Resource Brief

National Park Service U.S. Department of the Interior

Saguaro National Park Resource Management Division



Where Balloons Come Down: Saguaro National Park

Background

Releasing balloons in the sky has been a tradition for many people. It has been used to celebrate the life of a loved one, raise awareness, and commemorate milestone events such as weddings and birthdays. However, what goes up inevitably comes back down. Balloons released to the sky eventually land in the ocean, forest, rivers, farms, and the desert. Along with other airborne trash, especially plastic bags, many balloons end up in Saguaro National Park.

Balloons and plastic bags can cause a variety of problems in the environment. They take away from the outdoor experience of park visitors. As they degrade, they degrade the beauty of the desert and forest. Balloons and plastic bags can also harm wildlife. Animals as desert tortoises can ingest balloons are get tangled in the ribbons and strings that are commonly attached to them. Additionally, airborne trash ends up in streams and springs where, as they break down into microplastics, they can pollute the water.

The Study

Erin Zylstra, a graduate student at University of Arizona, did a study to estimate how many desert tortoises and Western diamond-backed rattlesnakes were in Saguaro National Park. She used a method called "distance sampling" that involved walking randomly-located transects to search for wildlife. She added balloons and plastic bags to the study because they were easy to see and locate. Based on these transects, in both the East (Rincon Mountain) and West (Tucson Mountain) Districts of Saguaro National Park, Zylstra was able to estimate the number of not only tortoises and rattlesnakes, but balloons and plastic bags. To her surprise, she found that there were more balloons per acre than there were tortoises or rattlesnakes. She estimated that there were nearly 63 balloons per square kilometer in the Rincon Mountains, which can be extrapolated to approximately 16,987 balloons in the entire park district of 271 square kilometers (about 105 square miles).



Red balloon caught by a tree branch. NPS Photo

Zylstra and her assistants surveyed 120 transects, each one kilometer (about 2/3 mile). They found plastic bags on 35% of them, balloons on 55%, and either ballons or bags on 68%. They counted a total of 56 plastic bags (mostly grocery bags) and at least 94 balloons that were predominantly made of latex (Zylstra, 2012). The density of balloons and plastic bags varied around the park, but not in relation to roads. The Rincon Mountains had significantly more clusters of trash, which Zystra believes that this was due to the prevailing winds, which blow trash from west to east in the Tucson area. Density of balloons in the Tucson Mountain District was 39.2 per square kilometer, or approximately 3,966 in the entire district.

Read the full study <u>here</u>. Zylstra, E. 2013. Accumulation of wind-dispersed trash in desert environments. *Journal of Arid Environments* 89:13-15.

Quick Facts

Balloons are generally made of rubber, latex, polychloroprene, or a nylon fabric. Although *some* balloons are biodegradable, it will still take anywhere from half a year to 4 years for them to fully degrade.

Trash made from balloon and plastic bag materials also has negative effects on the health of soil and water.

Calculations:

TMD: 24,498 acres = 99.14 km² (38 miles²) RMD: 66,947acres = 270.93 km² (105 miles²)

Number of trash items per square kilometer based on study:

Density of plastic bags (RMD) = 35.4/km² Density of plastic bags (TMD) = 5.6/km² Density of balloon clusters (RMD) = 62.7/km² Density of balloon clusters (TMD) = 39.2/km²

Extrapolated number of items for whole park:

Density of plastic bags (RMD) = 9,590.92 Density of plastic bags (TMD) = 555.18 Density of balloon clusters (RMD) = 16,987.31 Density of balloon clusters (TMD) = 3,886.29 Extrapolating Zystra's numbers from the desert to the whole park seems justified, because balloons and bags are so frequently observed at higher elevations in woodlands and forests.



Cluster of balloons found at high elevations in Rincon Mountain District. NPS Photo

Discussion

It is important to be mindful of where our trash ends up! Plastics and balloon materials take months to hundreds of years to degrade. Fortunately, there are alternatives to releasing balloons while celebrating significant moments and events in our lives. One environmentally friendly alternative would be to plant a native Sonoran Desert tree, which can provide enjoyment for years to come. Other alternatives include blowing bubbles, flying wish papers, planting native wildflowers, and flying a kite!

More Information

Don Swann Biologist ph (520) 733 5177 email: <u>Don Swann@nps.gov</u>

Saguaro National Park 3693 S. Old Spanish Trail Tucson, AZ 85730