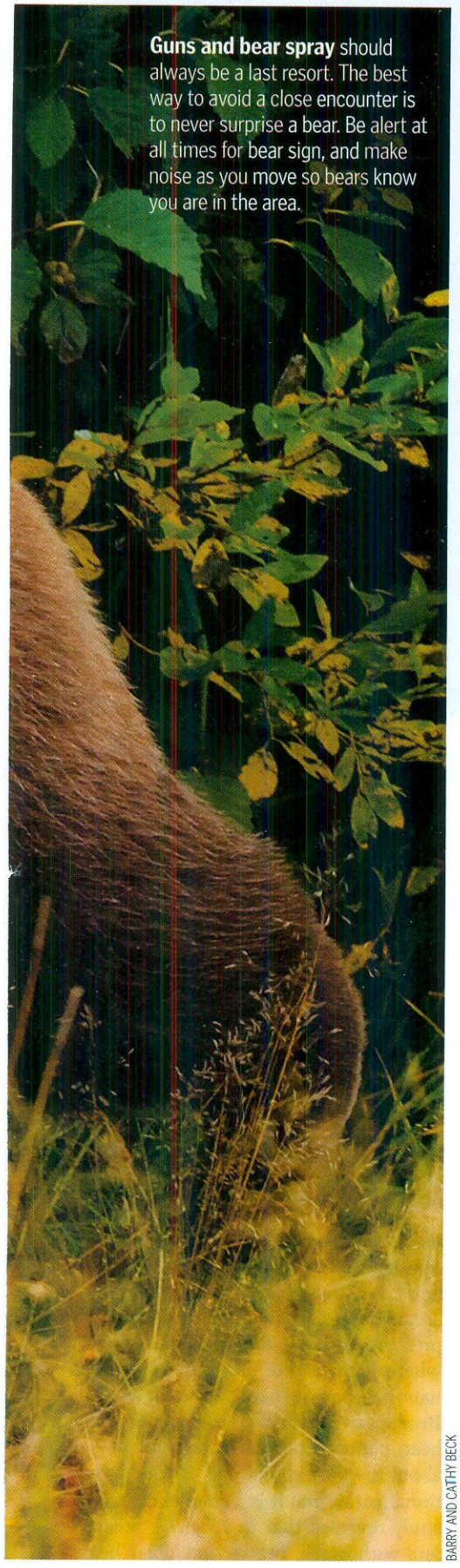


Guns and bear spray should always be a last resort. The best way to avoid a close encounter is to never surprise a bear. Be alert at all times for bear sign, and make noise as you move so bears know you are in the area.

BARRY AND CATHY BECK

Bear Spray, Your Best Defense

Expert research in Alaska finds that a few ounces of pepper spray are just as effective as a gun in an aggressive encounter

By Tom Smith, with Stephen Herrero and Terry D. DeBruyn

The angry bellowing of several coastal brown bears erupted behind a patch of ryegrass that separated me from the salmon stream. Bears gathered there were undoubtedly disputing fishing rights. As I angled across a mudflat to avoid the scuffle, a medium-sized bear emerged from the grass. His whimpering and bawling indicated he'd been a loser in the standoff, his head low as he ambled along. Catching sight of me, he launched into a gallop, growling as the 100 yards separating us rapidly dwindled.

I had to restrain myself from running: There was nowhere to go and the bear easily could have run me down. So I squared off with his hurtling hulk, planted my feet and frantically groped for my can of bear spray. To my utter shock, the can was not on my hip. In a split second I realized I'd foolishly put it in my pack to get it out of the way as I hiked through dense brush. The thought had no sooner

COURTESY JAMES GAVIN

ANDY HALL

Bear spray is an oily solution containing capsaicin from peppers, with a propellant that ejects the mix as a orange cloud of vapor at up to 70 miles per hour—a powerful tool that persuaded this bear [ABOVE] to leave these fishermen alone. Keeping bear spray close [RIGHT] is important. There usually isn't time to dig in a pack or pocket when a bear charges.

cleared my mind when a spray of sand shot up. The bear halted, mere feet away, staring at me, head down and growling. This was not going well.

Intense bear encounters like this happen many times a year in Alaska: person meets bear, person has no deterrent, bear makes choices for both of them.

With two colleagues, Stephen Herrero and Terry DeBruyn, I have been researching bears for most of my career.

