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Would You Survive?

The downed plane, the busted ATV, the wrong turn on the trail--each can land you in a do-or-die test of will and know-how. Here's the good news: You can make it.

BY JIM GORMAN

Cessna photographs by Gregg Segal

Published in the August, 2005 issue.



Good strategies pictured here: staying with the plane and signaling for help with the red X taped on the wing.

DOWN BUT NOT OUT: PM TRAILERED A WRECKED CESSNA TO SOUTHERN CALIFORNIA'S SAN BERNARDINO NATIONAL FOREST TO CREATE THIS SURVIVAL SCENARIO.

Scott Thurner was in the homestretch of a flight from Nevada to Colorado last February when his Cessna 172 apparently iced up in rough weather before plunging into a snowy mountain. Thurner survived with minor injuries--but he was 15 rugged miles from the nearest main road, and had violated protocol and common sense by failing to file a flight plan. Now, the amateur pilot faced the ultimate test of his ingenuity and grit.

In a similar situation, what would you do? Would you have the right stuff to get out alive? If you followed the advice contained in hoary survival guidebooks, maybe not. Forget notions of jigging fish and building elaborate log structures. There's a new, more practical set of priorities, say experts, derived from what's being taught at the leading edge of military survival schools. "Our focus now is on rescue, not long-term survival training," says Caleb Randles, an instructor at the Air Force Survival School at Fair-child AFB in Washington state.

What works for the military makes sense for the millions of hunters, hikers, snowmo-bilers and others who explore the outdoors every year. "Statistically, search and rescue personnel will find you within the first three days, dead or alive," says Cody Lundin, a survival trainer and the author of *98.6 Degrees: The Art of Keeping Your Ass Alive!*

In the following pages, PM dissects case studies, compiles lists of always-bring-it gear, and constructs an eight-step plan for making it through those first critical 72 hours. As for Scott Thurner, he's alive today and still flying. To make it through the night, he dug a snow cave and used the plane's door as a roof. Then he found the emergency beacon and began transmitting. In other words, he stayed alive and took action to help rescuers find him. And they did--in just 24 hours.

