

# The WORST-CASE SCENARIO ALMANAC



## GREAT OUTDOORS

By David Borgenicht & Trey Popp  
*Author of The Worst-Case Scenario Survival Handbook*



THE WORST-CASE SCENARIO  
ALMANAC  
**GREAT OUTDOORS**

The  
WORST-CASE SCENARIO  
ALMANAC  
GREAT OUTDOORS

By David Borgenicht  
& Trey Popp

Illustrations by Brenda Brown



CHRONICLE BOOKS

SAN FRANCISCO

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# WARNING

When a life is imperiled or a dire situation is at hand, safe alternatives may not exist. To deal with the worst-case scenarios presented in this book, we highly recommend—insist, actually—that the best course of action is to consult a professionally trained expert. But because highly trained professionals may not always be available when the safety or sanity of individuals is at risk, we have asked experts on various subjects to describe the techniques they might employ in these emergency situations. THE PUBLISHER, AUTHORS, AND EXPERTS DISCLAIM ANY LIABILITY from any injury that may result from the use, proper or improper, of the information contained in this book. All the answers in this book come from experts in the situation at hand, but we do not guarantee that the information contained herein is complete, safe, or accurate, nor should it be considered a substitute for your good judgment or common sense. Nothing in this book should be construed or interpreted to infringe on the rights of other persons or to violate criminal statutes; we urge you to obey all laws and respect Mother Nature.

—The Authors

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"Men wanted for hazardous journey. Low wages,  
bitter cold, long hours of complete darkness. Safe return  
doubtful. Honour and recognition in event of success."



—Ernest Shackleton, advertisement for crew  
for 1914 Antarctic expedition

# INTRODUCTION

Most of us think of the great outdoors as a place we can escape to—a respite from the so-called real world. We go outdoors for solitude, for exercise, to commune with nature—to see stars and wildflowers, to breathe clean air, to take a walk in the woods. But the reality of the great outdoors can be somewhat different. From time to time, as history reveals, the great outdoors is a place you need to escape *from*. As Kurt Vonnegut once wrote, “If people think nature is their friend, then they sure don’t need an enemy.”

And it’s not just wild animals that are the problem. It’s also the weather. The rough terrain. The heat *and* the humidity. The rockslides and avalanches and floods. It’s even the manhole covers and the pigeons in the city. It is a dangerous world outside your front door, no matter what environment you’re setting off into.

But it’s even more dangerous if you don’t know what you’re headed for. And that’s where this book comes in. The only way you’ll be truly prepared to leave the safety of your domicile and set a course, intentionally or unintentionally, for adventure is to learn everything you can about what you might encounter out there. Using this handy almanac, you’ll be armed with the skills and information you need to make it back alive from the mountains, the arctic, the forest, the tropics, the desert, the ocean, and the urban and suburban jungles. You’ll learn how to run rivers, survive lightning storms, build shelters, fend off animals, even keep beverages cool in the desert.



*The Worst-Case Scenario Almanac: Great Outdoors* also gives you additional equipment for your journey—the facts, statistics, charts, diagrams, and inspiring true tales of survival that will provide you with the information and stamina to avoid the pitfalls that befell those who came before you.

You'll be amazed at the stories within that demonstrate the power of the human will to survive: hiker James Scott, who survived for forty days without food when lost in a Himalayan blizzard; Aron Ralston, who amputated his own arm to escape from under a boulder; and seven fishermen who survived when their boat was capsized by a whale.

You'll be shocked to discover that many common survival tips are based on *myth* rather than *fact*. We've also provided you with fascinating insights into the worst nature has to offer—the most dangerous places, the most venomous snakes of the tropics, the times and temperatures that cause frostbite, the depths of the deepest ocean chasms. Our hope is that you'll be better able to embrace the planet's beauty and still emerge intact (or at least alive) to head for home.

Although this almanac is chock-full of information and survival advice, it is portable enough to fit into your rucksack, your harness, or your kayak. Like nature itself, it is exciting, instructive, and delightful—but our book is much safer.

And in a pinch, it can always be used as kindling—or toilet paper.