We recently analyzed 550 bear incidents that have occurred in Alaska since 1900, hoping to discover what precipitated these encounters, and what, if anything, the humans could have done to prevent or diffuse them.

A large number of victims had nothing with which to defend themselves when confronted by a bear. When the right deterrent is used correctly, situations often turn out better.

Fortunately, bears often choose to walk away from such encounters—as did the bear in this case—but not always.

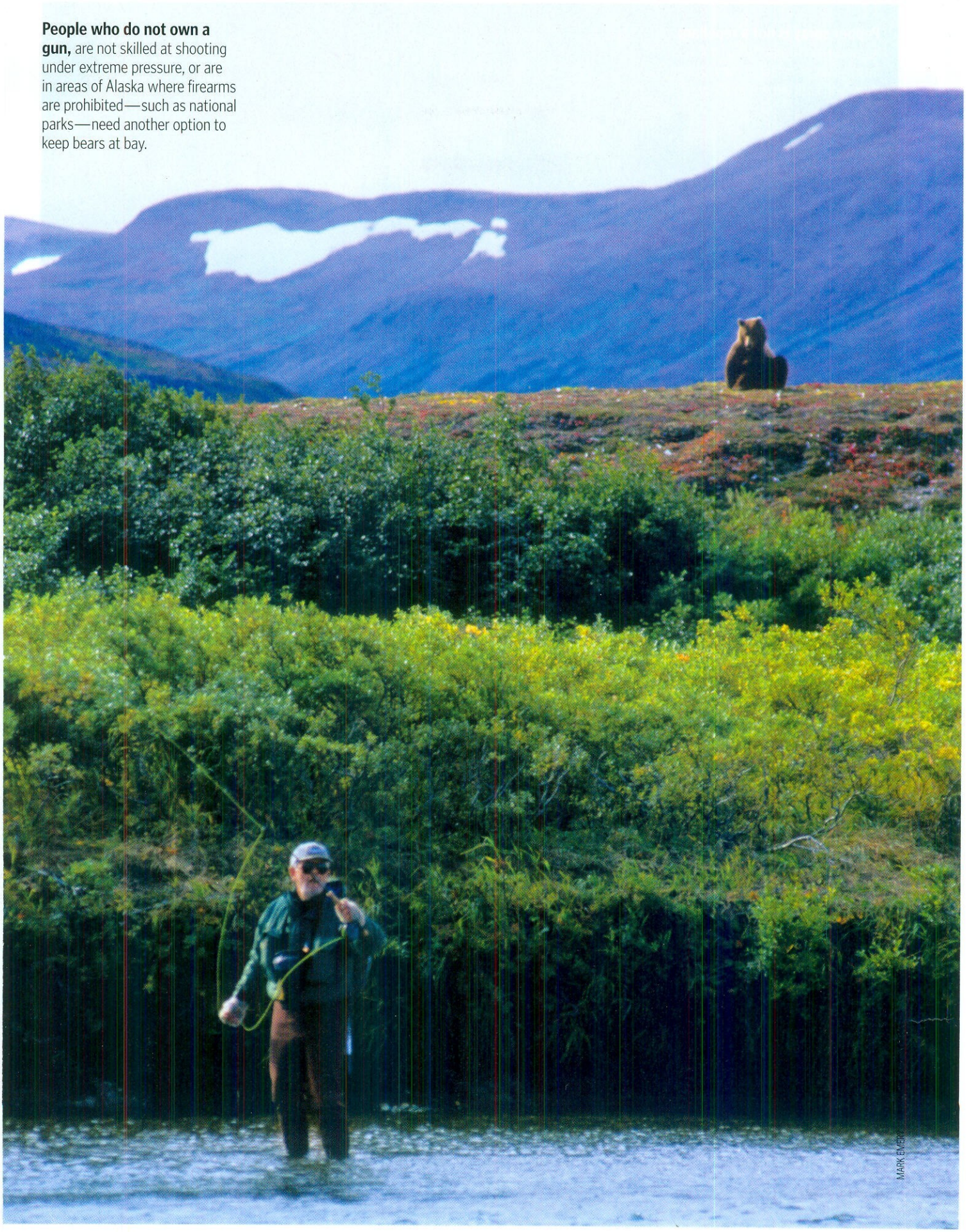
Alaska has averaged 4.5 bear attacks a year since 1985, including 24 fatalities and 45 serious injuries. Few of the people involved in these horrific incidents probably imagined they were going to run into a bear, much less be mauled by one. But each did, and in each case things went bad, fast.