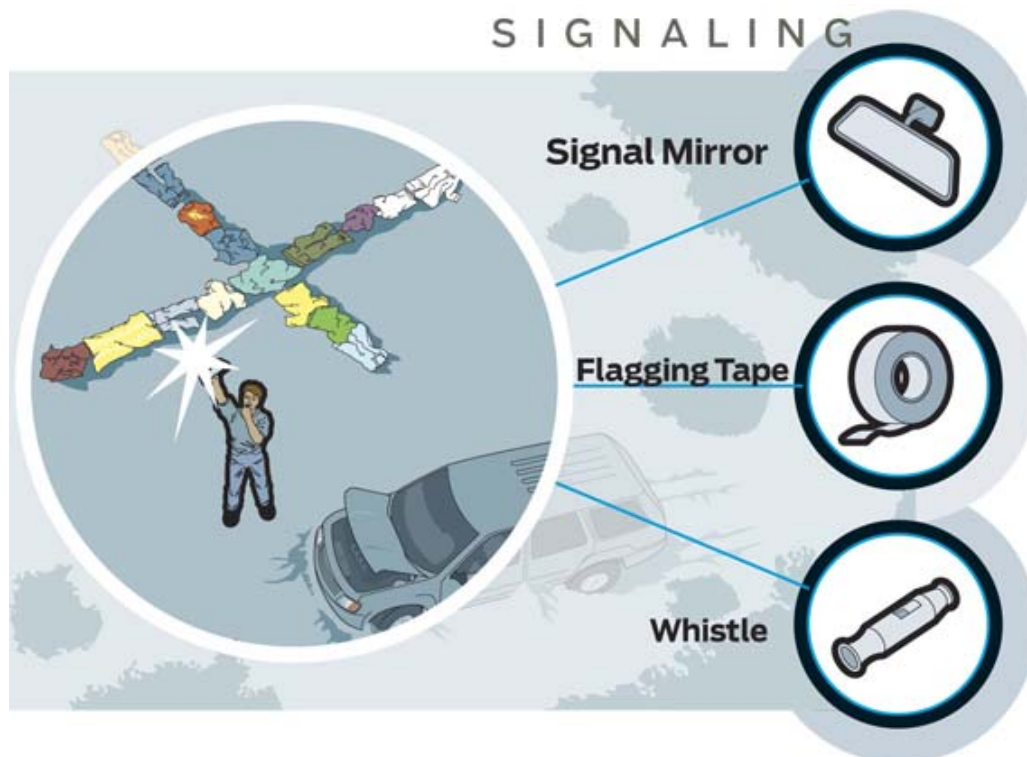


Diagram by Flying-Chilli.com

Eight steps for coming back Alive

1 / LEAVE A DETAILED PLAN with someone on the home front before any backcountry trip, even if it's a brief mountain bike ride. Spell out where you're going, what trailhead you'll use and what car you'll drive. Better yet, leave a copy of a 7.5-minute topographical map with your route highlighted. Pin down when you will return. On a multiday trip, give yourself 3 to 6 hours leeway to allow for delays--but tell your buddy back home that if you don't call in by the deadline, he's to notify the nearest search and rescue agency.

2 / BRING THE RIGHT CLOTHES for the environment. "Knowing how to dress properly is an essential survival technique," says Cody Lundin, an author and director of the Aboriginal Living Skills School in Prescott, Ariz. In the mountains in summer, that means toting wool or fleece hat and gloves, moisture-wicking long underwear, a fleece jacket, and windproof and waterproof jacket and pants. You may never wear any item in this ensemble, but they add up to an insurance policy.

It's a good rule of thumb that cotton kills by becoming damp and chilling the skin. But loose-fitting light-colored cotton clothing works well in the desert in summer, repelling the sun and trapping sweat that helps cool your body. Wear pants (not shorts); a T-shirt; a long-sleeved, collared, button-up shirt; and a wide-brimmed hat.

MYTH: TRAPPING DINNER

Animal snares? Leave all that to Grizzly Adams. "Search and rescue rarely finds a victim whose cause of death was starvation," says survival instructor David Arama.

WHAT WORKS: Get your priorities straight. The typical person can live for weeks off body fat. "You want to stay warm, avoid injury, find water and signal for rescue," Arama says.



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Set design/props by Nick Tortorici, photo by Doug Steley/Alamy

LESSON: STICKING TO THE PLAN

CASE STUDY /// Back-road Breakdown

Who: Hunter Terry Peterson, driving a pickup through Nevada's high desert.

What happened: Bad weather turned Peterson back from his destination, a game-management parcel called Area 22.

Crucial decision: Changing plans. On Peterson's way home, the skies briefly cleared and he decided to hunt at another spot, Area 13. The weather worsened and his vehicle became immobilized.

What happened next: Peterson's wife called authorities, prompting a weeklong search--in Area 22. After two nights Peterson decided to set out in lightweight boots through wet snow toward a cabin he'd seen. He arrived two days later, his feet crippled by frostbite. Peterson discovered food and fuel in the cabin, but eventually those ran out. He was found by the cabin's owners after a total of 17 days; he survived--barely--but lost all 10 toes.

Expert analysis: *"He was just plain lucky he made it through alive," says Don Davis, owner of Colorado's Wilderness Survival Institute. Peterson broke backcountry taboos by traveling alone with scant gear. But his great mistake was the breakdown in communication. Had his wife known he was in Area 13, he could have been rescued within a day or two.*

3 / STAY FOUND by carrying a map and compass (even if you use GPS) and knowing how to use them in tandem. "A common mistake is to take out the map after becoming lost. Too late," says Don Davis, a search and rescue manager in Larimer County, Colo., and owner of the Wilderness Survival Institute. "Keep the map in hand or close at hand while hiking, so you can continuously plot your location." Here are more tips for keeping yourself from becoming lost.

When the terrain ahead doesn't match map features, stop moving. "A gut feeling that something is wrong is usually

correct," Davis says. Backtrack to the last point at which the map and surrounding terrain were in agreement.

Locate your starting point on the map, then rotate the map in your hands until it conforms to the landscape. Keep turning the map as you travel, even when that puts the map upside down or sideways. To get a rough fix on your location, triangulate by using three prominent landmarks. You are standing where the three sightlines intersect on the map.

