The background image shows a lush green mountain slope with patches of yellow wildflowers in the foreground. A hiker with a large blue backpack walks along a path through the flowers. The sky is clear and blue.

Leadership and Trek Preparation





*"As I grow older, I pay
less attention to what
men say. I just watch
what they do."*

—Andrew Carnegie (1835–1919),
American businessman and philanthropist



CHAPTER

1





Organizing for Adventures

"We strive to create an environment where people are valued as individuals and are treated with respect, dignity, and fairness."

—From *Wood Badge for the 21st Century* (the BSA's premier leadership training course for adult Scouters), Boy Scouts of America, 2001



A mountain travel team pushes toward the summit of a peak. Kayakers and rafters combine their knowledge to find the best routes through a thundering river. Winter campers take turns breaking trail through the drifts. Search-and-rescue team members grab their gear and respond to an emergency. Friends set out for an afternoon of hiking, fishing, or bicycle touring.

Outdoor adventures are better when they are shared. While there is safety in numbers, group dynamics involve more than simple risk management. Groups taking part in trek adventures are usually small, and the challenge of living outdoors is often heightened by weather, distance, and logistical hurdles. Joining with others ensures plenty of brains and brawn for meeting all sorts of situations.

Leadership situations seldom involve one person giving orders and everybody else simply doing what they are told. Instead, all members must take responsibility for the team's success. When the need for direct leadership arises—coping with emergencies or defusing risky situations, for example—group members who shoulder their portion of the load and act in the group's best interests will enhance the probability of success.

Group members working toward common goals can amass a storehouse of experience. As members of a group iron out their differences and build upon their strengths, they become proof that the whole can be greater than the sum of its parts.

Group Formation

Groups form in many ways and for many reasons. The 1914 newspaper ad placed by British explorer Ernest Shackleton brought together a team of 27 adventurers for an attempted first crossing of Antarctica. Stranded for nearly two years after their ship, the *Endurance*, was crushed by ice, they worked together so well against overwhelming odds that all of them managed to return home safely. They failed to fulfill their original plan of a trans-Antarctic trek, but in terms of crew behavior and team leadership, the Shackleton expedition can be considered one of the most successful of all wilderness journeys.



Every group has initial motives for coming together. People might be drawn to the values and opportunities of a Scout unit or a school outdoor club. Family members setting out for a camping trip often act as a team once they hit the trail. A group might be as tightly knit as close friends seeking adventures, or as random as strangers signing up for a commercial trip, a guided wilderness experience, or a training course set in the outdoors.

Those joining an outdoor group might be similar in age and level of experience, or they could represent a broad range of backgrounds. Perhaps they have shared many trek adventures already, or they might be at the beginning of their outdoor explorations. Whatever the case, people are the raw material of every group. Their histories, interests, and abilities are the building blocks for organizing an effective team for the field.

Can a blind mountaineer climb Mount Everest? It's been done. Can hearing-impaired people form trail maintenance crews doing quality work deep in the woods? Of course. Can someone with food allergies, asthma, or diabetes take part in extended backpacking trips? The answer is *perhaps*, depending upon recommendations from the person's doctor and prior arrangements made by the group. The outdoors is open to all who want to enjoy it, bringing with them a variety of experience and possibility that will enrich almost any group.

*"Men wanted for hazardous journey.
Small wages. Bitter cold. Long months
of complete darkness. Constant danger.
Safe return doubtful.
Honour and
recognition in case
of success."*

—Ernest Shackleton, 1914



Group Size

The number of people traveling together in the outdoors must never exceed the limits established by those managing the lands where a trek will occur. The minimum size for a BSA group taking part in outdoor activities is four. That way, if someone becomes injured or ill, one party member can administer first aid while two others go for help.

Members of a trekking group should organize themselves as smaller teams of two each. These buddies share the challenges of a trip, keep track of each other, and alert group leaders to any concerns that may arise. Two people give reassurance to each other and share responsibility for navigating using map and compass.

For more on leadership, see the chapter titled “Outdoor Leadership.”

HOW FAR AND HOW FAST?

This general guide can help you plan how far your group will travel in a given time.

Two miles per hour—the speed of average hikers crossing gentle terrain

One mile per hour—the speed of hikers with heavy packs in rugged country

One hour—the amount of travel time to add for every thousand feet of elevation to be gained

Half an hour—the amount of travel time to subtract for every thousand feet of elevation to be lost

For more information on determining how far groups can travel in varying terrains, see the chapter titled “Mountain Travel.”

Learn From and Share With Other Travelers

Every organization involved in the outdoors has developed its own variations on teamwork, leadership, empowerment, and training. People wishing to be fully aware of a wide range of approaches to outdoor activities will seek out opportunities to learn about other organizations and their ways of doing things. They can take the best of what they learn from each group to incorporate into their own vision of leadership, group dynamics, and the practice of outdoor skills.



Matching Groups With Adventures

Which comes first, the itinerary or the group? It all depends. Ernest Shackleton knew what he wanted to achieve in Antarctica. With a plan in place, he began recruiting the people he felt could accomplish the goals he had set. The same process is the foundation of other extremely challenging treks, especially those requiring extensive specialized experience. Group organizers will, like Shackleton, seek out people qualified as mountain travelers, river runners, or cavers, or possessing other skills they feel will help ensure the success of a particular expedition. (Of course, high levels of expertise are no assurance of a person's ability to fit in as a member of a particular group. The history of wilderness exploration is crowded with accounts of able people whose personalities prevented them from meshing with others to form successful teams, a factor that sometimes led them to make very bad choices in dangerous circumstances.)

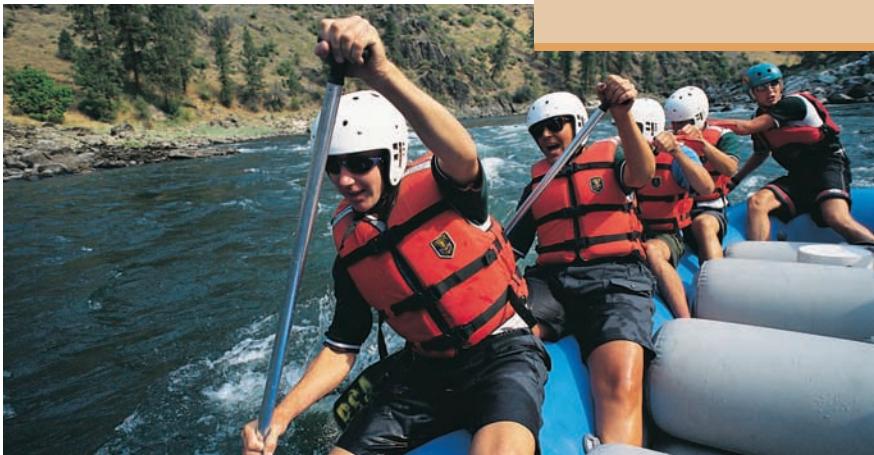


Usually, though, a group comes together first—as a Scout unit, for example, or a group of friends, or a school outdoor club. The challenge then is for leaders to help the group develop goals that are appropriate for the abilities of its members. Ideally, these possibilities offer opportunities for members to accept responsibilities of increasing importance and to recognize and celebrate real success.

Seasoned leadership can make up for some group inexperience if leaders manage challenges in ways that encourage the members to expand their knowledge. A group new to kayak touring would not yet have the training to embark on long journeys across open seas. On the other hand, the group could find plenty of satisfaction paddling in sheltered waters while they master kayaking skills that will prepare them for increasingly challenging adventures.

In helping groups shape their adventures, leaders should not overextend a group to the point of compromising safety or creating a high probability of failure. A novice group taking on a hard winter trek might find that they are overmatched by the weather. If they spend too much time being cold, wet, and hungry, they may be unwilling to try future outdoor adventures. When group members begin with manageable trips, though, and build up to more strenuous ones, they can develop confidence and ability along the way. Ideal itineraries have the flexibility to include demanding goals as well as more manageable alternatives should conditions change or the initial plan prove to be too difficult.

In addition to considering the abilities of group members, group leaders must be realistic about their own qualifications, and should accept responsibility only for treks that are within their levels of experience and skill.



Age-Appropriate Guidelines

Many activities described in the *Fieldbook* are ideal for Scouts of all ages. Some of the more challenging trek adventures are better suited for Venturers, Varsity Scouts, and older Boy Scouts. The BSA's Age-Appropriate Guidelines for Scouting Activities publication is useful for matching groups with outdoor activities that are within their capabilities, training, and experience. For more information, see the BSA's Web site at <http://www.scouting.org>.

Orienting a Group

Orient a map before a hike and it is set true to the world. Aligned with the compass and square with the North and South poles, the map can make more sense than if it were left flapping in the wind. Likewise, when a group is oriented before a trek, it is squared away for the journey to come. Everybody is aligned with the group's goals, plans, and methods. Members understand what lies ahead, and they know what their roles will be for achieving the most for their group and for themselves.

**Orienting a group
before a trip
can significantly
improve the quality
of the experience,
the safety of the
group members,
and each person's
ability to care for
the environment.**

The task of orienting a group rests primarily with its leaders. A newly formed or inexperienced group may need lots of pretrip preparation, beginning with members getting acquainted with one another and discovering common points of experience and interest.

Orienting groups of any skill level involves the following steps:

- Setting the tone
- Developing group structure and standards
- Establishing goals
- Determining logistical tasks





"Even in those early days, I was a great dreamer. I used to go for long walks about the area or cut across the paddocks jumping over fences with my mind far away, just thinking about adventurers and exciting things to do."

—Sir Edmund Hillary



Setting the Tone

The chapter titled “Gearing Up” lists clothing and equipment that can be carried to help ensure safe outdoor experiences. Nowhere on those lists, though, is the most important item of all—a positive attitude.

Leaders help set the tone right from the beginning of group orientation. Once a group has left the trailhead, the tone set by its leaders can be even more important. Trek adventures can be tough. There will be times when people are colder or hotter than they would like to be, and when they are hungry and tired. There will be days when headwinds hold them back or trails are rugged and steep. There might be nights when storms batter a camp, when a stove malfunctions, or when a key piece of gear is lost. Discouraging developments are bound to occur, but if a group looks at them in a positive, realistic way, difficulties can melt to a manageable size. When spirits are high, a group can achieve almost anything.

Train yourself and your group to look for answers rather than staying stuck in uncomfortable situations. Cold and wet? Do something about getting dry and warm. Somebody having trouble with a heavy pack? Give them a hand. Not sure which way the route goes? Get out the map and compass, put your heads together, and figure things out.

“Adventure is merely discomfort rightly perceived,” goes an old traveler’s saying, and there is some truth in that. Choosing to perceive discomfort—and all of adventure—as an opportunity to act in positive, productive ways is a responsibility to be taken seriously by every person in a group.



**Group standards,
understood from
the start, make
clear what
is acceptable
behavior during
group activities,
and what is not.**

Developing Group Structure and Standards

A group's structure is the framework that helps hold it together through good times and bad. A team like Shackleton's crew headed for Antarctica might have a clear hierarchy of command. A group of friends heading for the backcountry might be set up more informally, with each person having a say in many of the decisions and the most experienced member recognized as the leader who will make the call if

there is no clear consensus or if options must be considered quickly. With Venturing crews, Varsity Scout teams, and Boy Scout troops, Scouting offers a variety of organizational structures tailored to the ages and experience levels of group members.

The standards established by a group usually are an outgrowth of the beliefs and the shared experience of the organization to which the members belong. The most basic standards are nonnegotiable guidelines intended to enhance the safety of individuals and the quality of the environment—the mandatory use of life jackets during watercraft activities, for instance, or a commitment to follow the principles of Leave No Trace throughout a trek. Anyone who wishes to take part in an adventure with the group must agree in advance to follow these standards. (Nonnegotiable standards should be limited to matters of real importance. Too many rules can dilute the emphasis of those that are vital.)



Group standards also extend beyond matters of risk management and environmental protection to include essentials of how group members will treat one another. Most are commonsense means of interacting with others in any situation and any setting. Each person will be treated fairly and equally. Differences will be respected and harassment will never be tolerated. Everyone will be supported and encouraged.

For more on group safety standards, see the chapter titled “Managing Risk.” For more on guidelines that protect the environment, see the “Leaving No Trace” section of this book.

Establishing Goals

Goals provide group members with a shared vision and purpose. The goal of a wilderness trip might seem to be as clear as getting to a distant lake or standing on a mountaintop, but a destination is only part of it. *How* a group reaches a landmark is always a more important goal than *where* it hopes to arrive. Making a good decision about altering an itinerary or turning back might be much smarter, and a far more valuable learning experience, than touching a summit.

Establishing goals is a matter of imagining what you want to accomplish and then determining how to make that vision a reality. No doubt you and the others in your group can see yourselves paddling down a river, sleeping in igloos, hiking across a desert, or taking part in any number of other outdoor adventures. Determining logistical tasks will go a long way toward providing a blueprint for achieving your goals. Go a step further during pretrip meetings, skill sessions, and shakedowns, and enliven your goals with the commitment to ensure that everyone accepts responsibility not only for the group’s success, but also for creating a healthy environment in which each person can thrive.

When people travel the same trails, cook and eat together, and share the challenges and triumphs of outdoor living, they will discover much about practicing patience, respecting others, and developing lasting friendships.

Determining Logistical Tasks

The final part of orienting a group, determining logistical tasks, is a way of mapping out the steps to reach group goals. Many groups use written charts and checklists to delegate responsibilities so that nothing will be overlooked. Group members see to it that they have the gear, clothing, and provisions they will need. They know who has the assignments for cooking certain meals, who will carry first-aid gear, and how other chores will be divided up.

