

Macroplastics Report 2018



Purpose

Despite the Hudson River being much cleaner than it once was, marine debris remains a challenge, negatively impacting the River's water quality and wildlife. In an effort to understand the impacts of plastics to NYC's local waterways, Hudson River Park's (HRPK) Estuary Lab involves community volunteers in collecting and categorizing macroplastics (plastics larger than 1 in.) from the Park's Gansevoort Peninsula.

Key Research Questions

- What types and concentrations of macroplastics are present and are there any temporal trends?
- What is the spatial distribution and variability of macroplastics?

Fig. 1 (below) | Map of survey site, Gansevoort Peninsula Pier 52. Macroplastics are counted and categorized on 100 meter shoreline.



Fig. 2 (above) | Participants survey macroplastics in each transect of Gansevoort Peninsula's shoreline by recording type, quantity, resin code, weight and size of each plastic item collected.

Methods

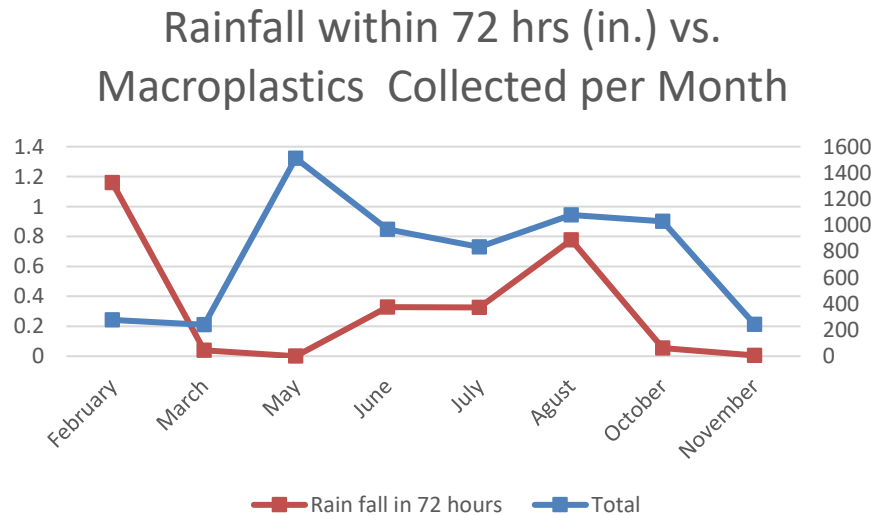
- Divided 100m Gansevoort Peninsula shoreline into 10m transects and surveyed transects at random
- Recorded the count and category of plastic debris items over 2.55cm/~1in (bottle cap size) in each transect
- Recorded resin identification code (RIC) if available and indicated when plastics are larger than 1 ft under the "Large Debris" section on the data sheet
- Recorded total weight of plastic debris collected in pounds (lbs) using a hanging scale
- Entered all plastic debris recorded by category and location into NOAA's Marine Debris Tracker app

Major Findings

In 2018, 6,182 macroplastic pieces were counted and categorized and 995.5 lbs of marine debris were removed from Hudson River Park's shorelines from 8 monthly cleanups with the support of 101 participants.

- Rainfall didn't correlate to the amount of debris collected
- Foam items were the most common item collected since 2016, likely because foam easily breaks down into smaller pieces
- The total number of beverage bottles collected in 2018 was 1,303 and in 2017 we collected 1,471 bottles

Fig. 3 (below) | 2018 Rainfall accumulation within the last 72 hours of each cleanup compared to the total macroplastics collected per cleanup. The left y-axis displays rain accumulation in inches and the right y-axis displays number of macroplastics collected.



