

Deadly Litter: Balloons & Plastic Ribbons on Virginia's Coastal Beaches



Photo by Katie Register, CVW

Deadliest Type of Trash

Latex balloons, foil balloons, plastic ribbons and other attachments on helium-filled balloons are among the deadliest types of ocean trash.

Found Everywhere, Especially on Beaches

Littered balloons and ribbons can be found inland, but they mostly accumulate in Virginia's remote coastal environments, between the high tide line and the dune vegetation, which is critical habitat for nesting birds, sea turtles, and diamondback terrapins.

Most Common Debris Item on Remote Beaches

Balloon debris was the number one or two type of debris found on Virginia's remote beaches.

- Up to 272 pieces of balloon-related litter per mile*
- On one beach, 212 pieces of balloon-related litter in a half mile**

Data on balloon debris supports the calls for laws, policies and behavior-change campaigns.

Why Study Balloon Litter?

In 2014, 236 volunteers found 904 balloons on Chincoteague National Wildlife Refuge (NWR) in a three-hour period during the International Coastal Cleanup (ICC) in Virginia.

Over a period of five years, Virginia's ICC volunteers found and reported 4,916 pieces of balloon litter; of these, 3,122 (63.5%) were found on ocean beaches. The most remote of the ocean beaches had

significantly more balloons as compared to public beaches. These findings led Clean Virginia Waterways (CVW) to partner with the Virginia Aquarium & Marine Science Center (VAQ) to conduct in-depth research on the fate and accumulation of balloons and ribbons in coastal environments.

Balloon Litter Data from Studies in VA

A 2014-18 study conducted by the VAQ and CVW found balloons were the #1 most frequently recorded debris type on Chincoteague NWR, #3 on Fisherman

* Documented on remote beaches in Virginia according to data collected by CVW, VAQ, and extensive surveys on barrier islands by researchers Kathy O'Hara and Christina Trapani.

** Recorded by researchers on Virginia's Fisherman Island National Wildlife Refuge in Nov 2020.

Island NWR, #5 on Back Bay NWR, and #7 on Grandview Nature Preserve. A total of 660 balloons were found on the surveyed areas, which measured 200 meters at each site.¹

Research by O'Hara and Trapani from 2013-17 confirms that **balloons accumulate on coastal beaches where they are often the #1 most common type of trash**. According to *Balloon Litter on Virginia's Remote Beaches*, the presence of balloons and ribbons varied between the coastal beaches they surveyed (Cedar, Hog and Smith Islands, Fisherman Island NWR and False Cape State Park) from 25 items per mile on Cedar Island, to more than 272 items per mile on Fisherman Island NWR. During their study, 11,441 balloon-related litter items were recorded during 46 surveys.²

This research was done in conjunction with a social marketing campaign created by the Virginia Coastal Zone Management Program (CZM), CVW, and the National Oceanic and Atmospheric Administration (NOAA) Marine Debris Program to reduce the intentional releases of balloons during memorial and celebratory events.³

Who Plans Balloon Release Events?

The CVW & VA CZM Program research found that balloon releases are predominately planned by women as part of celebrations (i.e., weddings) or memorial services, and that **many people do not understand that no balloon is “environmentally friendly,” and that every released balloon becomes litter and can be harmful**. There is also an incorrect assumption that “biodegradable” means “harmless”.³

A Unique Type of Litter

Balloons are a unique form of litter. Mass quantities of helium-filled latex balloons or foil-covered plastic balloons (often mistakenly referred to as Mylar) are purchased each year by families, businesses, nonprofit groups, schools, and other groups **with the intent to release them into the environment**. These balloons are intentionally released into the sky as part of memorials, funerals, and celebrations like store openings, weddings, political rallies, and sporting events.³



A dead laughing gull (Larus atricilla) hangs from a power line entangled in a balloon's ribbon, and a critically endangered Kemp's ridley sea turtle (Lepidochelys kempii) was dead on Fisherman Island, Virginia with two latex balloons and a plastic ribbon lodged in its GI tract. Photos by Pam Denmon, U.S. Fish & Wildlife Service Northeast Region, 2009 and 2014.

Deadly to Turtles, Birds and Mammals

Balloons and their attachments (plastic ribbons, valves, tie-off disks, and clips) present a **threat of entanglement and ingestion to birds and marine wildlife as well as horses, cows and other animals**.

A study from Australia “...provides evidence for the disproportionate ingestion of balloons by marine turtles.”⁴ Balloons are also documented as deadly to terrestrial animals including the desert tortoise.⁵



A mare on Assateague Island, Maryland with a balloon ribbon hanging from its mouth in May 2019. Photo by Ann Richardson Photography.

Impact on Coastal Environments

Balloon litter and plastic ribbons have been documented on Virginia's ocean-facing coastline much of which is either protected or restricted from public use. These areas are the northernmost nesting beaches for sea turtles. They also are an important migratory stop-off and nesting area for several species of endangered and/or protected shorebirds. Balloons and plastic ribbons on these remote beaches present the potential for disproportionate impacts on marine life and ecosystems.^{1,2}



More than 270 experts in marine debris were asked to rank the severity of impacts of marine debris on seabirds, sea turtles and marine mammals. As seen in this summary, balloons were ranked in the number three spot. Chart by Ocean Conservancy.⁶

A 2015 study revealed that balloons ranked #3 in the Top 5 list of deadliest ocean trash to key wildlife populations.⁶

Best Use of a Valuable Gas?

