One common occurrence faced during Shoreline Cleanups is the accumulation of debris in the water, a few feet too far from the shoreline to safely reach. This obstacle can be tackled with the help of Gulp, the WasteShark: a remotely operated surface vehicle designed to collect macroplastics and other floatable debris from in-shore waters.

The addition of the WasteShark will help grow the impact of the cleanup events by increasing the amount of debris collected and serving as an educational tool for the public. Engagement and outreach events such as cleanups encourage Park goers to make informed decisions regarding their trash and recycling habits within the Park and at home.

When comparing debris types found along the shore and those gathered by Gulp, initial results from July showed that the ROV was capturing relatively more intact pieces of debris than what was being observed on the shore, with food packaging being the most common. This may allow the Park to remove plastics at earlier stages of degradation and help to mitigate fragmentation along the shoreline.

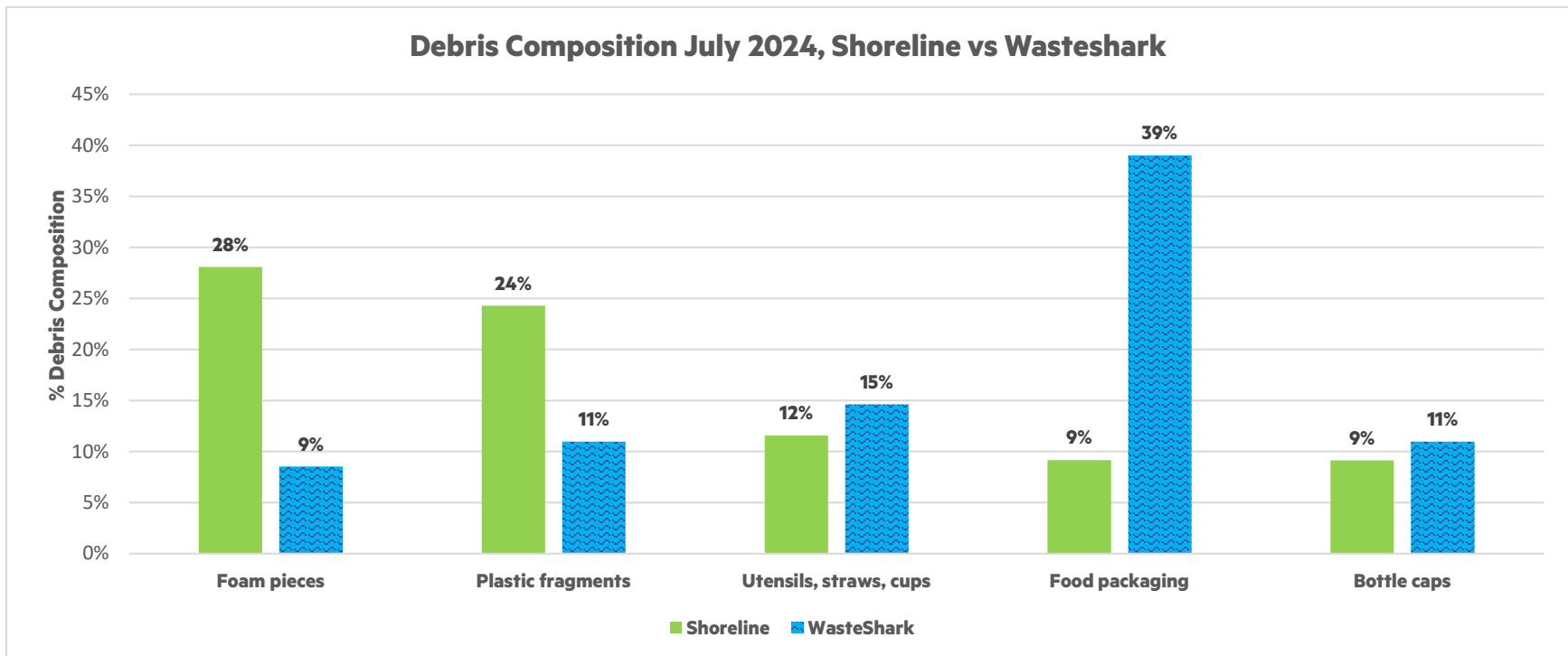


Fig. 12 | Top 5 debris types between shoreline cleanup area and floatables gathered by WasteShark, July 2024 (n=2,032). Debris was collected and sorted by volunteers and Park staff.

Takeaways

The results of the Waste Audit suggest that Park users' recycling habits are generally improving as recycling bins are continually used properly, but that there are still recyclables going into landfill bins. This has occurred in the past due to lack of available recycling receptacles, but in lieu of that, additional steps must be considered to continue to reduce contamination rates.

The compost program continues to succeed in diverting tens of thousands of pounds of food scraps from landfills to be used as nutrient-rich compost for the Park's 4 miles of plant beds and lawns. The annual Pumpkin Smash event's increasing attendance shows that community members are interested in supporting and participating in Park composting events, with 2,135 attendees and ~6,000lbs. of pumpkins at this year's Smash, more than double 2023's amount!

Gulp the WasteShark has proven to be a popular addition to shoreline cleanups, even engaging passers-by that aren't part of volunteer groups and sparking organic conversations about plastics, pollution, and sustainability. Gulp will continue to help the Park and volunteers to keep the Gansevoort Shoreline tidy for many years to come.

Future Directions

The evolution of the Park's Waste Audit, Community Compost, and Shoreline Cleanup Programs have shown tremendous progress towards the goal of a low-waste Park. The ongoing tracking provides annual data with which to assess efficacy of Park sustainability. The Park hopes to continue to improve in waste education and management by adding more signage in the park, as well as by increasing paired landfill and recycling bins, informing park goers of what plastics are and are not recyclable. Implementing more community education events such as open/walk-up cleanup events and WasteShark deployments can help community members learn how to be more proactive about waste sustainability in Hudson River Park and their daily lives.

References

- Dixon, S., Lees, Z., Leshak, A., 2017. The big apple's tiny problem: a legal analysis of the microplastic problem in the NY/NJ Harbor. *Roger Williams UL Rev.* 22, 385.
- Dris, R., Gasperi, J., Tassin, B., 2018. Sources and fate of microplastics in urban areas: a focus on Paris Megacity. *Freshwater Microplastics*. Springer, Cham, pp. 69–83.
- Masura, J., Baker, J.E., Foster, G.D., Arthur, C., Herring, C., 2015. *Laboratory Methods for the Analysis of Microplastics in the Marine Environment: Recommendations for Quantifying Synthetic Particles in Waters and Sediments*.
- National Centers for Environmental Information, NOAA, 2020. Daily summaries station details. [Dataset]. Retrieved from. <https://www.ncdc.noaa.gov/cdo-web/datasets/GHCND/stations/GHCND:USW00094728/detail>.
- NY-NJ Baykeeper, 2016. NY-NJ Harbor Estuary Microplastic Study Report, January 2016. Rutgers University, School of Environmental and Biological Sciences. <https://cues.rutgers.edu/microplastic/>.
- Polanco, H., S. Hayes, C. Roble, M. Krupitsky, and B. Branco. 2020. The presence and significance of microplastics in surface water in the Lower Hudson River Estuary 2016-2019: A research note. *Marine Pollution Bulletin* 161: 111702.