—The Authors

CHAPTER I  
MOUNTAINS AND CANYONS

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CLIFFHANGER

## WORST AVALANCHES IN HISTORY

Location	Year	Casualties
Swiss Alps	218 BC	18,000 soldiers in Hannibal's army, about 2,000 horses and elephants
Disentis, Switzerland	1459	16 people, the 665-year-old Church of St. Placidus
Splügen Pass, French Alps	1800	56 soldiers in Napoleon Bonaparte's army
Wellington, Washington	1910	96 people, several train cars
Italian/Austrian Alps	1916	10,000 soldiers
Blons, Austria	1954	200 people, 90 houses
Ranrahirca, Peru	1962	4,000 people, the entire village
Yungay, Peru	1970	20,000 people, the entire city

**MYTH:** A loud noise can trigger an avalanche.

**FACT:** The common belief that loud noises can trigger avalanches is not supported by science. Under specific conditions, a sonic boom may have the potential to set off a snow slide, but unless a high-performance fighter jet breaks the sound barrier directly over a high-risk area, you needn't worry.

## CLIMBERS ENDURE NINE AVALANCHES ON ALASKAN PEAK

On April 14, 1989, David Nyman and Jim Sweeney set out in Alaska's Denali National Park to climb the north face of a challenging peak known as Mount Johnson. As Sweeney was climbing a chute called the Elevator Shaft, the 35-foot-tall sheet of ice he was scaling collapsed, dropping him 100 feet down. His anchor rope stopped his fall, but the ball of his femur wrenched out of his hip socket and Sweeney was knocked unconscious. Lacking a radio, Nyman pulled his partner to safety, revived him, and skied down the mountain in a futile bid for help. Sweeney stayed behind, unable to walk. The next morning Nyman returned, placed his friend in a nylon sling, and began dragging the injured man toward civilization as snow fell heavily. Over the next several days, the pair got hit by 100-mile-per-hour windblasts and seven avalanches. Nyman managed to dig them out each time, but much of their equipment vanished in the snow. They had lost their ice axes and crampons by the time yet another avalanche sent them into a crevasse. Sweeney landed on a ledge as Nyman spread his own legs to brace himself against the sides of a funnel that led to an abyss. Fortunately the walls of the crevasse were made of hard snow, enabling Nyman to climb out—towing his partner by clenching the rope between his teeth. Eight days after Sweeney's initial fall, the companions made it off the mountain, reaching the Ruth Glacier. The weather lifted just long enough for a rescue plane to spot them, exposed and exhausted on the ice.

**Expert Advice:** When climbing in a national park, always take a radio tuned to a channel monitored by wardens.

# HOW TO MAKE AN EMERGENCY SLED OUT OF ROPE AND SKIS

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## **1 Unfurl the rope on the ground.**

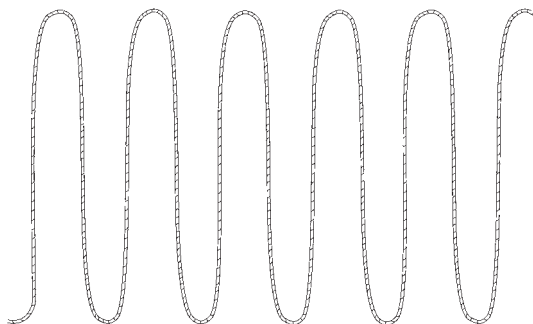
One hundred feet of rope at least half an inch in diameter should be adequate, but the longer, the better.

## **2 Bend the rope to form the bottom of the stretcher.**

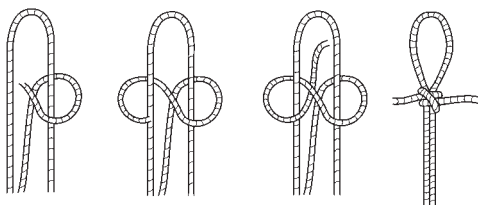
Beginning at the center of the rope and working outward in both directions, turn the rope into a series of S-curves. The segments of rope between the turns will be close together and parallel to one another, forming the bed of the stretcher. Allow enough space between each fold to accommodate the width of the person you must carry. The bed will consist of 16 parallel segments of rope with at least 20 feet of slack trailing off from either end.