Organizing equipment, putting together menus, repackaging food for the trail, and other pretrip activities are opportunities for group members to work together before a trek begins. Along with the rest of the group orientation process, these activities can help the members fit into their roles and increase group cohesion that will be important to the effective operation of the group once it sets out for the field.

For more on logistical tasks, see the chapter titled “Planning a Trek.”



CHAPTER

2



Outdoor Leadership

“Leadership is not just passed on from the more experienced to the less experienced. There are too many people with a lot of experiences who don’t know what they’re doing.”

—Paul Petzoldt, outdoorsman and writer who climbed Wyoming’s Grand Teton mountain more than 300 times by the time he died at age 91



Leaders come in all shapes and sizes, and they use all manner of techniques to achieve success. At times they might be in the forefront of outdoor activities, though they are just as likely to allow others to step ahead. They can be determined to reach a mountaintop, run a stretch of white water, and rise to other challenges, but they also find satisfaction in doing whatever they can to ensure that others reach their goals. Many have become famous. Others might be known as leaders only among the groups they have led, but are remembered with fondness and admiration by those with whom they shared adventures. All are women and men who have practiced the art of leadership, a skill as important to trek adventures as any in this book.

Every group going into the backcountry should have a recognized leader, a person who can orient people and then keep them organized, supported, and moving toward their objectives. While much of what occurs in the field can be decided through discussions and mutual agreement, a leader must be ready to provide clear direction when decisions need to be made quickly or when group members are unable or unqualified to determine a realistic course of action.

Leadership comes to life in the outdoors as challenges reveal the true nature of people relating to one another and to their surroundings. Guiding a Venturing crew, Scout troop, or Varsity Scout team when the sky is clear, the nights are

A leader shares group responsibilities by delegating tasks and then providing resources and support so that everyone can succeed. In difficult situations, others will look to a leader for guidance, for wisdom, and for making essential decisions.

pleasant, and everyone is experienced and well-prepared can be easier than when the foul weather settles in or the Scouts' skills are minimal, but that's not always the case. Even seasoned outdoor travelers can suffer an injury or illness, or discover that they are confronted with other unexpected circumstances that will severely test them.

Effective leaders help the others develop trip plans, prepare for the trek adventures, and learn skills to be used during outdoor activities. They delegate responsibilities, providing the tools and information people must have in order to do well. They adapt their leadership styles in response to the needs of individuals and groups, and at times they may modify their own agendas, as the ultimate goal of a leader—establishing an environment in which others can achieve their goal—is of greater importance than summiting any mountain or running any river.

Preparing to Lead

Leadership is more than a set of skills to be mastered. It is about the willingness to listen, to observe, to share, and to serve the interests of others. It also is about using good judgment, making decisions, and putting plans in motion. You can learn much about leading well by reading about leadership, by watching others lead, and by taking part in formal training opportunities. Most important, though, is putting yourself in various positions of responsibility and trying out principles of good leadership in real situations.

From an assistant patrol leader helping to plan a meeting to the president of a Venturing crew preparing for an extended wilderness journey, a hallmark of Scouting is providing settings for people to learn how to lead by being leaders. As your own experience as a leader grows within and beyond Scouting, you can take a number of steps that will help you maintain your readiness to step into leadership roles:

- Keep yourself in good physical condition and your personal equipment set to go.
- Develop your technical competence so that it is sufficient for the demands of upcoming treks. Include training in first aid.
- Increase your understanding of leadership by observing experienced leaders, working with mentors, and encouraging feedback from members of your group.



Leading Responsibly

Outdoor leaders must stay within their abilities, agreeing to lead only those activities for which they have experience and expertise. If your Scout troop, Varsity Scout team, or Venturing crew is considering a whitewater kayaking trip, for instance, and wants you to be its leader, you must have a mastery of kayaking and of watercraft safety. You need to know how to orient your group for an upcoming adventure, how to direct activities during the trip, and how to respond to emergencies.

You also must gain the trust of those you will lead. Through your actions and your words, everyone will know that your decisions are based on the needs, interests, and safety of all.

Preparing Your Group

A leader has important pretrip responsibilities for orienting a group, setting the tone, and clarifying the reasons for guidelines that everyone will follow. Just as leaders can carry out their responsibilities most effectively when they are fully informed, group members are best able to succeed when they have a clear understanding of agreed-upon standards, and when they can share in planning and carrying out activities. Leaders who are enthused about upcoming events set a positive tone that can carry over into the field.

For more on orienting Scout troops, Varsity Scout teams, Venturing crews, or other groups for trek adventures, see the chapters titled “Organizing for Adventures” and “Planning a Trek.”

Leadership Qualities

While their styles may vary, effective leaders all share the following qualities:

- They ensure a safe environment for their groups and themselves.
- They establish ground rules ahead of time and insist that they are followed.
- They clearly communicate their expectations.
- They retain for themselves the right and responsibility of ultimate decision-making authority.

—From *Lightly on the Land*, Student Conservation Association, 1996

Monitoring Progress

Seasoned outdoor leaders know that an important first step in coping with first-aid situations is this: “Don’t just do something; stand there!” The idea is that they must evaluate a situation before they can make good decisions about how to proceed.

Leadership usually is not a response to an emergency, but the approach is similar. To lead well, invest energy in listening and observing so that you can assess what is going on, figure out what a person or a group needs in order to succeed, and then find ways to address those needs.

Individuals and groups seldom will act in exactly the same ways from one trek to another or even on succeeding days of the same journey, and what is true for one situation will not always be true for every other. People preparing for a trek adventure often are excited about the opportunities that lie ahead, but their initial enthusiasm may fade as they realize how much work lies between them and their goals—how far they will have to hike, for example, or the extent of the skills they have not yet mastered. They might even be at odds with one another and with their leaders, but as they begin to experience progress, they often come around to working alongside each other in pursuit of common goals. Successes lead to greater confidence and growing enthusiasm, and that can encourage everyone to focus on the efficient completion of short-term and long-term tasks.

**“The adventure begins
when you lose the map,”
goes a tongue-in-cheek
traveler’s saying.

Likewise, it is when the
best-laid plans of a
Scout troop, Varsity
Scout team, or Venturing
crew no longer work
that leadership will be
truly put to the test.**

Adjusting Your Leadership Style

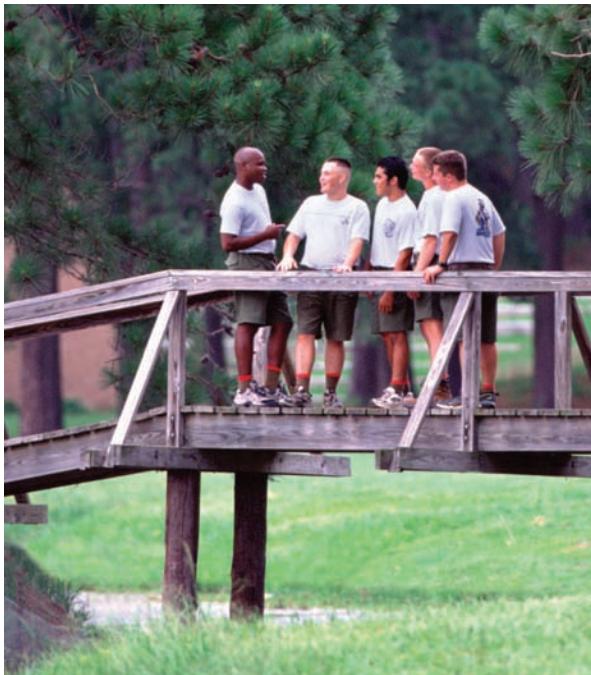
Responsive leadership requires that as you are hiking, camping, and enjoying other outdoor activities, you also are observing your group and its surroundings. By developing an evolving picture of group members’ attitudes, their progress toward goals, and the nature of the challenges they face, you can adjust your leadership style based on what the others appear to need.



Individuals and groups unaccustomed to a particular kind of outdoor adventure, for example, might require lots of clear direction from you as they learn essential skills and are introduced to new settings and routines. Those who have had plenty of experience probably won't need that kind of hands-on leadership, but can thrive when you provide them with plenty of support and information, then get out of their way and let them figure out on their own how to proceed.

The more you know about those you lead, the better you can provide them with appropriate leadership. The abilities, backgrounds, interests, and personalities of individuals all are factors, and levels of enthusiasm and motivation are key indicators of a group's development. By continually monitoring your group, you can be ready to make adjustments whenever adjustments need to be made.

Be flexible in your approaches, noting not only what works for those you are leading, but also what is comfortable for you. Try different styles in different situations. At its heart, leadership is as much an art as it is a skill. Finding your own effective styles is a matter of doing your best with what you know at the moment, and then using the experience you have gained to do even better the next time.



Empowering Others

The greatest gift a leader can give members of a group is the clear understanding that they are responsible for their own success. Provide everyone with the guidance and resources they need to do well, then give them room to take care of things to the full extent of their abilities. In return, group members can offer their willingness to take on much of the work of making the group go, and to see tasks through to the end.

You can further empower people by striving to maintain an environment that is both physically and emotionally safe. Physical safety is largely a matter of risk management through organizational standards and the good

judgment of everyone in the group. Emotional safety is a more elusive concept, but its effects upon the well-being of each person and the group as a whole can be every bit as vital as physical security. For example, there is no place in Scouting for negative peer pressure or harassment in any form.

Maintaining Ultimate Decision-Making Authority

In addition to sharing tasks and empowering others, a leader must retain authority for ultimate decision making. When individuals can't come to an agreement on issues of importance, the leader makes the call. When conflicts arise, a leader does whatever is necessary to find resolution. Most of all, when safety is a concern, a leader finds ways to help a group minimize danger and manage risk.

To a great degree, you will have established your leadership authority by all of your actions that precede the moment when a decision must be made. If you have demonstrated your involvement and have earned the trust of those you are leading, you will find that they can be very willing to support your decisions. Explaining the reasons for your decisions, either beforehand or during debriefings after events, will further increase the quality of the leadership relationship.

At times, your decision-making responsibilities might involve dealing with inappropriate behavior. Most often that will pertain to safety issues—someone's unwillingness to keep a clean camp in bear country, for example, or an individual's habit of going off alone without telling anyone. It also can extend to personality conflicts, questionable language, and other actions affecting the quality of the experience for other members of a Scout troop, Varsity Scout team, or Venturing crew.

Ideally, nonnegotiable standards determined by the group before a trek begins will have outlined what is acceptable and what is not. The structure and tone of a group should provide further guidance for the ways that the members will conduct themselves and treat one another.

When inappropriate situations arise, talk with the people involved out of earshot of others. Discuss the concerns you have about their behavior, and listen carefully to what they have to say. Based on what you hear, you might be able to suggest ways that they can follow the group's guidelines and still get what they want.

Stay Calm

Don't respond in anger to the actions or words of others, even if what they have said or done upsets you. In emergency situations, try not to let fear and uncertainty cloud your judgment. By seeking workable solutions, you also are showing through your actions the way that others can act when they are upset or under stress.



Leadership Tools

Every leader develops his or her own style, though most successful leaders use the following tools:

Be Realistic

Do your best to see things as they are, not as you wish they were. Be a bit of a pessimist in terms of what might go wrong, but an optimist in guiding people toward the effective management of risk.

Be Consistent and Fair

Group members want to know what they can expect from you as their leader, and what you expect of them. Strive to be consistent in word and action, and make it clear that you are working together.

Step In

Cheerfully accept your share of the chores. Lead others by having fun doing whatever needs to be done.

Monitor Yourself

Are you chilly, hungry, sleepy, too hot, or too cold? Upset, angry, or worried? By doing something about personal issues, you can more clearly focus on the leadership needs of the moment. It might simply be a matter of putting on another layer of clothing, having something to eat, or taking a moment to gather your thoughts. You also might discover when you need more information before making a decision, or when it would be wise to talk things over with others in your group as you are making up your mind.

Be Caring

Perhaps the most powerful tool of leadership is this: Care about the people you are leading. Respect and value others, and help each person feel that he or she has important contributions to make. Look for ways to draw on the strengths of every individual to the advantage of the entire group, and let all members know you are pleased to have them along. Say something positive to every person in the group at least once a day.

Communicating Well

The ability to communicate well is an essential skill for leaders of any team. Because the members will be assuming much of the responsibility for the success of their groups and will themselves act as leaders for many activities, they also can benefit from knowing how to share ideas.

Information about a group and its condition often is as close as your ears. “We’re getting tired.” “What shall we cook for dinner?” “I have an idea for a better way to bear-proof our camp.” “Isn’t this a bad place to be if that thunderstorm catches up with us?”

As you listen, try to delay making judgments on what you are hearing until you have all the information. “I got it,” is a good initial answer to those who have something to say. “Could you explain that to me again?” is an appropriate response when you don’t understand.

You can’t tailor every situation to be ideal. Now and then you will find yourself in discussions with others when sharing ideas is difficult. Practice communicating effectively, though, and you will find it to be a vital tool for addressing problems, resolving difficulties, and building spirit.





Feedback

People who are warm, dry, well-fed, and enjoying the challenges they face are bound to be upbeat and pleased with the way things are going. From overheard comments, laughter, and body language, you have clear feedback that a trek is going well. If people have become wet, hungry, chilly, or bored, though, you will know from their mood and lack of energy that aspects of planning and carrying out a trek have not been adequate for the journey, and that you might need to adjust your leadership style.

Tips on Receiving Feedback

Seeking out feedback from everyone can further clarify your understanding of what is occurring during a trek, and can help improve the performance of you and your group.