One consistent finding is that a large number of the victims had nothing with which to defend themselves when confronted by a bear. We also discovered that when the right deterrent is used correctly, situations often turn out better.

Gun or Spray?

Many Alaskans carry firearms for bear safety, and firearms have saved many from aggressive bear encounters that could have turned out quite differently. But those who do not own a gun, are not skilled at shooting under extreme pressure, or are hiking in areas of Alaska where firearms are prohibited—such as national parks—need another option. Bear spray—also called red pepper spray, bear pepper spray and bear mace—is about the only choice that is legal in national parks, and it is a good choice. Our study revealed that in 76 close encounters with black, brown and polar bears

People who do not own a gun, are not skilled at shooting under extreme pressure, or are in areas of Alaska where firearms are prohibited—such as national parks—need another option to keep bears at bay.



MARK EMERY

Pepper spray is not a repellant. Spraying it on property will not keep bears away—in fact, it may attract them and entice them to chew.

HOWIE GARBER/WANDERLUSTIMAGES.COM

in Alaska, bear spray was 92 percent effective in deterring them, and worked equally well in deterring all three species of bears. That's particularly impressive when you consider that in a separate study of 278 incidents, we found that firearms were only 67 percent effective in deterring bears.

Bear spray can convince bears that there are other places to go and better things to do than attack you. To make bear spray, manufacturers mix oleoresin capsicum (an oil solution containing capsaicin from peppers) in a spray can with a chemical that thins the oily resin so it will atomize. They then add a propellant that will eject the mix at up to 70 miles per hour. That's a powerful tool.

Gary Clutter, a big game hunter from Bozeman, Mont., encountered a grizzly face to face while hunting in Alaska a few years ago. He surprised a mother and cub in dense vegetation. Not surprisingly, the sow charged with intent to do harm.

"I caught the bear (with bear spray) full in the face when it was four feet away," he said. "It was like it hit a wall. The grizzly turned and ran so fast toward her cub she ran over it. Then cub and sow were gone. This worked exactly the way it was designed to work. The bears didn't die, and all I'm out is a can of pepper spray."

On June 22, 2006, two hikers in Denali National Park and Preserve surprised a female grizzly with two spring cubs only 10 feet away. The bear charged the hiker in front and retreated, but then charged the second hiker, who was close to the cubs. When interviewed, the second hiker said that the mother grizzly was about five feet away and appeared ready to lunge when she blasted the bear in the face with pepper spray. She said the bear promptly stopped, shook her head and retreated with the cubs.

In analyzing bear spray incidents from Alaska, we found that these stories are typical. In most cases, bear spray, when used properly, did exactly what manufacturers claimed it would: It stopped aggressive bears in their tracks.

Use it Correctly

At Katmai National Park and Preserve one cold, blustery day when the leaves had lost their color and fallen to the ground, bears—lots of them—were gathered along salmon streams to load up on calories to see them through their winter sleep. Katmai bears are habituated to humans and their trappings, such as airplanes, and will often investigate planes left unattended. One floatplane pilot, afraid curious bears might damage his fabric-covered aircraft and rubber-toed floats, liberally applied bear spray to the rubber bumpers and went off to sleep in a nearby lodge. The next morning he found that bears had chewed up the floats in spite of his efforts.

Even as I watched the pilot examining the damage, a bear walked over to where the spray had been dispensed and began vigorously rubbing and rolling in spray residues. I couldn't believe my eyes: Bears were attracted to the stuff. Indeed, tests have confirmed that bears are attracted to pepper spray residues.

In another case, a U.S. Fish and Wildlife Service employee was concerned that his newly constructed outhouse would attract bears that would destroy it with tooth and claw as they investigated. He applied bear spray to the base and corners of the building in the hope that the pungent concoction would repel curious bears. To his dismay the next morning, he found no piece larger than the palm of his hand after a bear—or bears—had smashed, clawed and chewed the new

Bears are attracted to the smell of bear spray—this one is rolling in spray residue left on the ground. Campers should clean the nozzle thoroughly after test-firing each can so as not to attract bears to their tents.