## **3 Use the slack to tie a clove hitch at each turn, forming a series of loops at the sides of the stretcher.**

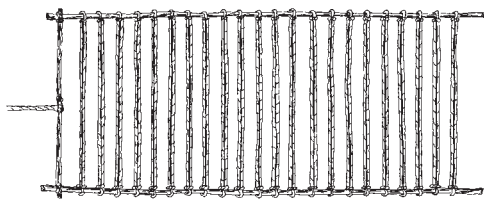
To tie a clove hitch, encircle one of the curves you created in step 2 with the end of the rope. Bring the end around the curve again to encircle the curve in the rope a second time, then tuck the end through the second circle, choking the curve in the rope into a loop. Pull to tighten. The knots can be adjusted for tightness at a later stage. Thread the extra slack through the loops you've just created.



*Turn the rope into a series of S-curves, starting at the rope's midpoint.*



*Tie a clove-hitch knot around the S-curves to form loops.*



*Add branches for stability. Lash skis under the sled for increased mobility and a smoother ride.*

**4 Thread a sapling through the loops at either side of the stretcher.**

Use two thin, sturdy saplings or tree branches about as wide as the skis they'll be mounted upon.

**5 Tighten the knots around the saplings.**

The saplings should remain parallel to one another.

**6 Secure the saplings on top of the skis.**

Use smaller pieces of rope, duct tape, backpack straps/webbing, or a strong fabric torn from expendable clothing to attach the saplings to the skis, keeping the bottom of the skis as smooth as possible.

**7 Lash a pair of shorter branches across the front and back ends of the sled to increase stability.**

**8 Tie a length of rope to the front end as a towing cable.**

If you have no rope left, pull out some of the extra slack from the loops on the side of the stretcher.

**9 Place the victim on the stretcher.**

Clothe the victim in as many layers as possible before setting him upon the stretcher. Secure him to the stretcher with extra rope or some of the slack from the loops on the side of the stretcher. Pull on the tow cord to haul the sled behind you on flat terrain. Proceed with caution over slopes, holding the tow cord from an uphill position.

## AVALANCHE ALERT

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- \* **Wear an avalanche cord in dangerous terrain.** An avalanche cord is a thin, brightly colored strip of nylon that drags behind you as you walk. In the event of an avalanche, the light cord is more likely to stay near the surface, helping rescuers to spot you—especially if a helium-filled balloon is attached to the cord.
- \* **If you are caught in an avalanche, stay atop the snow with swimming strokes.** Face down the mountain and move your arms as if you were swimming freestyle, to keep your head above the tumbling snow.
- \* **If you are buried, dig your way out.** Determine which way is up by letting drool fall from your mouth. Dig in the opposite direction quickly but without panicking.
- \* **Once you are on the surface, look for trapped companions near obstacles.** Areas near trees or other natural barriers are the most likely places for your companions to be buried. Look for signs of movement before digging with a rescue shovel, to minimize your time in dangerous terrain—one avalanche can often set the stage for another.



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## CONTACT LENSES AT ALTITUDE

Hiking and climbing at high elevations make contact lenses problematic. Soft contact lenses reduce the amount of oxygen available to the cornea, and wearing extended-use contacts at high altitude increases the risk of corneal ulcers. When hiking above 8,000 feet, do not wear extended-use lenses for more than seven days in a row. Lens solution may freeze solid overnight; keep eye-moisture solutions liquid by carrying them close to your body. Always bring sunglasses and tinted backup eyeglasses.

## MOUNTAIN INSOMNIA

Sleep trouble is common at high elevations, but do not take sleeping pills to help you through the night. Tranquilizer medications increase the risk of acute mountain sickness.

## TRAVERSING SNOW IN HIGH ALTITUDES

- Snow crusts are at their strongest early in the morning.
- Areas around tree trunks and boulders may contain empty cavities beneath a thin layer of surface snow.
- Dirty snow absorbs more heat and therefore tends to be firmer than nearby clean snow.
- In the northern hemisphere, south- and west-facing slopes tend to have firmer snow than north- and east-facing slopes.