1. Listen carefully. Receiving feedback requires a heightened awareness of yourself and the person offering the feedback.
2. Listen actively. Restate what you are hearing in your own words so that the speaker knows that the message you are receiving is the same as the one the speaker intended to send.
3. Listen emphatically. Put feedback in its proper context by observing the speaker's body language, tone of voice, and emotions. Consider the speaker's reasons for providing feedback.



Communication

The following guidelines can help you in communicating ideas to others:

1. Listen effectively.
2. Convey information to the right person at the right time.
3. Stay consistent in the information you are sharing, but be open to making changes.
4. Be open to the ideas of others.

Feedback

Generate feedback by asking the following:

1. How are we doing?
2. How am I doing?
3. What will make things better?

Feedback often is a way of improving the effectiveness of a team while it is in the field. Debriefing and evaluating can occur after a trek, or at the conclusion of each day and each stage of an extended outdoor activity.

Tips on Giving Feedback

Offering ideas to others can help them improve their performance and expand the group's success.

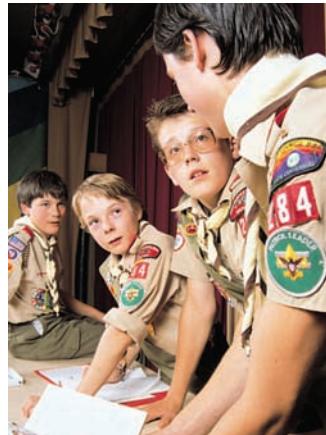
1. Think about your motives. Unless feedback will be helpful, there is no reason to give it.
2. Find out if people are open to receiving feedback.
3. Deal only with specific behavior that can be changed.
4. Ask recipients of feedback to rephrase what they heard you say so that you can be sure they have understood your message.



Debriefing and Evaluating

Even the best outdoor adventurers can find room for improvement, and groups can always become more effective. After an outdoor activity, and at least daily during an extended expedition, sit down with everyone and discuss what went well and what could have been better.

1. *Debrief* by discussing key events of the day with everyone to get a clear understanding of what happened.
2. *Evaluate* by weighing that understanding against the group's goals, standards, and logistical tasks, then use your findings to improve future outdoor activities.



Among the questions that can guide debriefing and evaluation are these:

- What went well?
- What could have been better?
- What skills do we need to acquire or improve?
- What gear wasn't needed?
- What gear or supplies were we missing?
- Where shall we go next?

Celebrate Success

Every outdoor adventure you have will become a collection of fond memories. Take time during and after a trek to reflect on your experiences together, to celebrate your successes, to reinforce what you learned, and to realize how remarkable it is to be in the great outdoors with a group of friends, all of you doing your best.

The confidence of a Venturing crew, Scout troop, or Varsity Scout team grows as members succeed together—planning and carrying out their first wilderness trip, finishing a rugged hike, or mastering the techniques of winter camping. Success fosters success, and a series of achievements can inspire group members to get in the habit of setting out to do well. Fresh opportunities to succeed can increase their self-assurance and their eagerness to try adventures they know will test them and help them work hard.

A Final Word on Leadership

The excitement and challenge of being a leader should involve you deeply with those you lead, but allow yourself to relax sometimes away from other activities. On extended adventures, you could rise earlier in the morning to enjoy a quiet half hour to yourself—a chance to enjoy a cup of cocoa as you sit under a tree and watch the day beginning to unfold.

Give yourself permission to make mistakes, too. Being a leader is a learned skill. The more you do it, the more effective you will be, but there always will be room to improve. Do the best you can, and next time do even better.

Whatever leadership styles you choose, keep in mind the basics of leadership. Strive to empower others, reach a consensus when making decisions, and provide whatever a group is missing, and you will be well on your way to practicing effective and responsible leadership in the field.

“Leadership is the capacity to move others toward goals shared with you, with a focus and competency they would not achieve on their own.”

—John Graham (outdoor leader and president of the Giraffe Project), *Outdoor Leadership*, 1997



CHAPTER

3



Becoming Fit

"Vigorous outdoor living is the key to the spirit of Scouting."

—Robert S. S. Baden-Powell (founder of the worldwide Scouting movement),
Aids to Scoutmastership, 1919



You're hiking along a rugged trail at a strong, steady pace, the miles rolling beneath your feet. You're canoeing all day, paddling with an almost effortless rhythm. You're bicycling toward the horizon, your legs pushing you along hour after hour with ease and speed.

Maintaining a high level of fitness will help you fully enjoy outdoor adventures. You will have the strength to take on demanding challenges and the endurance to see them through to the end. Rather than struggling to keep up or limiting yourself to short journeys along easy routes, you can set out with the confidence that you possess the power and stamina to accomplish whatever needs to be done.

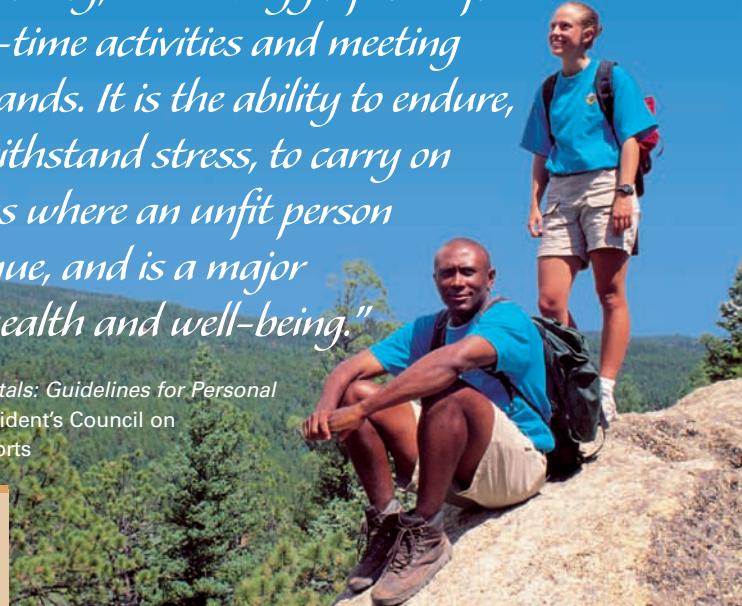
Getting yourself physically fit for an adventure trek is a terrific goal, but that should be just the beginning. Staying fit means you will be ready for any opportunities for outdoor activities that come along, and prepared for all else that presents itself throughout your life.



"[Fitness is] the ability to perform daily tasks vigorously and alertly, with energy left over for enjoying leisure-time activities and meeting emergency demands. It is the ability to endure, to bear up, to withstand stress, to carry on in circumstances where an unfit person could not continue, and is a major basis for good health and well-being."

—From *Fitness Fundamentals: Guidelines for Personal Exercise Programs*, President's Council on Physical Fitness and Sports

The stamina and strength to reach a mountain summit, ski a cross-country course, or complete other outdoor journeys often can be found on the playing fields near your home. Enliven your daily fitness routines by focusing on where your efforts to get strong and tough can lead you.



What Is Fitness?

Tall, short, wide, thin—the basic shape of your body is strongly determined by genetics. Your height, bone structure, and general musculature come in large part from your biological ancestors. So do many of the ways in which your body responds to food, to exercise, to stress, and to environmental influences.

Whatever your physical type, you can consider yourself fit when you have the strength and endurance to accomplish all you aspire to do, and when you have made staying in shape over the years a regular part of what you do. That means getting plenty of exercise and enough sleep, regularly brushing and flossing your teeth, and keeping immunizations up-to-date.

Becoming fit also means eating a balance of nourishing food in portions appropriate for you.

By themselves, the numbers on a weight scale seldom are a reliable guide for measuring fitness. For one thing, muscle weighs more than fat. If you are thinking of dieting to lose weight to achieve a certain appearance or as part of a fitness routine, consult a physician or nutritionist for guidance.

Whatever your shape and size, celebrate your body, do all you can to care for it, and give yourself every chance to excel. Then focus your energy on positive activities, friends, school, Scouting, family, and all else there is to enjoy in life.

For more on nutrition, see the chapter titled "Outdoor Menus."



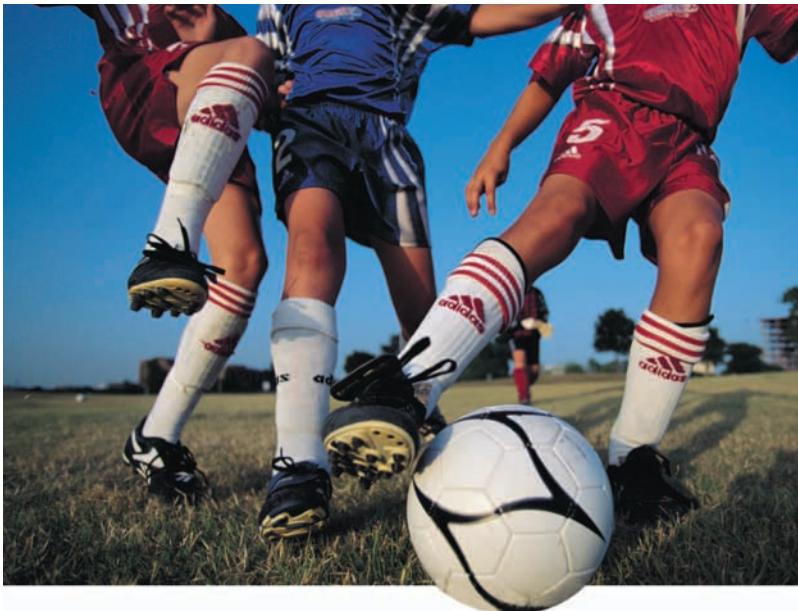
"Normal" and "fit" are not the same as what many images portrayed in movies, on television, and in magazines would have us believe. The impossibly thin women and unnaturally muscular men often portrayed in advertising and the media might help sell lots of clothing, deodorant, and automobiles, but they are not practical role models for real people.

Being Active

There are many ways to exercise. Among them, you can find fitness activities that keep you interested and challenged so that you will want to do them regularly. You might already take part in sports with friends, in organized athletics, and in physically demanding personal endeavors. Consider what your current activities offer in terms of overall fitness, then adjust what you do to ensure that your body is getting the attention it needs. To prepare for most trek adventures and to increase overall fitness, include a mix of aerobic activities to improve endurance and stamina, and strengthening exercises for increasing power.



Regular physical activities will help keep you fit and ready for trek adventures.

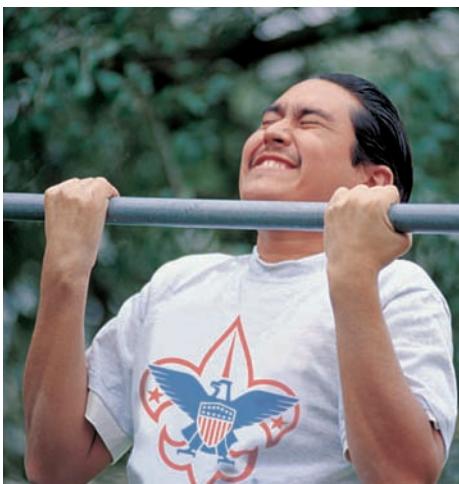


Aerobic Exercises

Aerobic means “with air.” Aerobic exercises are continuous, rhythmic activities that require your body to increase its use of oxygen. Brisk walking, jogging, running, jumping rope, swimming, cycling, and cross-country skiing can be aerobic exercises if you do them steadily for prolonged periods—usually 20 minutes or more at a level sufficiently ambitious that you would find it difficult to carry on a normal conversation. The effort you make will cause your heart and lungs to work harder, especially if you maintain an exercise pace that makes it difficult to converse normally. By gradually increasing the intensity and duration of your aerobic exercises over a period of weeks, you can help your cardiovascular system become stronger and more efficient.

Strength Exercises

Physical activities designed to increase muscular strength usually are intense, but of brief duration. Well-planned strengthening routines—including push-ups, abdominal crunches, and workouts with weights—force muscles to perform beyond their current capacities. Over time, the muscles will respond by becoming more powerful.





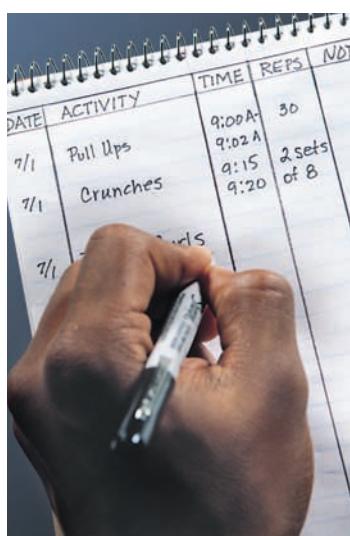
Getting Started

Warming up before playing sports or beginning an exercise session loosens your muscles, makes your joints more flexible, and prepares your body and mind to be in motion. Jogging, a game of catch, and a series of stretches all can serve to get you ready for more strenuous activities. Using similar easy activities to cool down after exerting yourself allows your heart rate, respiration, and temperature to return gradually to their normal resting states.

Exercise Notebook

An exercise notebook can be an important tool for making the most of your fitness efforts. Write down the routines you use and the number of repetitions for each exercise, and you'll have a record of your physical progress that can encourage you to keep improving. Over time, a written record will help you to evaluate and adjust your exercise plan.

Before beginning any exercise routine, it's a good idea to have a thorough physical examination. Your physician will give you the green light to undertake the activities you are planning, or explain any limitations you might have. A physician also can help you plan a program of good nutrition and exercise.