4 / REMAIN IN ONE PLACE IF YOU'RE IN TROUBLE Think of an automobile--even one mired in snow or mud--as a survival ark. It is windproof, waterproof and an excellent source of insulation. (You can tear up the seat cushions.) A vehicle features an audible signaling device--a horn--and is far more visible from the air than a person walking. (Put the hood up in the international sign for distress.)

While staying put is a critical strategy for hikers and pilots as well as off-road drivers, it's one of the hardest to follow. Rescue logs are filled with cases in which victims' abandoned planes and cars were found days before their corpses. In a review of 800 lost-person reports in Nova Scotia, only twice did victims intentionally remain in place. "The fight-or-flight reflex is strong," says Peter Kummerfeldt, the owner of OutdoorSafe, a Colorado survival training school. "When it kicks in, it makes a bad situation worse."

LIFESAVING GEAR

A small number of essentials can provide the wherewithal to get yourself out of trouble if the need arises. Below are two versions of the survival kit, depending on who's carrying it--you or your truck.

OFF-ROAD DRIVING

- Blanket or sleeping bag
- Brake fluid
- Duct tape
- Engine and gear oil (80W90)
- Epoxy
- Fan belt
- Fire extinguisher
- First-aid kit
- Gloves
- Heavy-duty tow strap
- Multitool
- Tire repair kit
- 12-volt air compressor
- Water and food

HIKING

- First-aid kit
- Knife
- Metal match
- Orange flagging tape (for signaling)
- Penlite (LED-type)
- Plastic 55-gal. drum liner (crawl inside for instant shelter)
- Signal mirror
- Space blanket
- Waterproof match cases (one with Vaseline-soaked cotton balls, the other with stormproof matches)
- Whistle



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Photos by Burcu Avsar

S H E L T E R

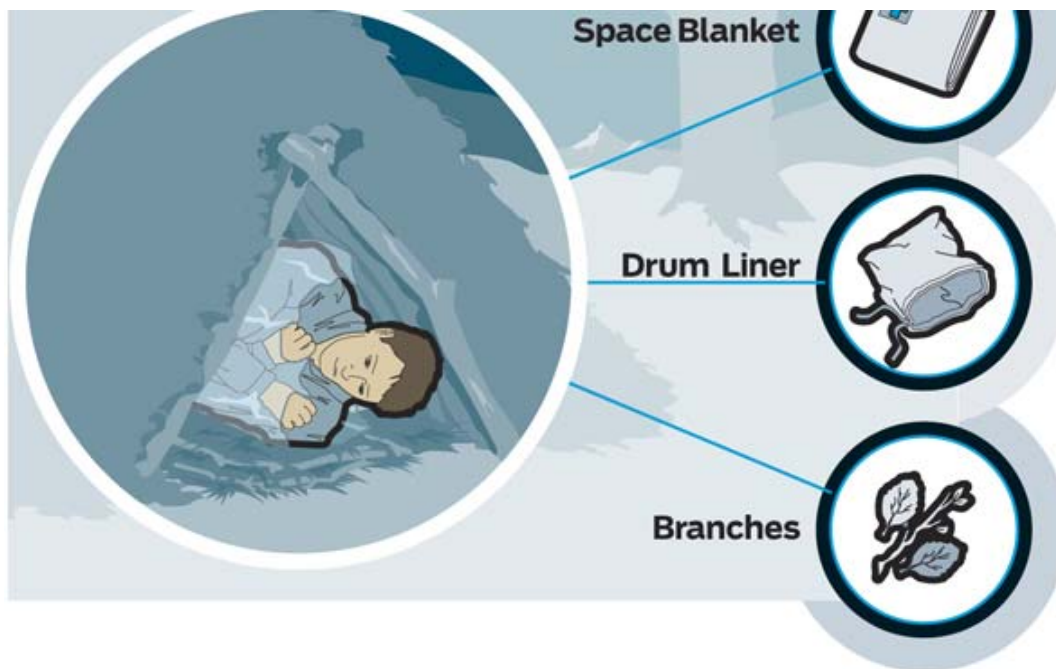


Illustration by Flying-Chilli.com

5 / STAY WARM Survival instructors talk about the "Rule of 3s": You can live 3 minutes without oxygen, 3 hours without warmth, 3 days without water, 3 weeks without food. "You'll die of hypothermia before you die of thirst," says Lundin. If you're with your car, you can reduce the area the heater needs to warm by partitioning off the back seat using plastic trash bags or a space blanket and duct tape. Run the engine 10 minutes each hour.