## COOKING AT ALTITUDE

Because atmospheric pressure decreases at high elevations, water boils at a lower temperature\*, extending the time it takes to cook food.

Elevation	Boiling Point	Cooking Time Equivalent to 1 Minute at Sea Level
5,000 feet	203°F	2 minutes
10,000 feet	194°F	4 minutes
15,000 feet	185°F	7 minutes
20,000 feet	176°F	13 minutes

\*At sea level, water boils at 212°F.

### Out and About

Avalanches are most likely when:

- a slope is angled between 30 and 50 degrees
- a slope has a convex shape
- a slope is permanently shaded from the sun
- there are no trees or natural obstacles to anchor snow
- new snow falls quickly on existing snow
- high winds prevent snow particles from bonding to one another
- the air temperature rises rapidly
- rain falls on existing snow

## OLYMPIC HOCKEY PLAYER TAKES WRONG TURN ON MOUNTAIN

As the sun went down on California's Mammoth Mountain, snowboarder Eric LeMarque realized he was lost. In a desperate attempt to speed himself to civilization and safety, he snapped his boots into his snowboard and raced down the mountain slope—in the wrong direction. The former Olympic hockey player was not prepared for extended time in the wilderness; his survival gear was limited to a pack of soggy matches, a cell phone with a dead battery, and four sticks of gum. After shivering through the night alone, he continued in the wrong direction the next day. Realizing he was making no progress, he tuned his MP3 player to a radio broadcast from the nearby town of Mammoth, reasoning that the signal would come through best when he pointed it in that direction. Armed with this assumption, he changed course, using the MP3 player like a sonic compass—but he had wandered too far off course initially for the change in direction to offer immediate results. The second night he used the blade of his snowboard to chop enough pine branches for a bed to elevate his body from the frozen snow. He ate pine seeds and tree bark for nourishment. Five days after getting lost, he ran out of steam and hunkered down in a snow shelter on a part of the mountain where he could be spotted by rescuers. Two days later, an Army National Guard helicopter crew spotted him with an infrared optical device. The 34-year-old had lost 35 pounds in one week and would soon lose both his feet to amputation—but doctors were able to save his life.

**Expert Advice:** When you realize you are lost, make a plan before you act. Acting rashly and putting more distance between yourself and safety will minimize your chances of survival.

## TEN MUST-HAVE ITEMS IN THE MOUNTAINS

1. **Compass:** For navigation
2. **Rope:** For climbing, shelter construction, emergency stretchers
3. **Knife:** For gathering food, protection
4. **Sunglasses:** Protect eyes from snow blindness and freezing wind
5. **Lighter:** More reliable than matches for lighting fires, melting snow for water
6. **Extra bootlaces:** For replacing a broken lace, binding sticks or logs to make shelter or raft
7. **Duct tape:** For fixing broken equipment, bandaging a flesh wound
8. **Four-season tent:** Bringing shelter is easier than making it
9. **Sleeping pad:** Insulates body from freezing ground, preventing hypothermia
10. **Waterproof and windproof outer shell:** Conserves body heat

**MYTH:** You can prevent altitude sickness by being in top physical condition.

**FACT:** The human body's response to elevation gains is basically the same no matter how much cardiovascular training a person has undergone. The slower progress of a moderately fit person actually can serve as a natural guard against altitude sickness—trekkers who are extremely physically fit are more likely to succumb to the temptation to ascend too far, too quickly.

# HOW TO BREAK A TRAIL IN WAIST-DEEP SNOW

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## **Read the terrain before choosing a route.**

In the mountains, perfectly flat expanses of snow can indicate a body of water underneath. Where possible, follow a path made up of slight inclines next to steeper slopes, to minimize the possibility of traversing incompletely frozen ponds or lakes. Never walk within 5 feet of a precipice, as snow can drift to form unstable cornices that overhang solid ground by several feet.