3

Date and Time	Exercise	Repetitions or Duration	Other
June 12 3:40 P.M.	Warm-ups	Jogging	
	Lateral raises	3 sets of 15	
	Push-ups	3 sets of 12	Keep back straight.
	Crunches	3 sets of 12	Feet flat, knees bent
	Squats	3 sets of 12	
	Walking crane lunge	5 minutes	Use hallway next to gym.
	Calf raises	3 sets of 20	
	Play basketball	30 minutes	Run hard to keep heart rate up.

An electronic spreadsheet might be a convenient way to track the types, durations, and repetitions of your exercises.



Fitness is a lifelong endeavor. Be patient and keep at it, gradually increasing the duration and degree of exertion.

Stretching

Stretching can relax your muscles, increase your flexibility, and help calm and focus your mind. You can stretch anytime, but you might find it especially productive as you are cooling down after exercising. Ligaments and muscles will already be loose, and stretching can be a relaxing way to conclude a workout.

As with any physical activity, learn the correct techniques and then gradually increase the range of each stretch. Breathe slowly and naturally. Stretching should never be painful; pay attention to your body and don't overextend.



Achilles Tendon and Calf Stretch

Stand with both feet on a ledge or platform that is at least 3 inches tall. Step back with your right foot, placing the ball of your foot on the platform edge. Stretch your calf muscles and Achilles tendon by slowly dropping your right heel toward the floor. Hold the stretch for 15 to 30 seconds, then step up onto the platform and stretch the left leg.

Hip and Lower Back Stretch

Sit tall with one leg extended, the other leg crossed over it, and your elbow against your raised knee. Gently turn your upper body toward your hand on the floor, and hold the stretch for 15 to 30 seconds.

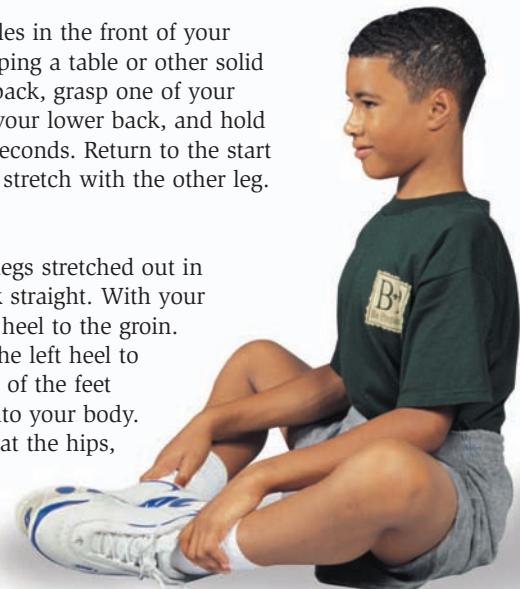
Reverse the position of your legs and arms, and repeat the stretch by twisting your torso in the other direction.

Quadriceps Stretch

To stretch the strong muscles in the front of your thighs, start standing, grasping a table or other solid object for balance. Reach back, grasp one of your feet, gently pull it toward your lower back, and hold that position for 15 to 30 seconds. Return to the start position, then perform the stretch with the other leg.

Groin Stretch

Sit on the floor with your legs stretched out in front of you and your back straight. With your right hand, bring the right heel to the groin. With the left hand, bring the left heel to the groin, joining the soles of the feet and bringing them close into your body. With your legs turned out at the hips, slowly press your knees to the floor. Hold for 20 seconds and release.



3



Lower Back Stretch

Lying on your back, bend a leg toward your chest, interlace your fingers around your knee, and gently pull it closer to your torso. After 15 to 30 seconds, release your hold and then perform the stretch with your other leg. (As a variation, you can bend both legs, grasp them together, and hold the stretch for 15 to 30 seconds.)

Hip Flexor Stretch

Kneel on one knee and position your other leg so that your thigh is parallel with the ground. With your hands on that thigh, lean forward until your thigh and calf form a right angle, then let your hips sink down. Hold the stretch for 15 to 30 seconds to loosen the muscles and tendons of your hip, then reverse the positions of your legs and repeat.

Hamstring Stretch

Stand with the right heel forward and place your hands on top of the right thigh to help you balance. Bend your back leg slightly. Bend at the hips and lower your torso toward your bent knee, gently stretching your back and the hamstring muscle in the back of your thigh. After 15 to 30 seconds of stretching, stand upright, reverse leg positions, and perform the stretch in the other direction.





Training for Stamina

The value of stamina training lies in raising your heartbeat and respiration rates, and maintaining those levels for 20 to 30 minutes or more. You can measure your heartbeat as you are exercising by stopping your activities for a moment and taking your pulse; place two fingers on the pulse point of your wrist or against the carotid artery in your neck. For most healthy people, the American Heart Association recommends an exercise target heart rate ranging from 50 percent to 75 percent of maximum heart rate.

- To figure maximum heart rate for a healthy person, subtract his or her age from 220.
- To figure your ideal heart rate for exercising, multiply your target number by your maximum heart rate. If you want to exercise at 70 percent of maximum heart rate, for example, multiply your maximum heart rate by .70:

$$(220 - \text{your age}) \times .70 = \text{target exercise heart rate}$$



"There were no shortcuts, I realized. It took years of racing to build up the mind and body and character, until a rider had logged hundreds of races and thousands of miles of road. I wouldn't be able to win a Tour de France until I had enough iron in my legs, and lungs, and brain, and heart."

—Lance Armstrong, *It's Not About the Bike*, 2000 (He overcame cancer to win bicycle racing's most prestigious event multiple times.)



**Cross-training—
engaging in a variety
of different sports
activities and
exercises—can
eliminate the monotony
of a single training
routine and can
increase the fitness
of a wide range of
muscle groups.**

For someone 17 years old, a target exercise heart rate of 70 percent would be 142 beats per minute.

Many activities lend themselves to stamina training. Playing basketball or soccer, for example, is an ideal way to have a good time and get plenty of exercise, too. The key is to keep moving so that your heart rate stays in the target zone of exertion.

If you are tuning up for a particular trek adventure, you can use specific forms of stamina training to target the muscles you will use the most during your outdoor activities. A few examples follow:

- To prepare for backpacking, climb up and down the stairs at a sports stadium, walk briskly up and down the sidewalks of steep city hills, jog on a treadmill set at an incline, use stair-stepping machines.
- To prepare for mountain biking, mimic mountain conditions on a stationary cycle by alternating periods of intense and easy pedaling.
- To prepare for paddling watercraft, swim to improve both your endurance and the strength of your upper body. Use a rowing machine at a gym.



Training for Strength

Develop a strength-training plan that is safe and effective, and that you can sustain through the months and years. An appropriate program involves exercises that work all of the major muscle groups. You might be able to use exercise equipment and weights at a school gymnasium or a health club, use a few free weights for exercising at home, or complete a thorough exercise routine without using weights at all. School coaches, physical education instructors, and other fitness experts can assist you in planning an exercise program that is right for you. Routines will be most effective when you follow these guidelines:

- Follow a qualified trainer's guidance when using weights or weight machines, and practice proper form throughout the repetitions of each set.
- Engage in strength training two or three days a week. Allow at least 48 hours between exercise sessions so that muscle tissues can recover.
- Include eight to 10 exercises for the large muscle groups of the upper and lower body.
- As you become stronger, gradually increase the intensity and duration of workouts.
- Be consistent. Stick with a good exercise routine for several months and you are likely to see improvements in your level of fitness.



Sample Exercise Routine Without Weights

UPPER BODY

Modified Push-Ups

Begin facedown, your arms bent and the palms of your hands flat against the floor. Keeping your spine and neck straight, let your knees serve as hinges while you push yourself upward until your arms are fully extended.

Slowly lower yourself back to the floor, then repeat. As your strength increases, shift to the regular push-up position with your weight on your hands and toes. Keep your spine and legs in a straight line.

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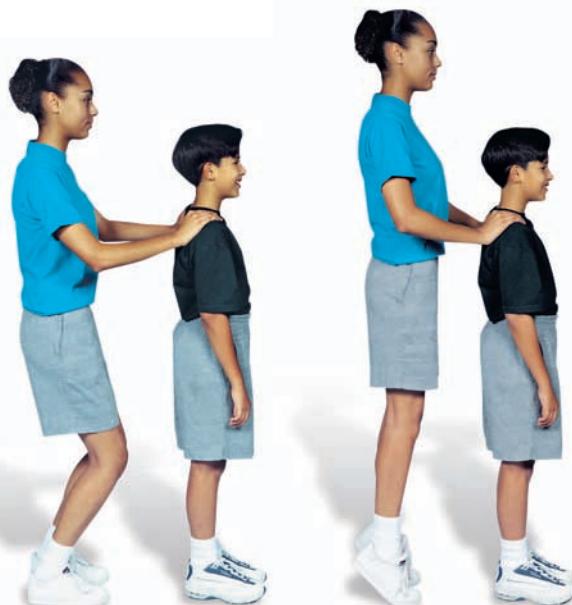
Lateral Raises and Front Raises

With your elbows slightly bent, stand upright and slowly lift your arms sideways in a smooth arc. When your arms reach shoulder height, slowly lower them and then repeat the motion. For variety, raise and lower your arms in front of your body. (Holding a can of food or other light weight in each hand will increase the workload of these exercises.)

LOWER BODY

Calf Raises

Ensure your balance by putting your hands on a wall, a pole, or the shoulder of a workout partner. Raise yourself on tiptoe as high as you can and hold that position for about three seconds, then lower your heels as far as they will go and again pause briefly. Repeat.





Squat

Keeping your spine straight, gradually bend your hips and legs, sliding down as if you were sitting on an imaginary chair. Lower yourself until your thighs are parallel with the ground. After several seconds in that position, slowly rise until you are standing, then repeat.

Walking Crane Lunge

This exaggerated form of walking is a good exercise for developing the thighs and buttocks. With your hands on your hips, take a wide step forward, leading with your heel and bending the knee until it is at a 90-degree angle. Be sure to keep your knee aligned with your heel. Press down onto the front heel, then bring the body back to an upright position with the legs together. Repeat with the other leg.



3**ABDOMEN*****Crunches***

Start by lying faceup in a comfortable position. Reduce stress on your lower back by bending your knees and keeping the soles of your shoes flat on the floor. Place each arm across your chest, then use your abdominal muscles to curl your torso far enough to lift your shoulder blades. Ease your torso back down and repeat.

**BACK*****Leg Raises***

Lying facedown, contract the muscles of one leg, keep it straight, lift it from the floor, and hold that position to the count of 10. Lower that leg, then do the exercise with the other leg, again counting to 10. Repeat.





Exercising With Weights

Used correctly, free weights and weight machines can be a boon to fitness efforts. Qualified fitness experts can help you learn how to use free weights and machines, and they can monitor your form to ensure that you are doing each exercise correctly. They are sure to remind you that beginning with light weights and gradually increasing exercise intensity will allow you to make progress without suffering injury.



3

Note: You should begin a weight-training program under the supervision of a qualified instructor.

Some of the weight-training exercises you might incorporate into your exercise routine include the following:

- Chest/bench press, seated row, overhead/military press, and overhead pull-down for upper-body strength
- Leg curls for hamstring strength
- Leg press and calf raises for lower-body strength
- Crunches for abdomen strength
- Spinal extensions for back strength



Leg extensions (quadriceps)



Leg curls (hamstrings)



Arm curls



Overhead pull-down



Overhead press (military press)



Chest press (bench press)



Mental Fitness

Your body has grace and strength that you can nurture and improve. Likewise, your mind is full of potential. Just as you take positive steps to build your physical strength and stamina, do all you can to enhance your mental fitness, too. Take advantage of opportunities to learn new skills, to engage in positive experiences, and to interact with others in productive ways. Take pride in your accomplishments and strive to do more. Wherever you go and whatever you do, approach life with enthusiasm, with dedication, and with joy.

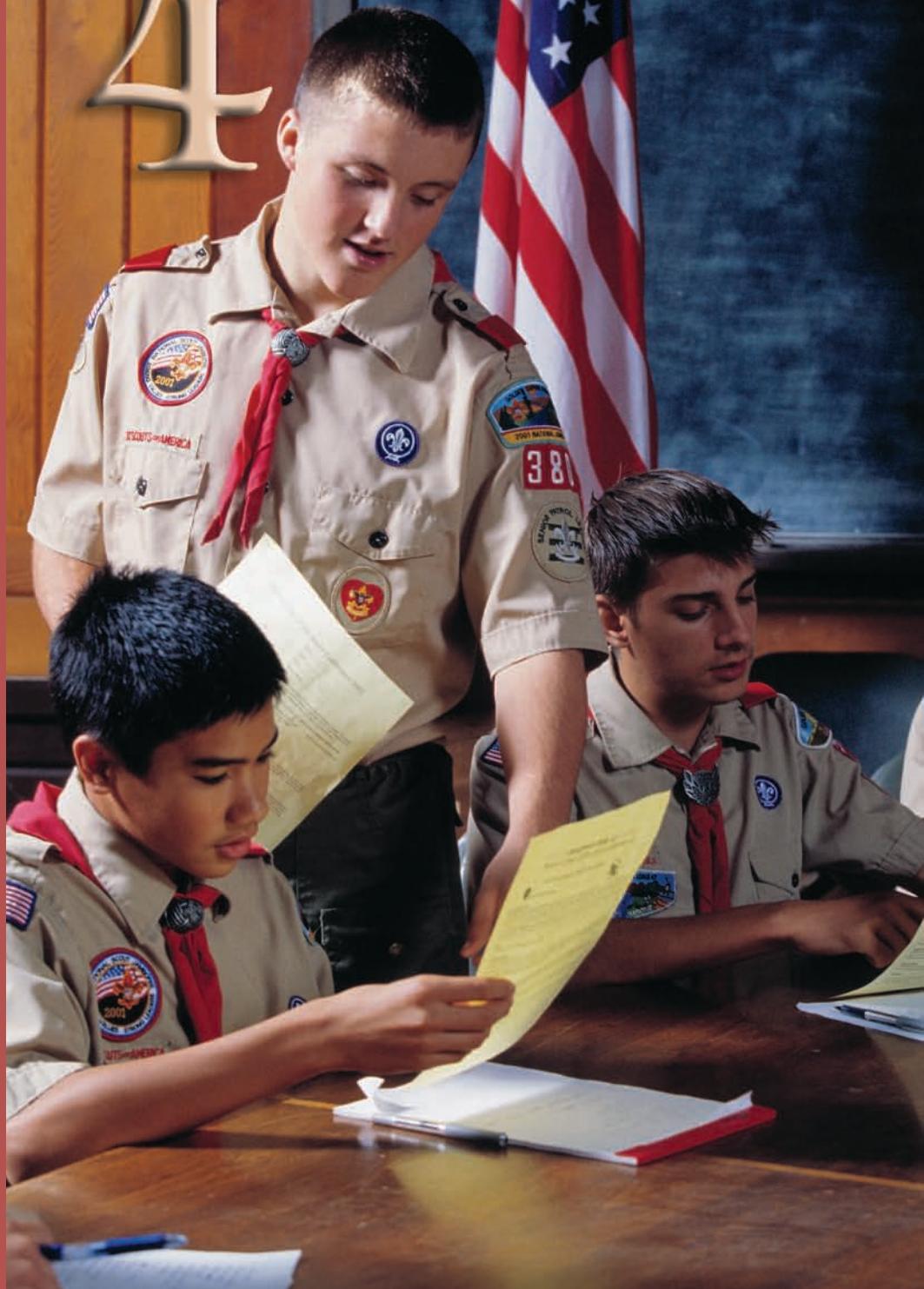
For more on the importance of attitude, see the chapter titled “Organizing for Adventures.”

