

# Are Beach Plastic Clean-Ups an Effective Way to Combat Marine Plastic Pollution?

Jessica Kennedy @jess\_kennedy98



## Introduction

Marine plastic pollution has become a prominent issue, and so beach plastic cleanups are becoming increasingly popular. These cleanups are usually touted to be beneficial, sustainable acts. However, there can be some un-intended negative consequences. Analyzing the costs and benefits associated with beach plastic cleanups allows us to evaluate the effectiveness of these cleanups. I will focus on volunteer-run cleanups in North America.

Many factors need to be considered!

## Ecological Impacts

The local marine ecosystem will benefit from the removal of plastic waste.

Marine plastic litter can entangle or be ingested by marine animals, can enable the spread of invasive species, and can break down into harmful microplastics<sup>1</sup>.

*However*, studies have shown that plastic debris has become so prevalent in marine systems that that organisms have begun to use plastic as habitat<sup>2</sup>!



## Economic Impacts

If local businesses rely on beach visitation to drive the local economy, and that beach becomes overrun with trash, this will lower beach attendance and negatively impact the economy.

*However*, beach cleanups can become costly if they need to be conducted frequently (due to admin fees<sup>3</sup>). This money may be better spent in other ways to decrease marine plastic pollution more effectively.

## Social Impacts

Beach cleanups can promote marine stewardship & create 'behavioral spillover' where cleanup participants are more likely to participate in pro-environmental behaviors in the future.

*However*, participants may feel as though their cleanup efforts absolve them from any future responsibility to act sustainably. Also, the over-emphasis on marine plastic pollution may be distracting the public from other, more damaging marine issues.

## Weighing the Costs and Benefits

IF beach clean-ups make a discernible dent in the amount of marine plastic on shorelines, then they have benefits to the local beach economy and ecosystem. The social outcomes of beach cleanups are probably subjective. Thus, beach cleanups can often be beneficial.

**BUT** Beach cleanups alone cannot solve the issue of marine plastic pollution.

In order to drastically decrease marine plastic pollution on a large scale, we need to decrease plastic **inputs** into the ocean.

We can achieve this by:

- Pressuring corporations to move towards more sustainable packaging options
- Improving recycling practices
- Banning single-use plastics

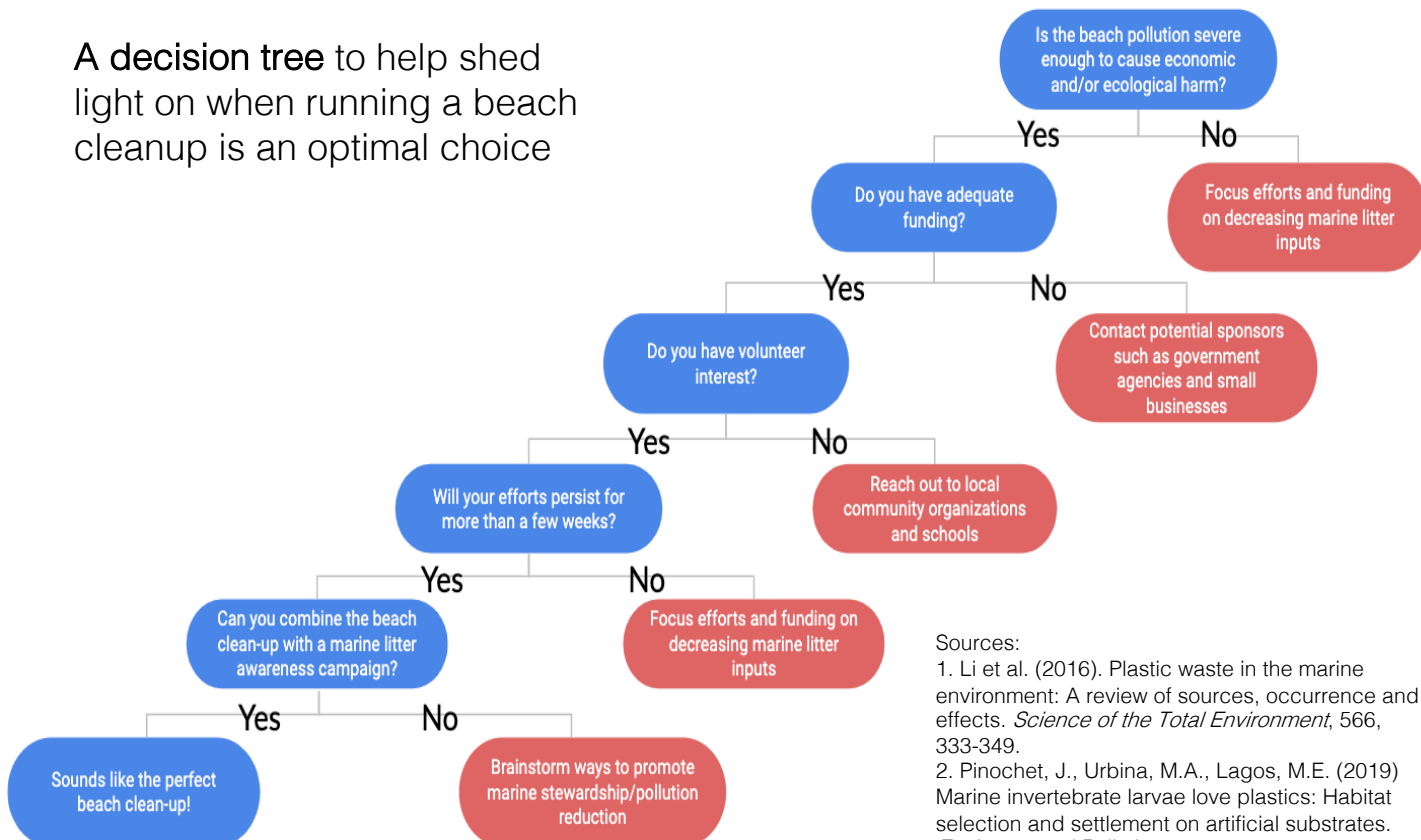
Greenpeace USA



## Recommendations

- Ask cleanup participants to pledge to reduce their own personal plastic use
- Utilize social media to promote beach cleanups and maximize impact
- Partner with local community groups to increase reach
- Collect data on quantity and types of litter collected (if possible) in order to understand how marine plastic pollution patterns change over time

A **decision tree** to help shed light on when running a beach cleanup is an optimal choice



Sources:

1. Li et al. (2016). Plastic waste in the marine environment: A review of sources, occurrence and effects. *Science of the Total Environment*, 566, 333-349.
2. Pinochet, J., Urbina, M.A., Lagos, M.E. (2019) Marine invertebrate larvae love plastics: Habitat selection and settlement on artificial substrates. *Environmental Pollution*, 257, 1-8.
3. Newman, et al. (2015). The Economics of Marine Litter. *Marine Anthropogenic Litter*.