Top Ten Most Common Macroplastics Collected

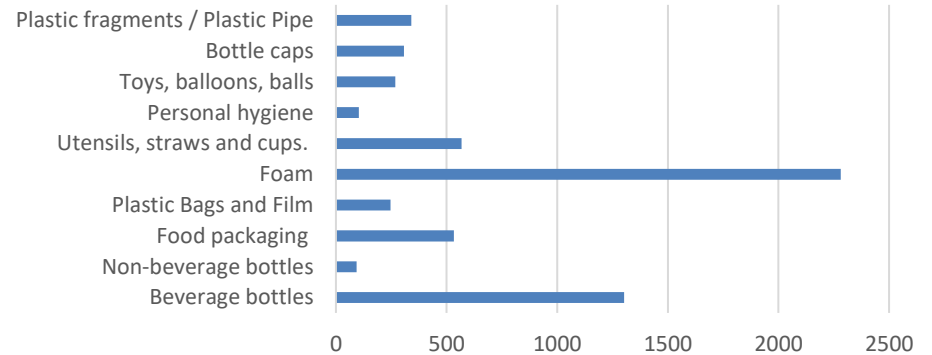
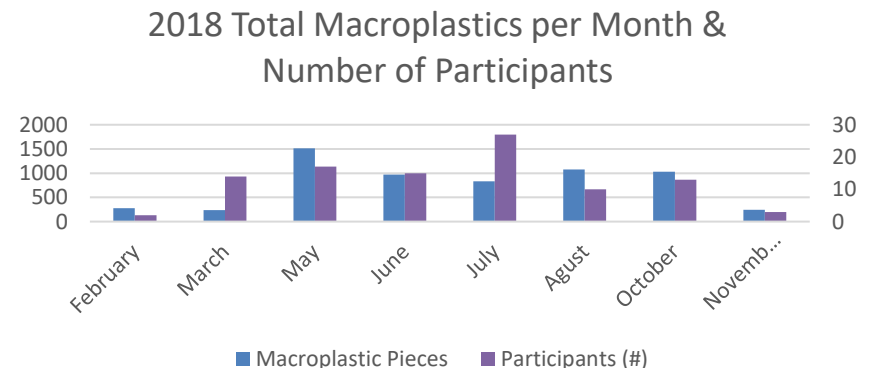


Fig. 4 (above) | Variety and number of macroplastics collected in 2018. Foam, beverage bottles and utensils/straws/cups were the top most frequent items collected.

- Foam was the most prevalent macroplastic collected at 2,282 pieces and beverage bottles was the second most at 1,303 pieces
- The month of May had the most debris collected at a total of 1,512 pieces and March had the least amount at 240 pieces, which could reflect the number of volunteers at the shoreline cleanup.

Fig. 5 (below) | Number of macroplastics collected per monthly cleanup. Findings do not correlate to the concentration of macroplastics existing on shoreline, but rather the number of volunteers at the cleanup.



Take Aways

Regular shoreline cleanups are a meaningful way to survey marine debris, yet insufficient at reducing plastic pollution from NYC shorelines, due to its reactionary approach. The cleanups, however, provide useful data innumerate the scope of the problem and highlight how plastic policy measures influence marine debris on our shorelines. In 2018, styrofoam was the most common plastic pollutant collected at Hudson River Park and continues to be the challenging to remove due to its brittle nature. Annually, May cleanups collect the most debris due to the commitment of volunteers who return year after year.



Fig. 6 (above) | Participants at Hudson River Park's May 2018 cleanup on Gansevoort Peninsula.

Future Directions

In 2019, HRPK is launching a Park Over Plastic initiative to reduce the sale, use, and distribution of single use plastic within the Park, starting with plastic water bottles. This effort is informed by the Estuary Lab's plastic research and prioritizes the Park's relationship to the Hudson River Estuarine Sanctuary as a four mile waterfront green space. HRPK's Park Over Plastic is a proactive plastic reduction program that will also help expand the Park's macroplastic shoreline cleanups. To broaden our macroplastic survey, Pier 76 will be added as a regular cleanup site. Over the next year, it will also be interesting to trial new methods for collecting Styrofoam and tracking how NYC's 2019 Styrofoam ban influences the amount of this common plastic pollutant.

References

- <https://www.sciencehistory.org/the-history-and-future-of-plastics>
- <https://www.riverkeeper.org/campaigns/stop-polluters/sewage-contamination/cso/>
- <http://plastic-pollution.org/>