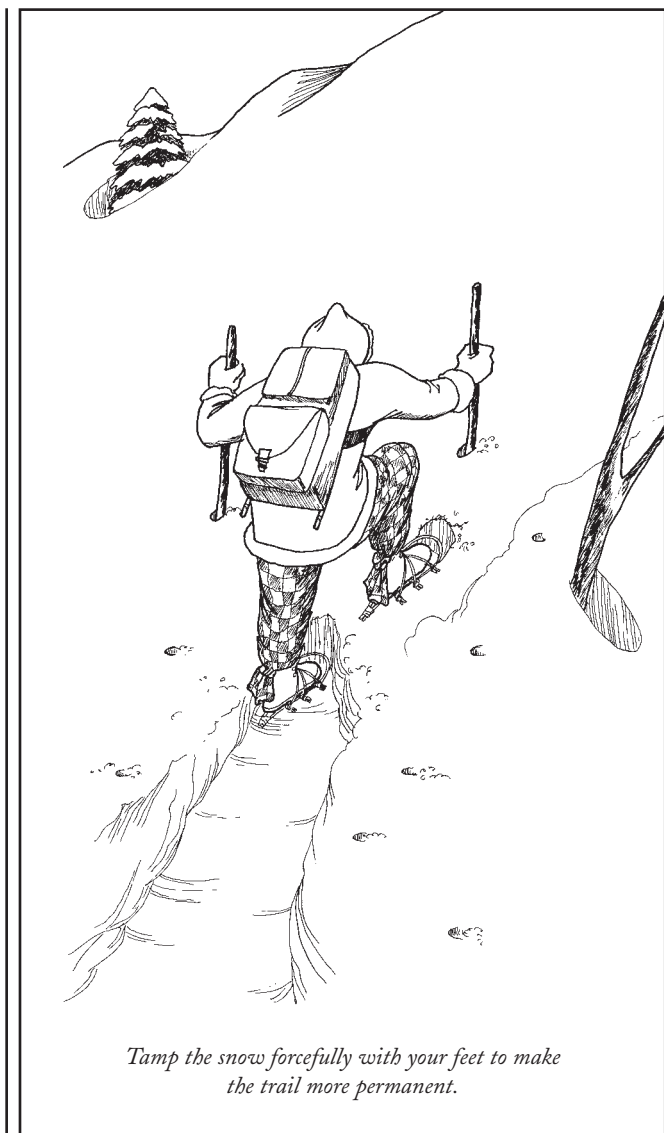
## **Favor hard snow.**

Hard snow tends to be shiny, with light reflecting off its upper crust. It will bear your weight better than soft, powdery snow.



## **Make your footprint bigger to minimize sinking.**

Wear snowshoes or wrap rags and bundles of sticks around your legs. If you don't have snowshoes and cannot locate natural materials to make your own, wrap your legs in extra clothes, a torn tarp, or another material that will help prevent your pants from becoming waterlogged, which would increase the potential for frostbite and hypothermia.



*Tamp the snow forcefully with your feet to make  
the trail more permanent.*



**Use walking poles or a stick to probe the ground in front of you.**

If the tips break through ice, walk backward several paces, retracing your footsteps. Survey your surroundings, then choose another route.



**Take small steps.**

As you progress, tamp down the snow forcefully with your feet and knees to make the trail more permanent.



**When in a group, walk in a single-file line.**

Because breaking trail requires far more energy than walking over a firm path, share the effort by rotating the leader to the back of the line every 15 minutes. Switching frequently will minimize water lost through perspiration by any one member of the group, ultimately conserving fluids for all and preventing unwanted sweat from cooling the body too rapidly.

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## HOW TO MAKE AN IMPROVISED SNOWSHOE

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**Bend a flexible sapling into a large teardrop shape.**

Secure the ends to one another by lashing them with string, duct tape, or an extra bootlace.



**Bind three sets of three sticks together.**

Find sticks slightly longer than the width of the teardrop, then tape or tie them together in sets of three.

**3 Lash the crossing sticks to the teardrop frame.**

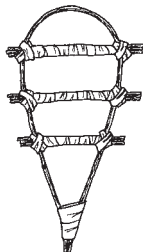
Situate the bundles of sticks so they are parallel to one another, making a ladder across the frame.

