

Floating M



Photo by Jeff Dye

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Researchers say latex party balloons pose a unique threat to southern California's population of bighorn sheep because of the way sheep eat and digest food

Story by Rebecca Barboza

A helium balloon wafting in the breeze across an endless sky hardly conveys a sense of peril. Yet these brightly colored spheres—frequent icon at parties, soirées and announcements—must eventually submit to the call of gravity and return to the environment where in southern California's high desert landscape they are creating a growing hazard for some of North America's rarest mammals.

For years, biologists have documented the negative impacts of latex balloons on marine wildlife. More recently, researchers have seen devastating evidence of what they can do to terrestrial wildlife as well. Of particular notice is how scientists are seeing more balloon debris in the rugged mountains of southern California. Specifically, they have found latex balloons near areas that support several populations of bighorn sheep.

Nelson bighorn sheep (*Ovis Canadensis nelsoni*) are designated as a fully protected species. The classification of fully protected was California's initial effort in the 1960s to identify and provide additional protection to wildlife that were rare or faced possible extinction. Throughout the 1990s some Nelson bighorn sheep populations were thought to be on the verge of collapse. Today, wildlife biologists believe they are recovering from years of poor habitat conditions and habitat loss, predation and human impacts.

In 2003, the Department of Fish and Game, along with the Angeles and San Bernardino national forests, began tracking local populations of bighorn sheep to better understand the animals long-term management needs. Researchers captured and marked sheep with radio collars to monitor their movements. When a marked animal dies, the collar emits a "mortality signal," which helps biologists locate the remains and determine the cause of death. During these routine mortality investigations, biologists regularly found remnants of latex balloons in the animals' stomachs.

"We have found everything from small latex fragments to entire balloon bouquets completely impacting the animals' digestive tracts," says Jeff Villepique, a DFG associate wildlife biologist. "If this were happening in just one location, we would probably consider it an anomaly. But our greatest concern is that this appears to be a ubiquitous occurrence in bighorn sheep populations that inhabit the urban-wild land interface of southern California and in the adjacent high deserts."



While researchers have seen a growing number of mylar balloons—the shiny, less permeable metalized plastic films—in the same environment, only latex has proved a problem to sheep.

The extent of balloons littering the environment might surprise visitors to the wilderness, but not those who work there. And those who work in bighorn sheep habitat say they see it too often.

“I think it is fair to say that balloons are a common occurrence in the forest,” says Kathie Meyer, a supervising biologist with the San Bernardino National Forest. “My staff regularly encounters and collects balloons, and when I worked for the National Park Service I dedicated an entire section of my office to all of the balloons that I personally collected.”

Working with DFG’s Inland Desert Region, Tim Glenner has flown as net gunner during dozens of helicopter surveys of bighorn sheep throughout the state. “During one three-day survey we counted 76 balloons in the San Gabriel Mountains,” Glenner recalls. “I’ve had an aerial view of every bighorn sheep range in California and the balloon problem seems to be increasing in the southern mountain ranges.”

The swell in latex balloons recovered from natural habitat crosses international borders. More than a year ago the British Broadcasting Corporation reported researchers there had marked a 260 percent increase in the number of balloons observed on Britain’s beaches over the last 10 years. The newscast, referred to



DFG Photo by Rebecca Barboza

Top photo: Balloons tangled in the wilderness, miles from where they were inadvertently released, has become far too common a sight for DFG crews working wildlife programs. Above: Jeff Villepique, a DFG associate wildlife biologist removed enough balloons from one of the chambers of a bighorn’s stomach to fill a plastic bag. Next page: An investigation of this deceased bighorn sheep showed the animal had swallowed plastic balloon strings while their other ends remained entangled in the sheep’s mandible and teeth.

in the June 2008 issue of *Herp-Digest*, a scientific and conservation publication on reptiles and amphibians, stated nearly 60,000 balloons were identified during a two-day international survey.

The impacts of latex balloons on wildlife—both terrestrial and aquatic—appear profound, but fortunately they are also preventable.

Researchers agree that ingested balloons and balloon fragments can potentially harm any species of wildlife. But bighorn sheep may be particularly at risk because of the way they eat and digest food. Bighorn sheep have the same digestive system as cows, goats, domestic sheep and other cud-chewing animals. They eat only plants, and have a specialized four-chambered stomach which extracts nutrients from indigestible plant materials. These animals do not chew food thoroughly as they graze. Instead, the un-chewed matter empties through the esophagus into the first stomach, called the rumen. Here, the plant matter softens and is kneaded into a mass and an initial process of fermentation by microorganisms begins. Larger food particles are later regurgitated back up through the esophagus into the mouth where it is re-chewed into smaller bits. This process continues as the

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food passes through the remaining stomach chambers. During this progression, microorganisms convert indigestible cellulose into nutrients that the animal can utilize for energy. Meanwhile a by-product of fermentation, methane gas, builds up inside the gut and is expelled as the animal belches.

“Foreign objects do not pass through the ruminant digestive system easily,” says Dr. Ben Gonzales, an associate wildlife veterinarian with DFG’s wildlife investigations laboratory. “Because of the complex process of regurgitation and re-swallowing, objects like latex balloons and their plastic strings can interfere with digestive processes and may create or contribute to numerous conditions that could ultimately result in death.”