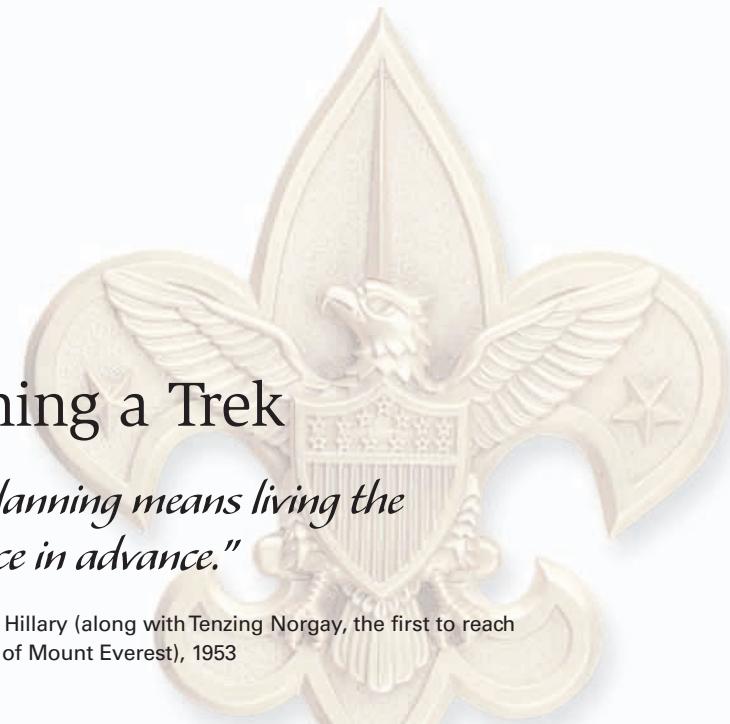
“Physical fitness is not only one of the most important keys to a healthy body, it is the basis of dynamic and creative intellectual activity.”

—John F. Kennedy (1917–1963),
35th president of the
United States

CHAPTER

1





Planning a Trek

“Good planning means living the experience in advance.”

—Sir Edmund Hillary (along with Tenzing Norgay, the first to reach the summit of Mount Everest), 1953



Planning is one of the great joys of an adventure. Anticipation builds when a group pores over maps and plans what to see and do in the out-of-doors. As you form a trip itinerary, you can imagine hiking a woodland trail, casting for catfish in a slow-moving river, or carving turns in fresh snow with cross-country skis. As you gather your gear you can almost see your tent pitched in a deep forest, your pack leaning against the summit marker of a high peak, your canoe paddle dipping into the waters of a quiet lake. As you repack your provisions, you can look forward to tasty dishes cooked outdoors. Once everything is prepared, anticipation will turn to action, and you can enjoy every adventure to the fullest.

Why Plan?

Adventures begin as daydreams. Transforming those dreams into reality requires thoughtful research and a written itinerary. Your goal is to make good estimates of what to expect and then to prepare well enough so that you are ready for the unexpected as well.

The more challenging the trek you consider, the more thorough your planning should be. Anticipating trail conditions, changes in elevation, distances to be traveled, expected weather conditions, the availability of water, and the locations of campsites will help your group plan an appropriate itinerary.

The most useful trek-planning tools may well be a notebook and a sharp pencil. Putting ideas on paper forces you to think them through. Checklists increase the likelihood you won't forget anything. After a trek, you can refer back to your notes to see which aspects of planning worked well and what can be improved the next time around.



Planning a trek, whether to a favorite campsite close to home or clear across the continent, is a matter of looking ahead, making realistic predictions of situations that might be encountered, and then preparing to meet them.

Planning Group Adventures

The chapter titled “Organizing for Adventures” discusses some of the ways that people come together to form groups and then to select outdoor activities. Treks should be satisfying for the most experienced group members, yet not so difficult that some in the group are pitted against situations far exceeding their abilities. In a group composed of people with varying levels of skill, part of the challenge for more capable members can be to help those with less experience succeed, ensuring that the entire group reaches its goals.

Planning Well

Backcountry lore is filled with cautionary examples of people going into the woods poorly equipped, lacking outdoor knowledge and skills, or unaware of potential dangers. The result of poor planning is often a dismal experience that leads to entertaining stories after it is over—a night in a wet sleeping bag, a day with no food, a long hike home with blisters and sunburn. Ill-prepared individuals have, in fact, sometimes managed to endure storms, deal with injuries, and become found after having gotten themselves quite lost. Unfortunately, there also are many cases of people whose lack of planning led to disaster.

Plan Ahead and Prepare—The First Principle of Leave No Trace

Trek planning can help you protect the environment. Research the area where you will travel and you’ll know if group size is limited, whether campfires are allowed, and where you can pitch your tents. Be realistic as you lay out your itinerary, and you can ensure that everyone will reach appropriate campsites at a reasonable hour each day. You also can prepare for the proper disposal of waste and ways to travel and camp without disturbing others.

For more on planning ways to enjoy the outdoors responsibly, see the “Leaving No Trace” section of this book.



Where to Go

America is blessed with terrific places for adventures. Wherever you live, you aren't far from lands that invite exploration and outdoor activities. Parks, forests, seashores, rivers, lakes, wetlands, deserts, and mountains abound. You can find small areas just right for a day hike, and great regions of forests, mountains, deserts, and plains that invite treks of days, weeks, and even months.

Many of America's recreational areas are on public lands administered by land management agencies. Depending on the popularity and condition of a particular area, agencies might regulate outdoor recreation with permits, reservation systems, and other management tools. Regulations exist for a reason, usually to enhance safety, minimize human impact, protect the resource, and ensure that future generations can enjoy visiting the areas, too. In addition to information about regulations, agencies can be valuable sources of information about the terrain, prevailing weather, and the current conditions of trails, rivers, snowfields, and other natural features.

The agencies administering the greatest expanses of public lands are those of the federal government. They include the Bureau of Land Management, the USDA Forest Service, the National Park Service, and the U.S. Fish and Wildlife Service.

Note: Abbreviations at right are for federal lands shown on this map. In many places, exact trail locations have not yet been determined. Locations of the trails indicated on this map may not be accessible for public use. Contact your local individual trail clubs and managing offices for the latest available trail locations.

National Park System

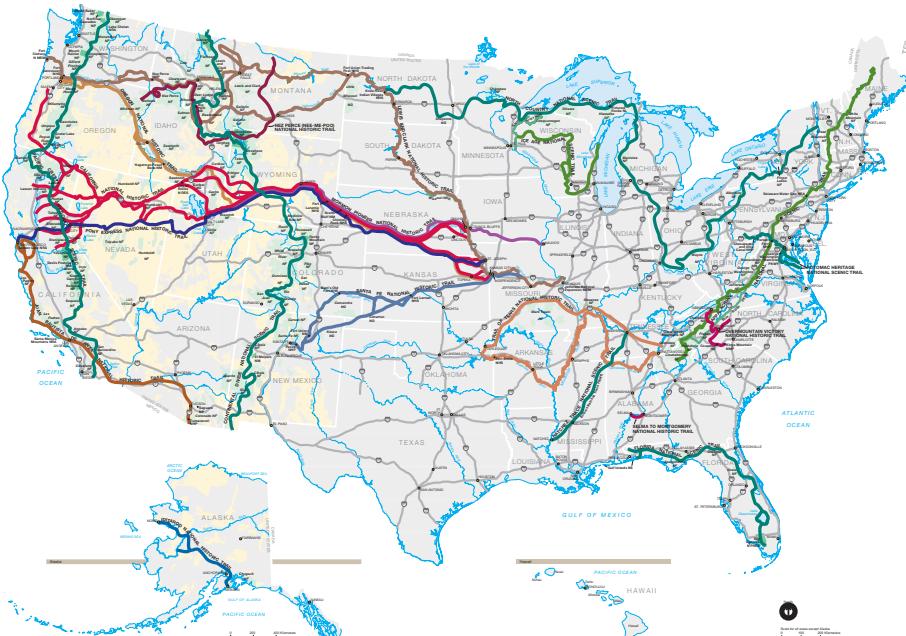
MEM	Memorial
NBP	National Battlefield Park
NHP	National Historical Park
NHS	National Historic Site
NM	National Monument
N MEM	National Memorial
NMP	National Military Park

NP	National Park
N PRES	National Preserve
NRA	National Recreation Area
NRR	National Recreational River
NRS	National River and Recreation Study
NS	National Seashore
NSR	National Scenic Riverway
PKWY	Parkway

National Forest System

NF	National Forest
NG	National Grassland

Bureau of Land Management



The American landscape features a rich variety of places for trek adventures. See the Fieldbook Web site for a larger version of this map.



USDA Forest Service

Gifford Pinchot, the first chief of the U.S. Forest Service, stated the guiding principle of the agency as “the greatest good for the greatest number in the long run.” The mission of the USDA Forest Service is to sustain the health, diversity, and productivity of the nation’s forests and grasslands to meet the needs of present and future

generations. One of the many public interests served by the Forest Service is providing opportunities for recreation in open spaces and natural environments. The Forest Service manages 191 million acres of America’s forests and rangelands, including national forests, experimental forests and ranges, grasslands, and land utilization projects.

Portions of some national forests are set aside as wilderness areas to preserve the unspoiled quality of the environment. The forests also are home to many of America’s national trails, national wild and scenic rivers, and national recreation areas.



National Park Service

The National Park Service, established in 1916, is directed by Congress “to promote and regulate the use of the . . . national parks, monuments, and reservations, . . . to conserve the scenery and the natural and historic objects and the wildlife therein . . . by such means as will leave them unimpaired for the enjoyment of future

generations.” In addition to protecting natural resources, the National Park Service strives to provide the public with opportunities for camping, wilderness exploration, hiking, horseback riding, cross-country skiing, watercraft adventures, and the study of nature and American history.

The National Park Service administers approximately 84 million acres of our natural, historical, and cultural heritage with units in almost every state in the Union and in Guam, Puerto Rico, and the Virgin Islands. Among Park Service areas are Yellowstone (America’s oldest national park), Alaska’s Wrangell-Saint Elias National Park and Preserve (at more than 13 million acres, the largest park), and the Thaddeus Kosciuszko National Memorial in Pennsylvania (the smallest facility with just .02 acres).



Bureau of Land Management

The territories of the Bureau of Land Management contain rugged desert landscapes, evergreen forests, snowcapped mountains, and an abundance of wildlife.

An agency within the U.S. Department of the Interior, the bureau administers 262 million acres of America’s public lands, located primarily in 12 western states. The bureau sustains the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations. Its areas are managed under multiple-use principles that encourage outdoor recreation as well as fish and wildlife production, livestock grazing, timber harvesting, industrial development, and watershed protection.



U.S. Fish and Wildlife Service

The mission of the Fish and Wildlife Service is to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. Its primary responsibilities are for migratory birds, endangered species, freshwater and migratory fisheries, and certain marine mammals. The

Fish and Wildlife Service manages more than 500 national wildlife refuges stretching from the Arctic Ocean to the South Pacific, and from Maine to the Caribbean. Varying in size from half-acre parcels to thousands of square miles, the National Wildlife Refuge System encompasses well over 90 million acres of the nation's wildlife habitats, making up the world's largest and most diverse collection of lands set aside specifically for wild animals.