HOWARD SHERIDAN

Bear spray was 92 percent effective in deterring attacks and worked equally well in deterring all three species of bears. Firearms were only 67 percent effective in deterring bears.

construction to bits.

Our study analyzed 11 cases in which people applied bear spray to objects, and in all instances bears clawed and chewed them to varying degrees. But that doesn't mean the spray doesn't work. It simply means it was not used as intended, to be sprayed directly in the face of charging bears. No one should ever apply spray to objects to repel bears. Bear pepper spray is a deterrent, not a repellant.

Lessons Learned

Our bear attack research shows that in a number of instances, people have done the wrong thing in bear country and paid a price. These were tragic incidents to be sure; but others can learn from their mistakes.

First lesson: It's best to have more than one can of bear spray. In a number of attacks, people successfully defended themselves from an aggressive bear but expended all of their spray in the process. Those people were then left in the middle of the wilderness, facing a long walk out with no bear spray and knowing that there is at least one ticked-off bear in the area. Such was the case for Carl Ramm and Susan Alexander, who were hiking in Chugach State Park in June 2003. They were walking into the wind, in dense willows, near a loud, fast-running creek when they startled a grizzly that woofed before charging.

"By the time I could see her I was already pointing the pepper spray," Ramm said. "The bear and the willows (around it) turned orange from the spray. She stopped, turned around, and was gone in a flash."

Ramm said it all happened in no more than six seconds.

"The bear was certainly within 20 feet by then. There wasn't a big margin of error. It was a very serious screw-up for us to have gotten into a situation with so little room for error and such serious consequences."

The bear encounter, he added, ruined the rest of the outing.

"We both should have been carrying pepper spray," he said. "Not that we should have both been using it then, definitely not. One was enough. But with another full canister we would have felt fine about staying back there for the full time we'd planned. Instead, we hiked in another four miles or so, spent the night and packed back out the next day."

Don't go cheap on bear protection. Carry a back-up can if you are embarking on an extended camping trip or hike, and if you are in a group, be sure everyone has a can.

Second lesson: Keep it accessible. We reviewed several incidents in which bear spray was stored in a backpack, inside a coat pocket or sealed in a plastic bag, rendering it useless. In many attacks, people have had only a split second to respond to an angry bear. This leaves no time for digging through a pack to find the spray or for removing the plastic wrapper or bag in which it has been sealed.

Most manufacturers sell a small holster that can be hung on your belt or backpack for ready access. When approaching an area where there is a high likelihood of encountering a bear, have the spray can out of the holster and in your hand, ready to use.

Third lesson: Carry only full cans. In nearly one-quarter of the bear encounters we studied, the people needed to spray bears multiple times in order to drive them off. Conserving bear spray and paying attention to the total volume in the can should be concerns. We've encountered people carrying what appeared to be very old cans of bear spray that were partially full. Had Ramm and Alexander been toting one of those cans, their encounter might have turned out quite differently.

Manufacturers recommend you test-spray a can to ensure it is pressurized and will work when needed. Do this in a well-ventilated area far from people and test it for only a very short burst. Beyond that initial test, don't spray it again. You will want all you can have if a bear encounter unfolds. Carefully clean the residue from the nozzle before bringing the canister into a tent, to avoid attracting bears. And discard a can when its contents fall below 90 percent of the original volume as determined by weight.

There is no substitute for conducting yourself appropriately in bear country: Be alert at all times for bear signs, make noise, secure all food and keep a clean camp. Guns and bear spray should always be a last resort for dealing with those extremely rare situations in which your efforts to avoid a close encounter with a bear have failed. However, you can be confident that, when push comes to shove, a few ounces of bear spray can persuade a half-ton of bear to find something else to do. ■

Tom S. Smith, Ph.D., works at Brigham Young University and has studied bear-human conflicts for the past 16 years. Stephen Herrero, Ph.D., is professor emeritus at the University of Calgary, Alberta, Canada, and has devoted the past 34 years of his life to studying bear-human conflicts. His book *Bear Attacks: Their Causes and Avoidance* is considered the authority on bear attacks. Terry D. DeBruyn, Ph.D., is a regional wildlife biologist for the National Park Service in Alaska. He has studied bears for the past 18 years and published *Walking with Bears* about his years of bear study on the Upper Peninsula of Michigan.