**4 Anchor your boot into the frame.**

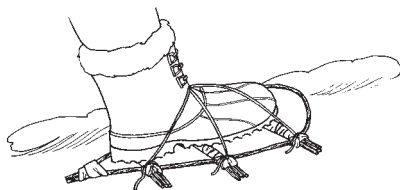
Tie string across each shoe, securing it to each bundle of sticks where it overlaps the frame. Tie the rear line around your ankle for additional support.



*Secure sapling in teardrop shape.*



*Lash bundles of sticks to bent sapling.*



*Tie foot to improvised shoe.*



## THE SEVEN SUMMITS

When considered together, the highest peaks on each of the continental plates are called the Seven Summits. Only the most elite mountain climbers have conquered them all.

Continent	Mountain	Location	Height (in feet)
Asia	Mount Everest	Nepal/Tibet	29,035
South America	Aconcagua	Argentina	22,840
North America	Mount McKinley (a.k.a. Denali)	Alaska	20,320
Africa	Kilimanjaro	Tanzania	19,339
Europe	Mount Elbrus	Russia	18,481
Antarctica	Vinson Massif	Antarctica	16,067
Australasia*	Carstensz Pyramid	Indonesia	16,023
	Mount Kosciuszko	Australia	7,310

\* Some climbers identify Australia's Mt. Kosciuszko as one of the seven, while others argue for Indonesia's more challenging Carstensz Pyramid.

## HIKER PERSEVERES 40 DAYS WITHOUT FOOD

As James Scott attempted to cross a 14,000-foot Himalayan pass in December 1991, a blizzard obscured the trail he was following. Lost on the mountainside, Scott turned back, reasoning that a creek he found would eventually lead him to a village. Instead, he arrived at a dead end when the creek plummeted over the mountainside in a daunting waterfall. The 22-year-old trekker took shelter beneath a rock overhang for the night, then continued through the snow the next morning. Again he failed to reach the settlement on his map, but now he was completely out of water and limited to just two chocolate bars for sustenance. Scott hunkered down beneath a slim rock ledge and ate the last of his food. The next day, exhausted, he reached the rock overhang that became his shelter for the next 40 days. With the exception of one set of clothing and his sleeping bag, everything in his rucksack had gotten soaked in a creek the previous day. It took two weeks for him to dry out his belongings in the frigid air. Meanwhile he made snowballs and let them melt in the sun, sucking out the water little by little. With the exception of a single caterpillar, he ingested no food. Though his muscles atrophied and movement was difficult, thoughts of his family and fiancée kept him from abandoning hope of rescue. Finally, after 42 days of solitude, a helicopter spotted him in a nearby clearing and he was airlifted to a hospital to regain his strength.

**Expert Advice:** In extreme conditions, the human body is much better able to survive for long periods without food than without shelter. When lost in the mountains, locate a safe, dry place to take refuge before exhaustion overwhelms you.

# MOUNT EVEREST

"The Third Pole"



**BEST KNOWN FOR:** Being the tallest mountain on Earth

**LOCATION:** Himalayan mountain range, on the border of Nepal and Tibet

**HEIGHT:** 29,035 feet

**DANGERS:** Oxygen levels at summit 65% lower than at sea level • Rapid weather changes • Shifting terrain and hidden crevasses of the Khumbu Icefall at the mountain's base • The Lhotse Wall's 4,000-foot ice slope • The Death Zone, the area above 26,000 feet • Vertical climb at 28,800 feet, highest technical climbing in the world

**LITTLE-KNOWN FACT:** In 2003, the Coalition for Texans with Disabilities organized a successful trek to Everest Base Camp that included a paralytic and a man in a wheelchair.

**Lowest temperature at summit:** -70°F • **Highest recorded wind speed:** 150 miles per hour • **Climbing deaths:** 189 • **Deadliest year:** 1996, 15 deaths • **First to summit:** Sir Edmund Hillary and Tenzing Norgay Sherpa, 1953 • **First to summit without oxygen tanks:** Reinhold Messner and Peter Habeler, 1978 • **Most personal summits:** Apa Sherpa, 16 • **Fastest climb from base camp to summit:** Pemba Dorjee Sherpa, 8 hours 10 minutes