The National Trails System

Trails provide travelers access to the heart of the outdoors. Most are open to hikers and backpackers. Certain trails also are designated for use by horses and pack animals, and a few can be accessed by mountain bikes. More than 12,000 miles of trails thread their way through national parks, a hundred thousand miles of trails are in national forests, and thousands of miles more can be found on lands administered by other agencies. Some of the more well-known trails include:

- Appalachian National Scenic Trail—2,158 miles
 - Continental Divide National Scenic Trail—3,100 miles
 - Florida National Scenic Trail—1,300 miles
 - Ice Age National Scenic Trail—1,000 miles
 - Iditarod National Historic Trail—2,350 miles
 - Juan Bautista de Anza National Historic Trail—1,200 miles
 - Lewis and Clark National Historic Trail—3,700 miles
 - Mormon Pioneer National Historic Trail—1,300 miles
 - North Country National Scenic Trail—3,200 miles
 - Nez Perce (Nee-Me-Poo) National Historic Trail—1,170 miles
 - Oregon National Historic Trail—2,170 miles
 - Pacific Crest National Scenic Trail—2,638 miles
 - Potomac Heritage National Scenic Trail—700 miles
 - Santa Fe National Historic Trail—1,203 miles
 - Trail of Tears National Historic Trail—2,052 miles

Finding out who manages the land through which you want to travel is crucial to planning a trip. Private and public lands often have restrictions and regulations, usually designed to protect the environment and the outdoor experience for all users.

State, County, and City Agencies

Most states, counties, and cities have agencies dedicated to the management, preservation, and maintenance of the natural resources within their jurisdictions. Their names indicate the scope of their responsibilities—for example, departments of ecology, state park and forestry departments, county forestry commissions, fish and game management agencies, departments of natural resources, and offices of parks and recreation. Many have Web sites explaining their functions and recreational opportunities.

BSA Local Council High-Adventure Bases

High-adventure bases operated by Boy Scouts of America local councils can drop you right into the middle of terrific action. Whitewater kayaking, extended backpacking, and sailing are just a few of the activities that groups can enjoy. (Links on the BSA Web site describe these and other high-adventure opportunities. See <http://www.scouting.org/boyscouts/directory>.)



BSA National High-Adventure Bases

For real excitement beyond your council, it's hard to beat the national high-adventure bases of the BSA. Designed for Venturers, older Boy Scouts, and Varsity Scouts, each base offers the training, equipment, and support needed to set out on wilderness treks that will challenge your skills, knowledge, and willpower.



Philmont Scout Ranch

Wander the rugged high country of northern New Mexico on a backpacking trek, as a member of a conservation work crew, or by taking part in an advanced wilderness adventure. Philmont is a backpacker's paradise, covering more than 137,000 acres of mountains, forests, meadows, and streams.



Staffed camps offer program opportunities including rock climbing, black-powder rifle shooting, living history, horseback riding, archaeology, environmental awareness, and many others.



Florida National High Adventure Sea Base

Explore the clear waters of the Florida Keys and the Bahamas by watercraft. Snorkel and scuba dive among schools of brilliantly colored tropical fish. Investigate a primitive island, search for the wreckage of galleons, fish the Gulf Stream waters, practice windsurfing, and study the marine life of North America's only living coral reef.

Northern Tier National High Adventure Program

The Sioux and Chippewa once traveled this northern lake country. French-Canadian trappers followed, their canoes loaded with furs. Headquartered in the beautiful Superior-Quetico boundary waters of Minnesota, Ontario, and Manitoba, the Northern Tier offers wilderness canoeing expeditions and programs featuring fishing and winter camping.



4

Planning How Long

Where you can go in the out-of-doors and what you can do will be strongly influenced by how much time you have for a trek. A group's weekend outing nearly always will be fairly close to home and involve a limited number of options. With several weeks to travel, the same group can greatly extend the range of its wanderings. The longer or more distant a trek will be, the more important the planning process becomes, both to cover all the details of the trek and to explore all the possibilities.

Include in your plans sufficient time to travel to and from the points at which your adventure will begin and end. If necessary, also include time to acclimatize to significant changes in elevation.

Good planning has been at the heart of many successful treks. The Lewis and Clark expedition, for example, set out in 1803 on a three-year journey of exploration that would take them across North America and back. As he prepared for the expedition, Meriwether Lewis tried to think of everything that

33 men would need for a trip of several years in uncharted terrain. His long list of items included 193 pounds of dried soup and three bushels of salt. The expedition eventually ran out of nearly all of



their supplies except for two items—gunpowder and the lead to make bullets. Lewis knew that as long as they could hunt, the men would be able to feed themselves. To that end, he had arranged to bring along three times the amount of gunpowder and lead that the expedition actually used.

Planning How Far

The distance a group can cover depends on weather, terrain, physical conditioning, and the weight of the gear. Is the country rugged? In terms of time, a mile of flat trail is far different from a mile that gains a thousand feet in elevation. Paddling across a lake will take longer than guiding a watercraft down a fast-flowing river. Are group members lean and strong or a bit out of shape? As a group, do you walk with a fast, steady stride or at a leisurely pace with frequent pauses to examine vegetation, watch wildlife, and take photographs?



Plan the distances of your first treks conservatively. It is better to have too much time to reach a destination than too little. By not rushing, you might enjoy yourself more, be less apt to make mistakes, and have time for activities other than traveling and setting up camp.

For more on determining travel distances, see the chapter titled “Mountain Travel.”

Even the best-prepared group should allow extra time for unforeseen events. Give yourselves anywhere from a few hours’ to several days’ leeway in case headwinds kick up during trips by watercraft or bicycle, bad weather moves in, or the terrain is more rugged than you had expected. A layover day during a longer trek allows group members to rest and relax, enjoy side trips, or prepare a lavish meal.

Planning Alternatives

Trek plans should include plenty of flexibility. Cover the basics, ensuring that you have the right people, gear, food, and a decent itinerary, but try not to set anything else in stone. That way you will be better able to adapt to changing circumstances in the field. It also is a good idea to devise an alternate itinerary in case your original plans are disrupted by unforeseen events.

Planning What to Carry

The amount of food and equipment you will need is a crucial consideration in planning any trek adventure. Most groups find that taking five or six days of food is about the maximum weight they can reasonably carry and the maximum bulk that will fit in backpacks or in panniers on bicycles or pack animals. If your group requires cold-weather clothing or other extra gear, pack space will be even more limited. One solution for longer treks is to arrange to be resupplied along the way with additional provisions.

For more on equipment, see the chapter titled “Gearing Up.” For more on food, see the chapter titled “Outdoor Menus.” For more on resupplying a group, see the chapter titled “Backpacking.”

Planning How to Get There

As you design a journey, don’t overlook the means by which your group will reach the starting point of the trek. Public transportation can be a possibility, though traveling by private motor vehicle is often more convenient. It might be possible for your group to be dropped off at one trailhead and picked up at another, allowing you to complete a route without backtracking. Find out where vehicles can be safely parked and whether parking permits are required. Land management agencies and local guidebooks often have that information.

Writing a Trip Plan

When your group arrives at a consensus of what your itinerary and alternate plans will be, write them down. Include a description of your intended route, where you want to camp, and what time you will return. Leave copies with several responsible adults. A written itinerary lets support people know where you are going and when you intend to return, but only if you stick to it.

Trip Plan

Trip plan of _____

Where

Destination _____

Route going _____

Route returning _____

When

Date and time of departure _____

Date and time of return _____

Who

Names of participants _____

Why

Purpose of the trip _____

What



Gear and other items to be taken:



Outdoor Essentials



Other clothing and gear _____

Permits required _____

Special equipment needs _____

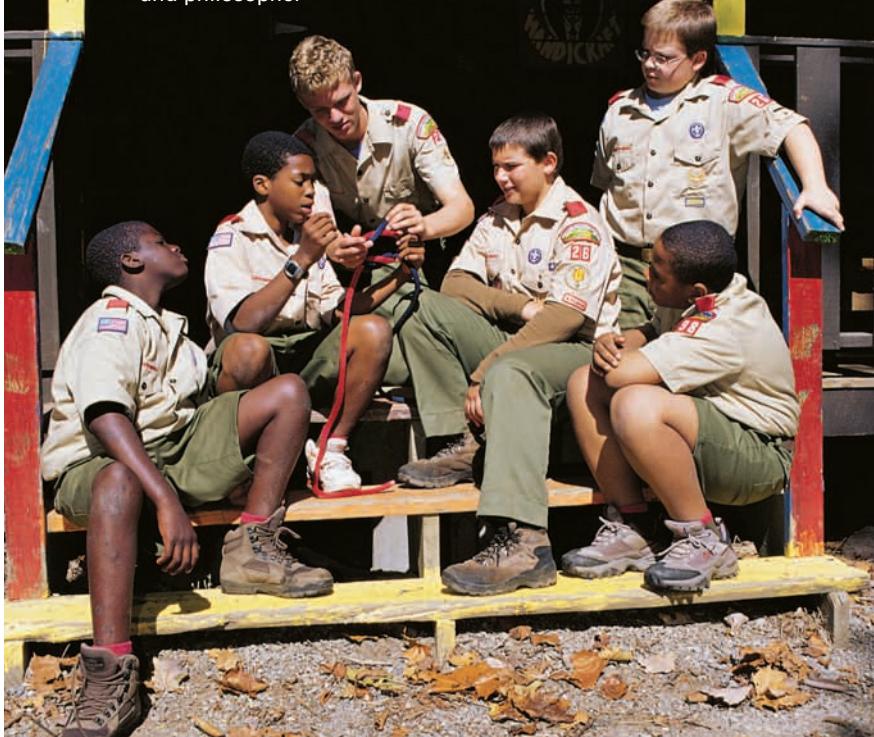
Special clothing needs _____

How

List the principles of Leave No Trace that relate to your trip. For each one, write a sentence explaining what the patrol will do to follow that principle. _____

“Our belief at the beginning of a doubtful undertaking is the one thing that assures the successful outcome of any venture.”

—William James (1842–1910), American psychologist and philosopher



Being Prepared for Emergencies

Perhaps the most critical test of a group's level of preparation will occur if emergencies arise. Precious time needed for response to a crisis can be added by having on hand emergency contact information and an emergency action plan. This is true on a day hike, an overnight or longer unit camp, and all other activities, including high-adventure treks.

Emergency Response Plan

An emergency response plan informs group members of an approach to be taken in case of injuries or illnesses. It is strongly recommended that the group members practice this plan before setting out. Along with your trip plan, copies of the emergency response plan should be provided to those persons in the frontcountry who can assist your group.

If you are delayed for a nonemergency reason, make every effort to notify your contacts so that an emergency response is not activated. And when you return, be sure to notify everyone with whom you have left a trip plan so they won't report you missing or worry unnecessarily.

Sample Emergency Response Plan

Trip Location and Description

(Attach a copy of the trip plan.)

Date _____

Group InformationGroup leaders _____
_____Medical training level of leaders _____
_____Group members _____
_____Medical training level of members _____
_____**Resources**Locations of nearest public telephones _____

(If a mobile telephone will be carried, ensure that batteries are fully charged.)

Group first-aid kit: Are contents up-to-date? _____

Who will carry it? _____

Emergency ContactsTelephone numbers of people and organizations to notify

(Land management agency, BSA council officials, emergency response system, and/or search-and-rescue alert numbers)

Driving instructions from trailhead or activity area to clinics, hospitals, and other health-care facilities _____
_____**Action**Steps to be taken in the event of an emergency



Emergency Contact Information

Each person planning to go on a trek should provide emergency contact information to group leaders and support personnel, either through official organization forms or a card such as this one:

Sample Emergency Contact Information Card

Name _____ Date _____

Primary Emergency Contact

Name _____

Relationship _____

Telephone numbers

Home _____

Work _____

Mobile _____

Secondary Emergency Contact

Name _____

Relationship _____

Telephone numbers

Home _____

Work _____

Mobile _____

For more on planning ahead to maximize the safety of a trek, see the chapter titled “Managing Risk.”

The process of planning can enliven the days and weeks leading up to a trek by focusing your group’s attention on the possibilities ahead. Preparing well for a trip also can ensure that you have considered the gear and provisions you will need, the itinerary you will follow, and the actions you will take if an emergency arises. That will leave you free to enjoy all that you discover along the way.



CHAPTER

5



Outdoor Menus

"Happiness is a good camp meal."

—From *Fieldbook*, 2nd edition, Boy Scouts of America, 1967



A camp cook stirs a pot of stew bubbling over the flame of a backpacking stove. Rafters resting in the eddy of a rushing river reach into their pockets for handfuls of dried fruit and trail mix. Long-distance hikers deep into a journey dig through their packs to see what's left of a 10-day supply of provisions. Winter campers brush the evening snow from their hats and enjoy a hearty meal that will help them stay warm through the night.

If you've spent much time in the outdoors, you know that eating is a constant necessity. Meals can be among the great pleasures, too—fun to prepare and a highlight of a trek. Food will brighten a stretch of stormy weather, energize trekkers striving toward a destination, and revive many a weary soul.

As you plan your menus, you also have the opportunity to shape the sort of experience you have during a trek. When simplicity is important, the provisions in your pack can be basic as well—bags of flour, beans, dried vegetables, powdered milk, jerky, nuts, and a few other items from which to make your meals. When convenience is higher on your list of priorities, or when cooking gourmet meals is an activity you anticipate with pleasure, there is a tremendous range of ingredients you can take along to prepare dishes that will be as memorable as any other aspect of a journey.

