

CAUGHT IN A TORNADO

WHEN THUNDER CRACKED, LARRY Krznarich and his wife were lounging at their campsite on an island in a northern Wisconsin lake. It was July 2010. Krznarich turned on his weather radio and heard an urgent message from the National Weather Service: "Severe storm hitting the Turtle Flambeau Flowage. Take cover immediately."

Krznarich sprinted to warn another couple and raced back with them. All four huddled under a picnic table. Within 30 seconds, the first 60-foot tree fell. Four trees landed on the table; Krznarich was crushed by a red pine; his pelvis was fractured in three places.

It was an EF1 tornado, with winds up to 110 miles an hour. "The destruction was unbelievable," Krznarich says. "Big trees were shattering and tumbling like tinker toys all around us." He says he and the others would be dead if they hadn't heard the radio warning and used the table as a shield.



SURVIVAL SKILLS

You can't outrun a twister, so if you're in the open, seek the lowest spot around, like a ditch, says Paul Auerbach, M.D. an emergency medicine physician with Stanford University. Nothing suitable? You might be okay in your car.

"A car should be able to withstand a certain amount of wind, but it can be lifted and tossed and penetrated by flying objects," says Dr. Auerbach. An EF1 or EF2 twister will leave most cars intact, but an EF3 or EF4 will move most vehicles, a new study suggests.







A BEAR ATTACK

a bear was nearby. He was hunting with 20 friends and 20 dogs in North Garolina's Black Mountains last December when the dogs started barking. Usually that meant a bear had climbed a tree, but nothing was up in the branches. By the time he saw the 390-pound black bear charging at him, it was 10 feet away. He raised his .44 Thompson Genter Contender and fired. The bullet hit the bear and made it angrier. Before Wilson could reload, the bear was on him.

"It knocked me plum down the hill, got me in my neck with one paw, and nearly got my jugular vein," says Wilson. "I had to get 26 stitches. The doctor told me if it'd been a half inch deeper, I'd have had about five minutes to live." The bear ran away. Wilson's hunting partners bandaged his neck and rushed him to the nearest emergency room.



SURVIVAL SKILLS

If you encounter a bear, make noise to scare it. If a grizzly attacks you, curl up and play dead, Dr. Auerbach says. With a black bear, do the opposite: Push out your chest and make yourself tall. Avoid eye contact with polar bears.



A BIKE CRASH



and newborn daughter home from the hospital when he went for a mountain-bike ride with a friend in 2004. About a mile from his home in Frisco, Golorado, Swezy lost control of his front wheel, vaulted over his handlebar, and struck a boulder, shattering his C4 vertebra. If he hadn't been wearing a helmet, Swezy says, "there's no question in my mind that I would've died."

As Swezy lay temporarily paralyzed, he focused on his daughter and wife. He used his cellphone to give rescuers his precise location while his friend held the receiver.

Three and a half hours after his crash, Swezy regained feeling in his toes. Doctors fused his C3, C4, and C5 vertebrae, which restricts his movement—but he still rides.



SURVIVAL SKILLS

Most crashes happen so quickly that it's impossible to react. If you can, try to curl up in a ball to protect your neck and spine. This is when a helmet can save you. Find our favorites on page 57.

LOST IN THE WILD

IN AUGUST 2014, CALIFORNIA MAN MIKE VILHAUER

headed into the High Sierra to camp and fish for trout. After little luck with lures, he went looking for grasshoppers to use as bait. He headed downstream from his campsite at Lower Sunset Lake carrying a pink butterfly net, a small knife, a compass watch, and a map of the area.

After a few hours, Vilhauer tried to find his way back. He climbed a ridge to get a view of the lake, but it wasn't where his map showed it. So began a five-day odyssey that would involve 300 search-and-rescue personnel, plus dogs, horses, and helicopters. Vilhauer didn't sleep or eat for those five days. He stared down a wolverine and a bear. When he heard a helicopter on day five, he remembered a trick from the movie *Castaway* and built a 10-by-15-foot H-E-L-P sign out of tree branches. The pilot saw it, and a rescue team arrived soon after. Vilhauer found out later that his compass was off by 88 degrees.



SURVIVAL SKILLS

Raise your survival odds before you leave: Prep for any trek or trip by packing a map, compass, sunglasses, sunscreen, extra clothes, an LED headlamp or flashlight, first-aid kit, fire starter, matches, knife a Mylar emergency blanket, and extra food and water, says Tom Vogl, outdoors man and CEO of The Mountaineers. He keeps these supplies in a stuff sack so he can grab it and go.



THE RESCUER



Christopher Van Tilburg, M.D., of the Hood River Crag Rats, responds to a dozen search-and-rescue calls every year. At 5'7" and 145 pounds, Dr. Van Tilburg, 50, doesn't look like a mountain man. But when a mission can involve 15 miles of night hiking while managing a 200pound victim, his build is an advantage. So is a six-day-a-week training regimen that includes biking, skiing, trail running, and kitesurfing. 'The universal trait that connects us," he says, "is that everybody on our team is really fit.