Balloons are not easy to swallow and animals can choke on the latex material. Unless the object is removed, suffocation and death can occur. In addition, the thin, rubbery material can block the esophagus, preventing the animal from expelling gasses. This can develop into ruminal tympany, a life-threatening condition



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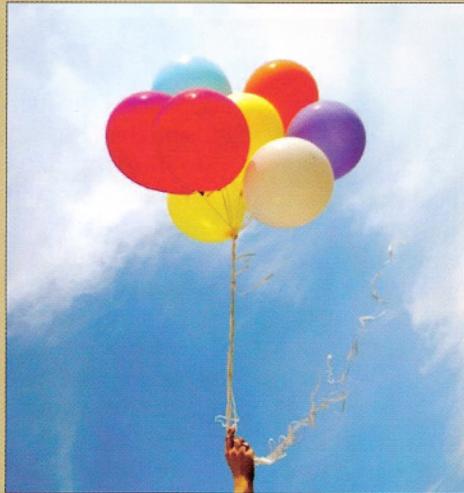
Floating Suggestions for Change

By Rebecca Barboza

State and federal wildlife agencies can maximize the bighorn sheep's existence by improving habitat and monitoring the population's health and movements, says Chanelle Davis, a DFG wildlife biologist, but the public holds the solution to the problem in their hands—literally. “We cannot solve the balloon problem without the public's help,” she says.

Although balloons are a traditional way to celebrate, they can create a hazardous situation to our natural resources unless people utilize them in a responsible manner. Small efforts like proper balloon disposal make a huge difference when everyone participates. Everyone can enjoy balloons without risk to wildlife by following some simple suggestions:

- Consider filling balloons with air instead of helium to reduce the



distance they travel.

- Do not release balloons outdoors.
- Attach weights to balloon strings or secure them tightly to solid objects.
- Use natural biodegradable, cotton string to tie balloons.
- Dispose of balloons after the celebra-

tion with a balloon-popping contest.

- Take the initiative and dispose of balloons that have been discarded in the environment.
- Some schools and businesses celebrate by displaying or releasing scores of balloons. Make an effort to discourage the practice and suggest alternative decorations.
- Share this information whenever possible.

The public can contribute to the success of a wildlife management program by encouraging change and educating others. The bighorn sheep is a symbol of the western wilderness and part of our natural heritage. Please join us in our mission to conserve California's wildlife for future generations. For additional information about bighorn sheep management programs in southern California, contact DFG's South Coast Region at (858) 467-4201, or the Inland Deserts Region at (909) 484-0167.

commonly referred to as “bloat.” As the rumen fills with gas, the abdominal cavity becomes painfully distended and interferes with the animal's ability to breathe. If bloat is not treated immediately, the animal can die from asphyxiation. While remedies exist for closely attended domestic livestock, wildlife suffering from bloat often endure a painful death.

Adding to the dilemma, helium balloons carry along an added menace. Researchers have found balloon strings through the length of bighorn sheep digestive tracts, from the esophagus to the intestines.

“Balloon strings can choke the animal and they can lacerate, perforate and strangulate the esophagus, intestines or other delicate membranes,” Gonzales says.

“If a pet swallows a string, surgery is often required to remove these objects as well as sections of the damaged membranes,” he adds. “Unfortunately, surgery is not an option for wild animals.”

Gonzales points out that if an inflated balloon ruptures while being eaten by a bighorn sheep, balloon particles can be aspirated up the windpipe. Latex fragments can either block airflow, which leads to suffocation, or clog the system of increasingly smaller airspaces within the lungs, which leads to pneumonia.

“Clinical signs of aspiration pneumonia include fever, extreme discomfort, difficulty breathing and chronic cough,” he says. “Death can also result from secondary infection. In addition, the loss of appetite, weakened condition and general malaise associated with this condition can make an individual more susceptible to attack by predators.”

Wildlife biologists also worry over an accumulation of indigestible balloon parts, material that remains inside the animal and gives it a false sense that the stomach is full. If the animal constantly feels full, it won't eat sufficient amounts of food. Over time, it could starve itself.

Biologists want to understand the apparent draw of wildlife, especially bighorn sheep, to latex balloons. There's little information available to explain why these animals eat foreign objects like balloons in the first place or why they'll continue to chew the hard-to-swallow latex. Some anecdotal evidence suggests the animals intentionally target the bright-colored objects and not inadvertently swallow them while grazing.

“Domestic goats and certain big game animals like pronghorn have been known to approach red objects, but we don't yet know if it is out of curiosity or some other, more practical reason,” says Villepique, the associate wildlife biologist.

An optimal balance between soil type, weather conditions and moisture promotes flower-production in plants, which can be an indicator of high-quality forage for wildlife.

“Bighorn sheep might be more likely to target brightly-colored objects because they mistake them as high-quality forage,” Villepique says. “But, again, we have not yet determined this experimentally. This is just one of many possible hypotheses that might explain this behavior.” 

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