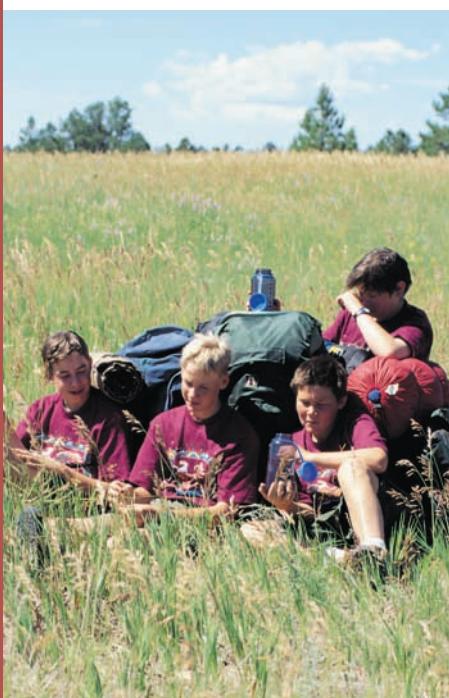
Some travelers are content to eat the same foods day after day. Others crave variety. Whatever your food interests, plan well and then choose your provisions with care. Once you hit the trail, you can turn your attention to the adventure unfolding around you, confident that the food you need is in your pack and that there will be plenty to go around.

Emergency food is one of the 10 Scout Outdoor Essentials to be carried on every trek. A small bag of trail mix, some fruit, and a couple of energy bars will ensure that you will always have something to eat regardless of delays, emergencies, or other challenges.

For more on the Scout Outdoor Essentials, see the chapter titled “Gearing Up.”

Planning Menus

The length of a trip and the manner in which you will move your gear and provisions are factors in determining the nature of a trek menu:



- On trips of just a few days, you can take any foods that will stay fresh and that you are willing to carry.
- As trek distances and durations increase, the weight of provisions will become a concern of increasing importance. Careful food selection should allow you to eat well with about $1\frac{1}{2}$ to $2\frac{1}{2}$ pounds of ingredients a day for each person. Decide at home what to prepare for each camp meal, then bring ingredients specifically chosen for each dish. For convenience, measure meal ingredients and carry them in plastic bags marked to identify the contents, the meal for which the ingredients are intended, and instructions for preparation.
- For extended journeys, trek provisions planning might be the most practical method of food selection. Instead of separately bagging ingredients for each meal, pack staples in bulk (so many pounds of cheese, so much trail mix, so many packets of sauce mix, etc.), then draw on them each day as you would the contents of a kitchen cupboard at home. Eating the berries you picked or the fish you caught can provide a welcome change from the monotony of trail food.

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With good planning, Scouts and other outdoor travelers should be able to manage backpacks with enough food, stove fuel, and gear for about a week on the trail. Longer treks will require resupplies of provisions. Methods include prearranged trailhead rendezvous and mail drops.

For more on resupplying, see the chapter titled “Backpacking.”



The Nuts and Bolts (and Fruits and Grains) of Nutrition

Food is fuel for the body. The harder your body works, the more calories it burns and the more you need to eat. Those calories come from three primary sources—carbohydrates, proteins, and fats. For healthy, active people, a balanced diet includes about 50 percent to 60 percent carbohydrates, 20 percent to 30 percent proteins, and 15 percent to 25 percent fats.

Following nutrition guidelines can help you develop healthy lifelong eating habits. While these guidelines might also be useful for ensuring variety in your menus, any nutritional deficiencies that might occur during treks can be made up when you get home.

Carbohydrates

Carbohydrates provide both quick and long-term energy. Whole-grain bread, bagels, crackers, and cereals are loaded with carbohydrates. So are bulgur, lentils, rice, and other grains, and pastas including noodles, spaghetti, and macaroni. Fruits and vegetables are sources of carbohydrates, and also contain high levels of vitamins and minerals.

Proteins

Proteins are essential for building and repairing muscle and bone, and are sources of calories. Beef, poultry, fish, nuts, eggs, and dairy products all are protein-rich foods.

Fats

Fats contain about twice the calories per ounce as do carbohydrates or proteins. Cheese, margarine, vegetable oil, and other foods with a high fat content can keep you going for hours. Since you burn calories to stay warm, eating high-fat foods before going to bed on cold evenings will help you enjoy a comfortable night's sleep.



Vitamins, Minerals, and Nonnutritive Dietary Essentials

In addition to carbohydrates, proteins, and fats, your body needs water, fiber, and a sufficient supply of vitamins and minerals.

Water

The human body is made up of 70 percent water. Drinking plenty of water will help you digest food, stay energized, and better cope with the challenges of heat and cold.

For information on dehydration, see the chapter titled “Managing Risk.” For guidelines on treating drinking water, see the chapter titled “Hygiene and Waste Disposal.”

Fiber

Fiber is roughage that is not absorbed by the body. It helps move food products through the digestive tract, reducing the likelihood of constipation. Many grains, fruits, and vegetables close to their natural forms are high in fiber.

Vitamins and Minerals

For all but the most extensive treks, a diet composed of a variety of foods that includes fruits and vegetables is likely to provide the vitamins and minerals you need to maintain good health.

Shopping for Trek Adventure Food

Adventurers a century ago had a limited choice of provisions compact enough to carry and stable enough not to spoil. Wilderness travelers relied on grains, flour, pemmican, and jerky. Trekkers today can still build their menus around simple staples, but they also have other forms of food from which to choose.

Dry Foods

Nuts, pasta, flour, beans, rice, seeds, powdered milk, and other dry foods form a large portion of a diet for active people. They usually are less expensive when purchased in bulk and then repackaged for the trail. Protect them from moisture, and they are unlikely to spoil.



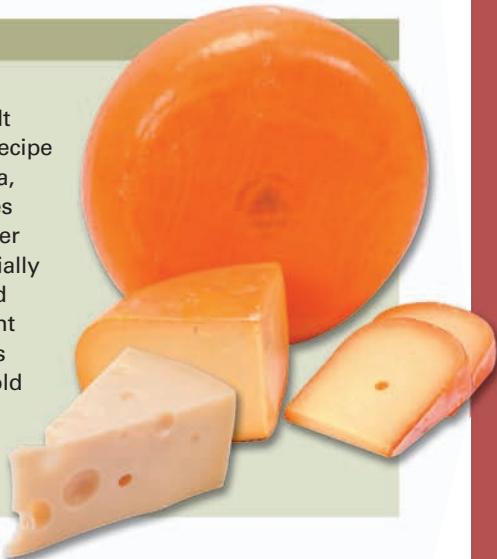


Fresh Foods

Fresh foods typically are more nutritious than highly processed forms of the same items; they contain more vitamins and minerals, as well as provide roughage. Many won't keep long without refrigeration, but if you don't mind carrying the weight you can take fresh fruits, vegetables, and certain meats for meals during the first days of a trek. River rafters sometimes stock insulated chests with ice to preserve a wide range of perishable food.

Cheese

Cheese is a high-calorie fresh-food favorite of many outdoor travelers. It can be eaten by itself or used as a recipe ingredient. Jack, cheddar, mozzarella, Parmesan, and other harder varieties of cheese will stay fresh for a number of days without refrigeration, especially if the weather is cool. Cheese sealed in plastic when purchased also might last longer if the airtight wrapping is left unopened. Should a layer of mold appear on a piece of hard cheese, pare it away with a knife and use the unaffected portion underneath.



Canned Foods

Many foods are available in cans. If weight is an issue, though, you'll want to be very selective about which canned products, if any, you decide to carry. Small cans of tuna or boned chicken, for example, weigh just a few ounces and will add protein, calories, and flavor to pastas, soups, and other dishes. Wash and flatten empty cans, then carry them home for proper disposal.

Convenience Foods

Every supermarket offers dozens of convenience foods that are ready to eat or can be prepared quickly. Those you might want to try include gravy and pasta sauce mixes, biscuit and pancake mixes, jerky, energy bars, and main courses that require only the addition of hot water.

Dehydrated/Freeze-Dried Foods

Dehydrating and freeze-drying remove most of the moisture from a food item. The result is a product that weighs ounces rather than pounds and that won't take up much room in your pack. The serving sizes listed on packaged foods often are optimistic—a freeze-dried entrée that says it contains food for four might, in fact, be just enough to feed two hungry backpackers.

Dehydrating Your Own Foods

A dehydrator designed for home use might be a worthwhile investment for Scouts interested in cutting costs and increasing the variety and appeal of their outdoor meals. For best results, follow the instructions that come with the dehydrator. Many can be set up to dehydrate fresh produce, herbs, sauces, meats, eggs, and even dairy products.

A kitchen oven also can be used as a dehydrator. Here's a good way to dry vegetables and fruit:

- ❶ Begin with fresh, ripe produce. Wash it well; remove cores, stems, and bruised or brown spots; and thinly slice.
- ❷ Apples, peaches, and other soft produce can be dehydrated without further preparation. Tougher vegetables such as broccoli and cauliflower should be steamed briefly before dehydrating. Place slices in a vegetable steamer inside a large pot containing an inch of water and bring to a boil, or microwave them in an appropriate container after sprinkling them with water and putting on the lid. Steam or microwave for half the time normally used for cooking.
- ❸ Remove an oven rack, then set the oven at its lowest temperature. Tightly stretch cheesecloth or muslin over the rack and secure it with safety pins. Spread produce slices on the cloth, put the rack in the oven, and leave the door open a few inches. (If necessary, prop the door open.)
- ❹ Sample a few slices now and then. When they are dry but not brittle (a process that might take eight hours or more), pack them in plastic bags, then store in a refrigerator or freezer until you need them for a trek. Dehydrated fruits and vegetables can be eaten as they are, added to dishes you are cooking, or soaked in water for a few hours to restore their original sizes and shapes.





Breakfast

A good breakfast gives you a foundation of energy to power you through the morning. Include something to drink (nothing beats a hot cup of cocoa on a chilly morning), some fruit (fresh, dried, or a juice mix), and a main course. If you are eager to get out of camp, a bowl of granola with nuts, fruit, and some reconstituted powdered milk can hit the spot. On more leisurely mornings you might prepare hot cereal, pancakes, hash browns, or scrambled eggs.

Eggs

Eggs are a campground treat, both as breakfast items and as recipe ingredients. Fresh eggs will stay that way for a couple of days without refrigeration. (Pack three or four in an empty cardboard potato-chip tube, separating and cushioning them with loosely wadded newspaper.) Many outdoors or camping supply stores and catalogs offer dried eggs in a convenient powdered form.



Trail Food

Food to snack on throughout the day plays such an important role in outdoor nutrition that it is almost a meal in itself. Maintain energy reserves between meals by eating frequently, especially whenever you start to feel hungry. Fruit, cheese, and trail mix are ideal. Make your own mix by combining nuts, raisins, and candy-coated chocolate bits, then store the mix in a plastic bag. Experiment by adding other ingredients—shredded coconut, for example, or granola.



“Cooking and eating in the outdoors present exciting challenges, and when you’re properly prepared, can provide a pleasant experience.”

—From *Fieldbook for Canadian Scouting*, Boy Scouts of Canada, 2000

Lunch

Plan lunch foods that can be eaten without much preparation. Bagels, pita bread, and tortillas pack well without crumbling, while bread and crackers require more care to prevent them from being smashed in your pack. Round out a lunch menu with peanut butter, cheese, and meats that keep without being refrigerated—summer sausage and salami, for example. Add some fresh or dried fruit and, for dessert, dip into your bag of trail mix.

Dinner

Dinner is a chance for you to catch up on nutrients your other meals might have lacked, and to consume the calories you will need to keep you warm through the night. Evening menus are limited only to your imagination and the amount of weight you are willing to carry on a trek. In general, though, travelers out for more than a few days usually settle into a routine of preparing one-pot specials.

One-Pot Specials

To prepare a one-pot main course, choose an ingredient from each column in the One-Pot Special Chart and combine in proportions appropriate for the number of people in your cooking group. Give some thought to the preparation time for each ingredient to determine the order in which you will add the items. Dried vegetables, for example, might require soaking before being added to the pot, and some sauce mixes dissolve more readily in cold water than in hot. Complete the meal with a beverage and, if you wish, something for dessert.



The One-Pot Special Chart

(Select one item from each column.)

Pastas and Grains ¹	Sauces ²	Protein ³	Extras ⁴
Noodles	Soup mixes	Canned meats (chicken, tuna)	Cheese
Macaroni	Gravy mixes	Jerky (beef, turkey)	Nuts
Ramen-style noodles	Spaghetti sauce mix	Nut burger mix	Coconut
Rice (white, instant, or brown)		Summer sausage	Raisins
Bulgur		Dried chipped beef	Sunflower seeds
Couscous		Textured vegetable protein (TVP)	Bacon bits

¹Notes on pastas and grains:

- White rice—1/2 cup dry rice and 1 cup of water per person per meal. Combine rice and cold water in the pot and bring to a boil. Cover and let simmer until done—about 8 to 10 minutes.
- Instant rice—1 cup dry instant rice and 1 cup of water per person per meal. Stir the instant rice into boiling water, remove from the stove, and let the pot sit for a few minutes.
- Brown rice—1/2 cup dry rice and 1 cup of water per person per meal. Prepare as you would white rice, but allow 30 to 45 minutes of cooking time. (The extended cooking time makes brown rice impractical on many treks.)
- Pasta—4 ounces per person per meal. Bring a pot of water to a boil. If you have it, add a tablespoon of cooking oil or margarine, then stir in the pasta. Allow to boil until pasta is done (cooking time will vary according to the type of pasta). Drain.
- Ramen-style noodles—one package per person per meal. For a stewlike consistency, add 1 cup of water per packet; 2 cups of water per packet makes a soup. Measure the water into a pot, bring it to a boil, add the noodles, and cook until done—about 3 to 5 minutes. (The noodles will be easier to eat with a spoon if you break them up before adding them to the pot.)
- Packaged entrées—Convenience-food versions of macaroni and cheese and many dishes featuring pasta and rice come with several or all of the one-pot ingredient columns covered. For best cooking results, follow the instructions on the package.

²Notes on sauces:

- Powdered sauce mixes in a variety of flavors can be purchased in packets that are easy to carry and convenient to prepare.
- Instant soup and powdered gravy mixes also can be used as sauces for pasta and rice dishes.