A versatile and stable gas, helium is an exhaustible natural resource that cannot be produced economically or efficiently. According to the US Geological Survey, the biggest consumer use of helium is in party balloons; the biggest non-consumer use is in magnetic resonance imaging (MRI) technologies.⁷

There are **limited or no substitutes for helium** in its use as a coolant in aircraft, the manufacture of semiconductors and optical fibers, and providing the low temperatures required by several technologies and cryogenic applications.⁸

Power Outages Caused by Balloons

CVW gathered evidence that **up to 20% of electrical power outages are caused by balloons making contact with power lines.**³

According to Dominion Power, there are 14 to 40 power outages every year in Virginia caused by balloons, impacting thousands of customers.

According to one employee of a utility company, balloons released on Valentine’s Day, Mother’s Day, Easter, graduations and at weddings bring outages, “almost without fail”.³

Balloons Travel

Balloons, unlike many of the most commonly found items at inland cleanups, are sold, purchased and used less frequently than many single-use consumer food and beverage items. So why are they found more frequently on beaches?

Balloons can travel hundreds of miles before bursting or deflating.³ In 2018, a latex balloon with a plastic ribbon and imprinted with a logo from Kansas was found along the shoreline of the Chesapeake Bay in Hampton, VA.² If this balloon was actually released in Kansas, it had traveled almost 1,400 miles. The negative impacts of balloon litter can occur great distances from their point of release.

Several factors may affect the distribution of balloons in the marine environment, including prevailing wind patterns over the continental United States. Buoyant balloons are subject to the same hydrodynamic mechanisms responsible for the movement, aggregations, and endpoints as sea weed.²

Solutions to Balloon and Ribbon Litter

Knowing that balloons and their attachments—mostly plastic ribbons—are **among the deadliest forms of ocean trash**, balloons have been targeted in litter and marine debris prevention efforts by government agencies, local communities, and nonprofit organizations.



When foil balloons (plastic covered with metallic paint) contact power lines, they cause thousands of customers to lose power. Photo by Katie Register, CVW.

Laws: Several states and communities have laws that prohibit the intentional releases of helium-filled balloons in order to prevent this form of pollution.⁹ Since 1991, Virginia has banned the release of 50 or more helium-filled balloons.¹⁰ In 2015, 2020, and 2021, bills were introduced in the Virginia General

Assembly to reduce the allowable number to one balloon, and also zero balloons.¹¹

Policies: Churches, parks, restaurants, and schools can also be effective in directing people to choose litter-free ways to celebrate through their written policies. For example, releasing balloons and sky lanterns is not permitted in Virginia State Parks. Releasing sky lanterns is not an acceptable alternative to balloon releases. Using sky lanterns is illegal in Virginia and most other states due to fire hazards.¹²

Behavior Change Campaigns:

PreventBalloonLitter.org and JoyfulSendoff.org (created by the VA CZM Program and CVW) are two examples of campaigns that offer:

- Joyful, picture-perfect ideas for weddings and other celebratory events,
- Uplifting ideas for memorials,
- Expressive ways to come together as a community

—all without releasing harmful balloons into the air.

Several zoos, aquariums, and nonprofit organizations, including BalloonsBlow.org, raise awareness through websites, videos, and use of social media. As a member of the Mid-Atlantic Regional Council on the Ocean, Virginia is partnering with other states in the Mid-Atlantic to implement a behavior-change campaign to reduce intentional balloon releases with funding from the NOAA Marine Debris Program.

About the Data

Data in this report are from several sources including the Ocean Conservancy's ICC, the largest volunteer effort for the world's ocean and waterways which provides a global snapshot of the litter and ocean trash problem from year to year. Data are collected using paper data forms, or the CleanSwell App for smartphones. All data are entered into the Ocean Conservancy's open-access TIDES database.¹³ CVW has organized the ICC in Virginia since 1995, engaging nearly 120,000 volunteers.

The VAQ research (2014-18) was supported by grants from the NOAA Office for Coastal Management (OCM) through VA CZM. The NOAA Marine Debris Monitoring Protocol was followed during this research.¹

The barrier island balloon litter research by O'Hara and Trapani was also supported in large part by grants from the NOAA OCM through VA CZM. A protocol developed by O'Hara and Trapani to track balloon litter and other items is now being used by the Mid-Atlantic states of NY, NJ, DE, MD and VA as part of a regional campaign to decrease intentional balloon releases.¹⁴

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Founded in 1995, Clean Virginia Waterways of Longwood University is dedicated to decreasing plastic pollution, litter and marine debris through research, cleanup events, and building collaborations. CVW is housed on the Longwood University campus in Farmville, VA and is affiliated with the Ocean Conservancy in Washington D.C. CVW is funded through grants, gifts, sponsorships, and workshop fees.

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