If you're in the backcountry, skip the elaborate Daniel Boone-style log cabin and instead crawl inside a 55-gal. plastic sack to sleep. (In the desert, stay cool during the day by rigging the bag as a sunshade.) After making it through the first night, you can improve your situation by constructing a simple debris hut. Lean a long pole in the crook of a tree, with the other end resting on the ground. Create rafters by laying branches against the pole at intervals, and pile more boughs, leaves and duff on top. The lower, closed end should face into the wind. Build a small fire near the open end, and sleep inside the plastic sack. Build an insulating floor out of evergreen boughs or by piling dried leaves, grass and moss atop a bed of sticks. The layer should be at least 6 in. thick.

Finally, if you have a space blanket, use it to line the interior of your shelter, suggests David Arama, director of WSC Survival School in Kitchener, Ontario. "With the shiny side of the blanket facing inward, you'll reflect radiant heat from your body and from the fire," he says.

6 / SIGNAL FOR HELP in the most obnoxious ways possible. Find an area visible from the air and create a giant letter "X" using rocks, newspaper or spare clothing. In snow, use evergreen boughs. Lay out a colorful tarp or tent. Flash aircraft using a signaling mirror, a music CD or your car's rearview mirror. Hang clothing from branches. Blow a whistle, bang pots or blow the car horn repeatedly in a pattern of threes. The more of these you can do simultaneously, the better. Really desperate? Remove a car tire and torch it using siphoned gasoline. "Contrast and movement are what catch the eye of rescuers," says Lundin.

MYTH: THE SOLAR STILL

Old-school advice for getting water in a desert involves a hole in the sand, a sheet of plastic, and the drip, drip, drip of condensation into a pot. "It's crap," Lundin says. "You sweat away more water building the still than you get back."

WHAT WORKS: Make a transpiration bag by placing a clear plastic bag on any lush, leafy branch and tying it off. You'll net a few ounces of water each day.





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Photo by Michael Quinn/Grand Canyon/NPS