A FLASH FLOOD IN A SLOT CANYON

T WAS SUPPOSED TO BE A GETaway. In 2010, David Frankhouser, Jason Fico, and Joe Cain went to Zion National Park to rappel down Spry Canyon. A storm hit and water rushed through the 3-foot-wide slot where forecast for not only they stood. They braced their legs against the walls as debris and foamy brown water pushed them toward a cliff.

The water rose until they had no choice: Let go or drown. All three shot off the cliff. Cain shattered his tailbone and was pulled to safety by onlookers. Then Frankhouser and Fico were thrust over a second cliff. Frankhouser didn't break a bone. Fico's femur punched a hole in his hip when he landed. Park rescuers evacuated the two injured men by helicopter; Frankhouser hiked out. "Before the flood, it was bone-dry," Frankhouser says.



SURVIVAL SKILLS

Before you venture into a slot canyon, check the weather your area but also a few miles upstream. "A storm hits miles away and then the water rushes down and you have no idea what is coming," says Dr. Auerbach. During your climb if you spot unusual debris muddy water, or rising water levels, seek high ground immediately. "Get as high up a bank as you can and as soon as possible," Dr. Auerbach says.

CAST



DARRELL AND HEATHER EMANUELSON HAD been looking forward to the first outing in their new Blue Jay sailboat. Last August they loaded up their kids, ages 7 and 4, and set sail toward Long Island Sound. It wasn't long before the waves picked up. Darrell tried to tack into the 3-foot chop but water crashed into the boat, filling the hull. "We were in over our heads," he says.

Eventually the boat capsized, tossing all four into the open water. Everyone had life jackets, but the quarter-mile swim to land might as well have been 10; the current and waves were too strong. "I had our son and my wife had our daughter, but trying to swim while pulling kids is nearly impossible," Emanuelson says. They treaded water and then decided that Heather, who'd been a lifeguard back in high school, should try to swim to land and fetch help. After about an hour and a half of floating and kicking toward shore, Emanuelson flagged down a passing fishing boat. He and the kids, tired and cold, got to shore just as the rescue boats started searching for them. Heather had caught a ride during her swim and alerted authorities.



SURVIVAL SKILLS

Have a life jacket designed for sailing, made to keep you afloat in an upright position, Dr. Auerbach says. And bring a waterproof two-way radio. If you capsize alone, bring your knees in, wrap your arms around your legs, and lean back to float. In a group, form a circle with your arms around each other like a team huddle. Then bring your legs to the center.

THE TOUGHEST SAVE

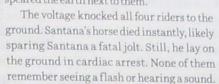


When a cliff jumper leaped from an 80-foot waterfall along Oregon's Eagle Creek Trail and broke his back upon landing, Dr. Van Tilburg was the first rescuer on the scene. He swam 40 feet through the plunge

pool's 50-degree water to reach the victim. Dr. Van Tilburg immobilized the man's spine with towels and clothing and waited, shivering, until his colleagues arrived with a floating stretcher. The rescue team swam the man back across the pool and walked him down the trail to a waiting ambulance. "I think he eventually did fine," Dr. Van Tilburg says. "We don't often get the follow-up." More than a decade later, the scenario still ranks as one of the most com-







By chance, an off-duty paramedic saw the strike from his porch and resuscitated Santana with CPR. Santana suffered a stroke and traumatic brain injury from the lightning strike, and spent four and a half months in the hospital. Nearly a year later, he is learning how to walk all over again.



SURVIVAL SKILLS

During a storm with ightning, squat down on the balls of your feet to lower your profile and minimize our contact with the ground. Or seek shelter in a fully enclosed hard top vehicle or a building says Dr. Auerbach If someone else is hit? Try to help the victim eathe, Lightning strike victims often appear dead and get temporary paralysis that stops breathing for up to 30 minutes. Call 911 and start CPR. Push hard and fast in the center of the victim's chest 100 to 120 times a minute until help arrives.

THE JAWS OF A GATOR

ON BLACK FRIDAY LAST NOVEMBER, KRIT Krutchaiyan and his friend Roberto Gautier went duck hunting in the Everglades. Pushing their kayaks across a marsh with sawgrass up to their eyes, Krutchaiyan kicked what looked like a log. It turned out to be a 10-foot alligator, which then clamped on his thigh. He beat the gator's head with his paddle; it let go and

then snapped again. Krutchaiyan, bleeding from a wound under his waders, tried to backpedal but fell as the alligator rolled three times. Then the gator started swimming back toward him, mouth open.

Gautier shoved a kayak between his friend and the reptile and they scrambled out of the water. Krutchaiyan was airlifted to a hospital 40 minutes away. The 50-year-old used his belt as a tourniquet and slowed his breathing to slow his heart rate and reduce bloodflow.



SURVIVAL SKILLS

Pack a tourniquet, like the SOF Tactical Tourniquet (\$27, tacmedsolutions. com) and a blood-stopping wound dressing, such as QuikClot Gauze (\$20, adventuremedicalkits.com). They work better than jerry-rigged versions.