LESSON: RESPECT FOR DANGER

CASE STUDY /// **Canyon Missteps**

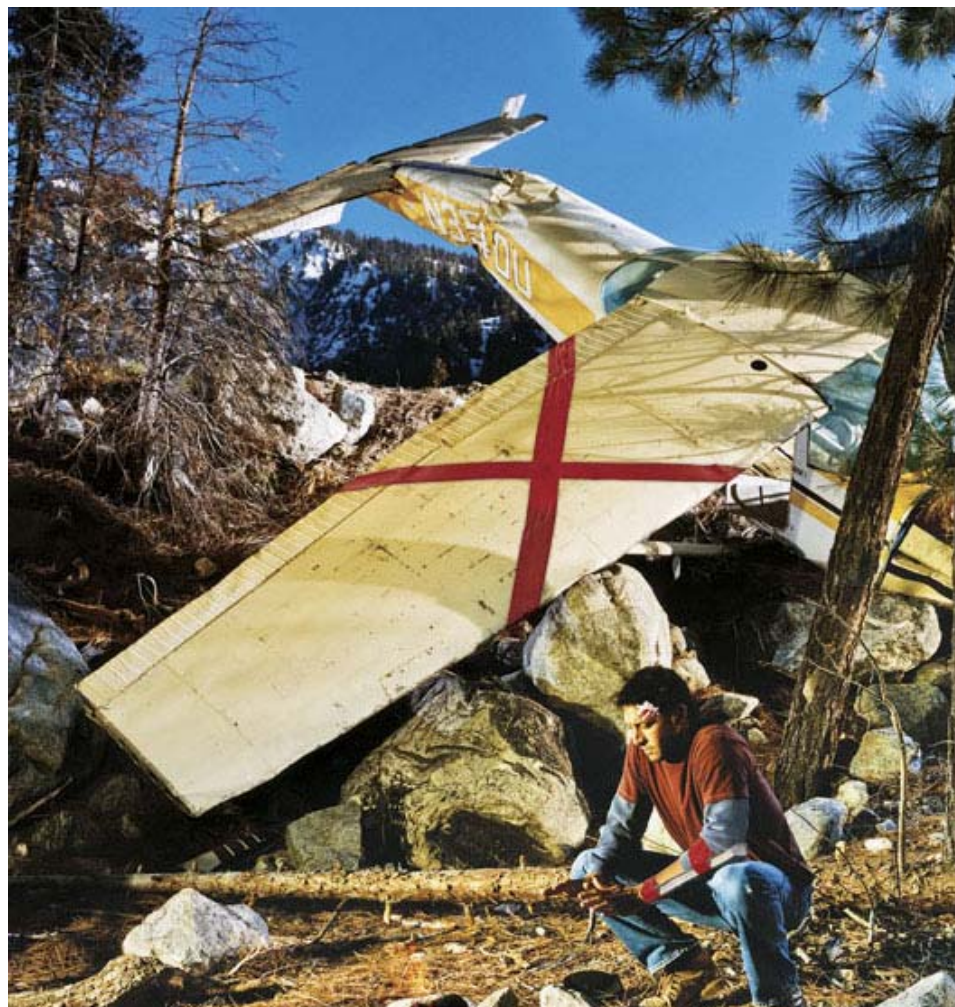
Who: Paul and Karen Stryker, 26-year-old newbie hikers in the Grand Canyon, during the blast-furnace days of June.

What happened: Embarking on a tough overnight hike they estimated at 18 miles (the true distance was 29 miles), the couple carried 6 quarts of water apiece.

Crucial decision: Underestimating the danger. After quickly finishing half their water, the Strykers came across a small pool. They rejected it, Karen later said, because tadpoles were swimming in it.

What happened next: By nightfall, Paul was ill. The next day, with his condition worsening, they left the trail for what seemed to be a shortcut to safety. Their water gone, Paul became semiconscious and died that afternoon, probably of heatstroke. The next morning, Karen found her way to an emergency phone at Phantom Ranch at the bottom of the canyon.

Expert analysis: *"Dehydration and heat killed Paul Stryker, but the real reason was their failure to abandon a preconceived vacation scenario," Cody Lundin says. A pretrip call to a ranger could have led the Strykers to modify their plans. Leaving the trail ensured that no other hikers would find them. And failing to refill their empty bottles was a tragic mistake. "A doctor can fix giardia," says Peter Kummerfeldt. "But he can't fix dead."*





FIRE: Builds morale, keeps you in one place, signals rescuers--and, yes, it even helps keep you warm.

7 / BUILD A FIRE It "gives light, warmth, a morale boost, a signal and a way to cook," Kummerfeldt says. A fire will also keep you in one place, which helps rescuers.

For a surefire blaze, tuck a cotton ball soaked in petroleum jelly beneath a small pile of twigs. Each ball burns for more than 5 minutes. (These are elements of a survival kit; see "Lifesaving Gear," page 3 here at PM.com, page 65 in POPULAR MECHANICS' August issue.) Before torching the cotton ball, collect enough wood to get a fire started and keep it going. Sort the wood into three piles according to size: tinder, kindling and fuel logs. Birch bark, cedar bark and dead evergreen twigs make excellent tinder. Standing deadwood is the driest source of kindling.

On cold nights, heat several stones on the periphery of a fire. Don't use limestone or saturated rocks from a streambed: They can explode. "When the stones are barely hot to the touch, curl up with them tucked inside your clothing but not next to your skin," says survival instructor David Arama. Caution: Overly hot rocks can melt synthetic outdoor wear.

8 / FIND WATER--IF NECESSARY In the vast majority of searches, the victim is found before dehydration becomes a serious health threat. If supplies are running low, avoid the urge to ration it for later. "It's better to drink the water you have to fend off dehydration--and the irrational thinking that goes with it--as long as possible," Kummerfeldt says. If you do need water, you can follow prominent drainages downhill in most environments. And don't be overly fastidious about water purity; dehydration is a more pressing concern than an intestinal infection that might show up days after you've been rescued. Finally, avoid searching for water far from your car or camp, where you're most likely to be found.

MYTH: BOW AND DRILL FIRE

Has anyone ever lit a fire using a bow, spindle, fireboard and elbow grease? Sure. Can you? Don't bet on it.

WHAT WORKS: Carry a metal match for emergencies. Pare shavings from the block of magnesium, and spark them by scratching the flint surface with a knife. The 5400 F blaze ignites even damp tinder.



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Photo by Alamy

LESSON: STAYING CALM, STAYING PUT CASE STUDY /// High Sierra Blizzard

Who: Frank Horath, Paul Bargetto and their two sons camping high in the Sierra Nevada in mid-October.

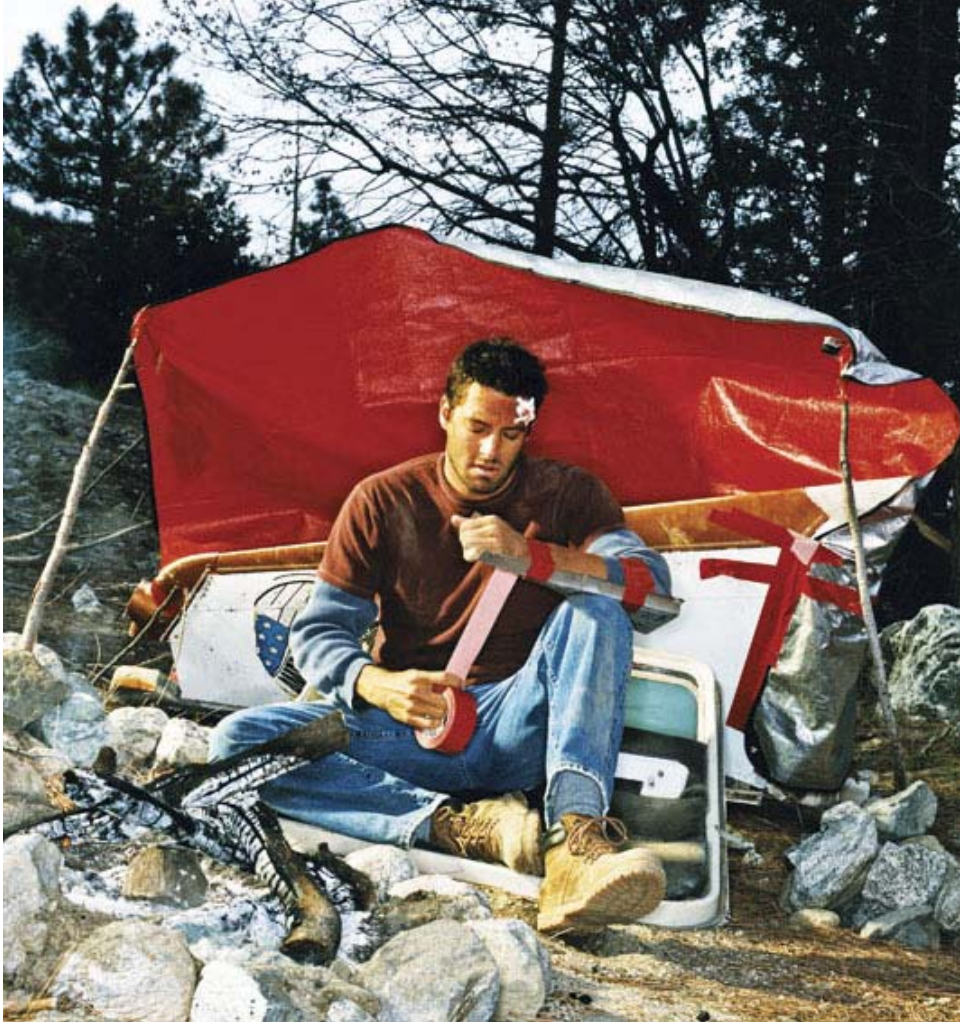
What happened: Sunny weather gave way to a surprise storm that buried the mountains beneath 4 ft. of snow.

Crucial decision: Staying put. The men scouted the trail back to the car, but decided that forging ahead was a bad risk. "I could make out the trail here and there, but I kept losing it in the snow," Bargetto says. Further, the group lacked snowworthy footwear and clothing.

What happened next: The four crawled into a single tent for warmth and tried to keep their spirits up while the storm raged. When it cleared after four days, the men laid out an orange tarp and signaled aircraft with shiny objects. Searchers in a CH-47 Chinook helicopter spotted them within hours.

Expert analysis: "The group repeatedly made good decisions to save their lives," survival instructor David Arama says. The men didn't have adequate clothing, but otherwise they aced their survival test. They had

left an itinerary behind, so rescuers knew where to look. They took the safest course by choosing not to hike into the blizzard. They crowded together for warmth, maintained group cohesion and signaled for help effectively.



5 MacGyver Tricks

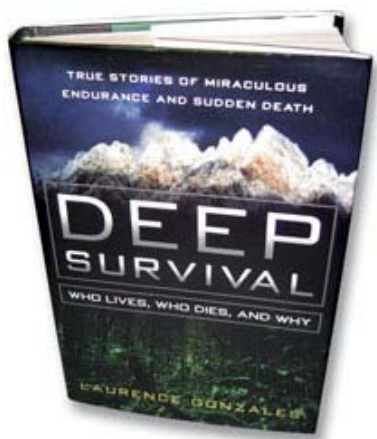
Thread: Dental floss has superb tensile strength. Use it to sew a blown shoulder strap on a backpack or lash a garbage sack to the skeleton of an improvised shelter to form the roof.

Fire Starter: Connect fine-grade steel wool to the positive and negative terminals of a 9-volt battery to create a glowing fire starter. (A pair of 6-volt, AA batteries held in a series will do.)

Signal Mirror: Springsteen to the rescue. You can signal an aircraft flying between you and the sun using a CD. Line up the aircraft in the hole and flash, ideally in a series of three.

Water Jug: Got a condom aging in your wallet? In a pinch, it can carry a gallon of water. (Unlubricated tastes best.) To make it easier to carry, sling the improvised water bag in a bandana.

Duct Tape: Prevents blisters; splints bones; folds into emergency sunglasses; yanks cactus spines; burns as a fire starter.



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The Will to Live

In *Deep Survival*, author Laurence Gonzales examines cases of survival in the wild to determine why some people live, while others die.

Q. How much does survival depend on luck and how much on personal factors?

A. There's always an element of luck, but most of survival is psychological. The more connected you are to people you care about, or a church or activities you love, the greater the chances for survival. Time and again people get through incredible hardships with nothing but the will to live, while others die with a backpack or liferaft full of all the things necessary to save themselves.

Q. "The will to live" sounds like a vague, even old-fashioned, concept. How real is it?

A. In fact, it's a very uniform reaction that at some point a survivor has said to himself, "I'm not going to die. This isn't going to happen." They get a firm resolve to make it through.

Q. Are there key mental strategies for survival?

A. Yes. The first involves perceiving what's going on in your environment and believing the evidence that you're in trouble. Then, think calmly, make a plan to save yourself and take action. The biggest enemy is the question, "Why me?" The right question to ask is, "How am I going to make the most of my situation?"

Survival Facts

50,000: Estimated number of wilderness search and rescue (SAR) missions in the United States each year.

36 percent: Portion of SAR operations launched to help people who have become lost.

40 percent: Portion of SAR missions in national parks called out to tend to hikers.

10 hours: Duration of the average search.

1 hour: Survival time for a person immersed in 40-degree water.

15 minutes: Average survival time for victims buried by an avalanche; asphyxiation is the main cause of death.

\$32,000: Average daily cost to operate a full-scale search and rescue operation.

53 percent: Portion of avalanche fatalities in the United States who were snowmobilers.

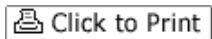
80 percent: Chance of surviving a lightning strike.

Men, 20 to 25 years old: Group most likely to be SAR targets, followed closely by men between 50 and 60 years of age.

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