³Notes on protein:

- A 6-ounce can of tuna or boned chicken is a good amount for two people.
- As a meat substitute, textured vegetable protein (TVP) is lightweight, easy to pack, and nutritious.

⁴Notes on extras:

- Vegetables and fruit—Green beans, corn, tomatoes, apples, peaches, pears, and other fruits and vegetables are available in freeze-dried or commercially dehydrated forms. Many can be dehydrated at home, too. On short trips, consider carrying fresh fruit and vegetables.
- Soaking dried fruits and vegetables for an hour before preparing a meal will reconstitute them and hasten cooking.
- Fresh potatoes can be sliced and boiled, then eaten as a side dish or added to one-pot specials. Reconstitute potato flakes according to the product directions.
- Margarine adds fat and flavor to recipes. Liquid margarine comes in plastic squeeze bottles just right for backpacking. Stick or semisolid margarine can be stored in a plastic jar with a secure screw-on lid.

Trek Provisions Planning

For many shorter trips, you can plan each meal then purchase and repackage the ingredients for it. That strategy will become increasingly cumbersome if a trek will extend beyond three or four days. When that's the case, trek provisions planning is a more effective and time-efficient means of organizing food. Instead of having each meal in one package, carry bulk quantities of menu ingredients and then draw on them to prepare one-pot specials and other recipes throughout a trek. As a trip winds down, there are bound to be more of some ingredients left than others. That's when you can use your imagination to devise meals from what is still available.

Here is one way that trek provisions planning works:

- ① Calculate the total amount of food that can reasonably be carried on the trek—usually between 1½ and 2½ pounds per person per day. For example, five people on a weeklong trek would need a total of 70 pounds of provisions, as shown below:

$$\begin{aligned} 7 \text{ (days)} \times 5 \text{ (people)} \times 2 \text{ (pounds of food per person per day)} \\ = 70 \text{ pounds of food} \end{aligned}$$

- ② Develop a checklist similar to the one at right that organizes the foodstuffs you want into categories.
- ③ Calculate how many pounds of food you will need in each category. Based on the food lists of many groups packing provisions for extended treks, the approximate percentage of the total food weight assigned to each category is as follows:

General staples—40 percent

Breakfast foods—10 percent

Trail foods—25 percent

Dinner foods—25 percent

(Feel free to adjust the percentages if your experiences in the field suggest that your group's preferences are different from those listed here.)

Calculate the pounds for each category by multiplying the total trek food weight by the percentages: general staples X .40, breakfast foods X .10, trail foods X .25, dinner foods X .25.

Use the checklist as a general guideline for selecting trek provisions. As you determine amounts, consider the sorts of recipes you will want to prepare, the likes and dislikes of those traveling with you, experiences you've had with food on other treks, and the importance of a balanced diet.



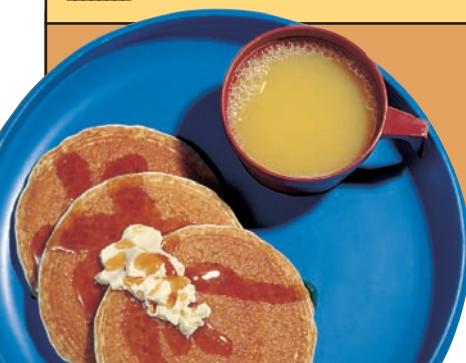
Trek Provisions Planning Checklist

General Staples

- (Ingredients for use with any meal)
Percentage of the total food weight—40 percent
- TARGET WEIGHT** for this category
- ITEM WEIGHT**
- _____ Fruit drink mixes (lemonade, apple cider, etc.)
 - _____ Cocoa mix
 - _____ Brown sugar
 - _____ Honey
 - _____ Cheese (cheddar, jack, mozzarella, Parmesan)
 - _____ Meat (jerky, summer sausage, salami, pepperoni, and other unrefrigerated varieties)
 - _____ Peanut butter
 - _____ Cornmeal
 - _____ Biscuit mix
 - _____ Tortillas
 - _____ Bagels
 - _____ Pita bread
 - _____ Powdered milk
 - _____ Dried eggs
 - _____ Oil
 - _____ Margarine
 - _____ Seasonings
- WEIGHT** of general staples

Breakfast Foods

- (Ingredients for morning meals)
Percentage of the total food weight—10 percent
- TARGET WEIGHT** for this category
- ITEM WEIGHT**
- _____ Oatmeal and other hot cereals
 - _____ Granola and other cold cereals
 - _____ Pancake mix
- WEIGHT** of breakfast foods



Trail Foods

- (Ingredients to combine into trail mix, to eat alone, or to add to other dishes)
Percentage of the total food weight—25 percent
- TARGET WEIGHT** for this category
- ITEM WEIGHT**
- _____ Fruit, dried (apricots, apples, cranberries, pineapple, banana chips, etc.)
 - _____ Peanuts
 - _____ Mixed nuts
 - _____ Sunflower seeds
 - _____ Raisins
 - _____ Coconut
 - _____ Crackers
 - _____ Energy bars
 - _____ Hard candy
 - _____ Candy-coated chocolate bits
- WEIGHT** of trail foods

Dinner Foods

- (Ingredients primarily for one-pot specials and other evening meals)
Percentage of the total food weight—25 percent
- TARGET WEIGHT** for this category
- ITEM WEIGHT**
- _____ Pasta (noodles, macaroni, ramen-style noodles)
 - _____ Rice
 - _____ Beans (refried, black, lentils)
 - _____ Potato flakes
 - _____ Couscous (steamed semolina pasta)
 - _____ Vegetables (dried)
 - _____ Onion flakes
 - _____ Falafel (spicy vegetable patties)
 - _____ Hummus (pureed chickpeas)
 - _____ Sauce and gravy mixes (powdered)
 - _____ Instant soup
 - _____ Brownie mix
 - _____ Cake mix
 - _____ Instant pudding mix
- WEIGHT** of dinner foods

COMBINED TARGET WEIGHT
of all categories

COMBINED ACTUAL WEIGHT
of all categories

5

Seasonings

Seasonings will enhance your meals by bringing variety and interest to even the most ordinary recipes. Small plastic bags are good containers, as are thoroughly cleaned plastic aspirin bottles with secure lids. Label containers so you will know what's inside, and use each seasoning with care—it's easy to add flavor to a dish, but you can't remove it if you put in too much. A basic kit might contain the following seasonings. Add others if you wish.

- Salt
- Black pepper
- Garlic powder
- Basil
- Chili powder
- Other



Repacking Foods

Most foods on grocery store shelves are sealed in cardboard, foil, paper, plastic, or glass. Most of that packaging is useless on the trail. Eliminate it as you organize food for a trek, and you'll rid your pack of excess weight and clutter. Here's one way to get it done:

Divide food supplies into piles, one for each meal you'll prepare during a trek. Beginning with the first meal of the trip, measure the amount of each ingredient that a recipe calls for and put it into a plastic bag.

For example, you might be planning a quick dinner of tuna-and-rice casserole, bagels, instant pudding, and cocoa. To feed yourself and three companions, you calculate that you will need 2 cups of white rice, 2 packets of gravy mix, two 6-ounce cans of tuna, and 3 ounces of dried vegetables.

Measure the rice into one bag and the vegetables into another, then stow them in a larger bag along with the gravy packets and cans of tuna. Write the cooking instructions on a slip of paper and include that in the bag, too. Close the bag and label it with the name of the entrée. Place all the ingredient bags for each meal in a larger bag labeled with the name of the meal.

In camp, pull out the bag for a particular meal and find inside all the ingredients in the right proportions.

Plastic Bags and Food Containers

Repacking food for a trek of even just a few days can involve lots of plastic bags. Heavy-duty freezer bags with sturdy plastic zip seals come in 1-quart and 1-gallon sizes. Bread wrappers and other simple plastic bags are good, too—close each by tying the neck with a loose overhand knot.

Many camping supply stores sell refillable squeeze tubes and plastic jars with screw-on lids for carrying peanut butter, jelly, margarine, honey, and other sticky, oily, and potentially messy foods. Guard against leakage by carrying each jar or squeeze tube in a plastic bag of its own.



Cooking Gear

Decide which meals you want during a trip and then determine the cooking gear needed to prepare them. If you are backpacking with all your food and equipment, you will want to keep everything as light as possible. On treks that involve watercraft or pack animals, weight probably won't be such an issue; you can bring along a greater variety of menu items and the cooking gear to make more complicated meals.

Check outdoors and camping supply stores and catalogs for pots, pans, and utensils designed especially for outdoor use. Some kits include pots that nest together and lids that double as frying pans. As an inexpensive alternative, look for lightweight pots and pans at garage sales, surplus outlets, and discount stores. Some pot handles can be removed simply by removing a screw. They might not nestle together as tightly as camp cook kits, but cheap pots will boil water just as well as pricier cookware.

Most treks are best undertaken by small groups of people, so you'll need only a camp stove and a couple of pots to prepare meals that will satisfy everyone. Split larger groups into cooking teams of three to four people, each with its own stove, cook kit, and provisions. Winter campers might want to add a larger pot with a lid so that they can melt snow to replenish water bottles and provide plenty of hot drinks.

Depending on the menus they intend to prepare, three or four people cooking together will manage well with the following cooking gear:

- 1 backpacking stove with fuel
- 1 large pot and lid (2½- or 3-quart size)
- 1 small pot and lid (1½- or 2-quart size)
- 1 lightweight frying pan (10 to 12 inches in diameter)
- For melting snow, add 1 large pot and lid (6- to 10-quart size)
- Hot-pot tongs



Hot-pot tongs allow you to move pots and pans onto and off of a stove, and to stabilize them while adding ingredients or stirring. You can use your personal spoon and pocketknife as your primary cooking utensils, or you might want to carry a lightweight ladle or spatula for stirring, flipping, and serving.

At the end of a trip, review the cooking gear you used, what you lacked, and what proved to be unnecessary. Make a similar assessment of your food choices and recipes. Use your reviews to refine your menu planning and gear selection so that they mesh exactly with the journeys on which you are embarking.

For information on selecting stoves, see the chapter titled "Using Stoves and Campfires." For more on personal gear for eating, see the chapter titled "Gearing Up." For guidelines on sanitary handling and preparation of food, see the chapter titled "Hygiene and Waste Disposal." For information on bear bags and other means of protecting food in camp, see the chapter titled "Traveling and Camping in Special Environments."



Baking

Peach cobbler, cornbread dripping with honey, biscuits right out of the pan—the results of baking enliven any meal. If you are camping in areas where campfires are appropriate, fashion an oven out of two frying pans: Use one as the lid of the other, and add a layer of coals on top to provide heat. Reflector ovens and cast-iron or aluminum Dutch ovens offer a world of baking opportunities, especially for horse packers and other travelers able to manage the weight of the ovens.

A number of manufacturers market ovens for use with camp stoves. These ovens, lightweight and ingenious in design, allow heat to circulate around and over cooking food, enabling trekkers to enjoy baked goods wherever they go.

Basic Biscuits

You can buy biscuit mix at a grocery store and prepare according to directions on the box, or use a good biscuit recipe to make your own.

In a sturdy plastic bag, combine these dry ingredients:

2 cups flour

1 level teaspoon salt

4 level teaspoons baking powder

5 level tablespoons powdered milk

Carry separately in a plastic jar or bottle with a leak-proof lid:

4 tablespoons (1/4 cup)
margarine, cooking oil,
or shortening

When you are ready to make biscuits, thoroughly mix the margarine, cooking oil, or shortening into the dry ingredients, then add enough water (about 1 cup) to form a stiff dough. Pat the dough flat (about 1/2 inch thick), then use the rim of a camp mug to cut the dough into biscuits. You can cook the biscuits in one of several ways:

- Bake them in a camp stove oven, a Dutch oven, or a reflector oven.
- Cook them in a frying pan lightly oiled with cooking oil, shortening, or margarine. Arrange biscuit dough in the pan, then cover it and brown the biscuits over low heat (about 8 minutes). Turn the biscuits over, replace the lid, and brown the other side.
- Make dumplings by dropping spoonfuls of dough into boiling soup or stew. Cover and cook for about 10 minutes, then take out one dumpling and cut it open to see if it is done inside. If the dough is still sticky, return the dumpling to the pan, replace the cover, and cook for another 2 to 3 minutes.

A Final Word on Menus

Choosing food for a trip presents more opportunity and challenge than almost any other aspect of trek preparation. Success is a matter of trial, error, and an element of bravery—building on the menu successes of past outings and learning from the occasional culinary mishaps that are bound to occur. You also can learn about menu possibilities and tricks of the outdoor kitchen from books devoted to camping recipes and cooking methods. Master a few simple meals, then begin branching out with dishes that will delight your taste buds, satisfy your hunger, provide the energy you need, and amaze those who are traveling and dining with you.

“Food is always on our minds. We seem to be constantly hungry. As soon as one meal is finished we begin planning what to have at the next.”

—Cindy Ross, *A Woman’s Journey*, 1982
(She hiked the entire Appalachian Trail from Georgia to Maine, and the Pacific Crest Trail from Mexico to Canada.)



CHAPTER

6



Managing Risk

"I say we have a great chance to get to the summit, but we may also have to turn back, and I want all their support if we have to do that."

—Peter Whitaker, climber/guide



An injury that doesn't happen needs no treatment. An emergency that doesn't occur requires no response. An illness that doesn't develop demands no remedy. The best way to stay safe in the outdoors is to avoid getting into trouble in the first place. That requires planning, training, leadership, good judgment, and accepting responsibility—in short, risk management.

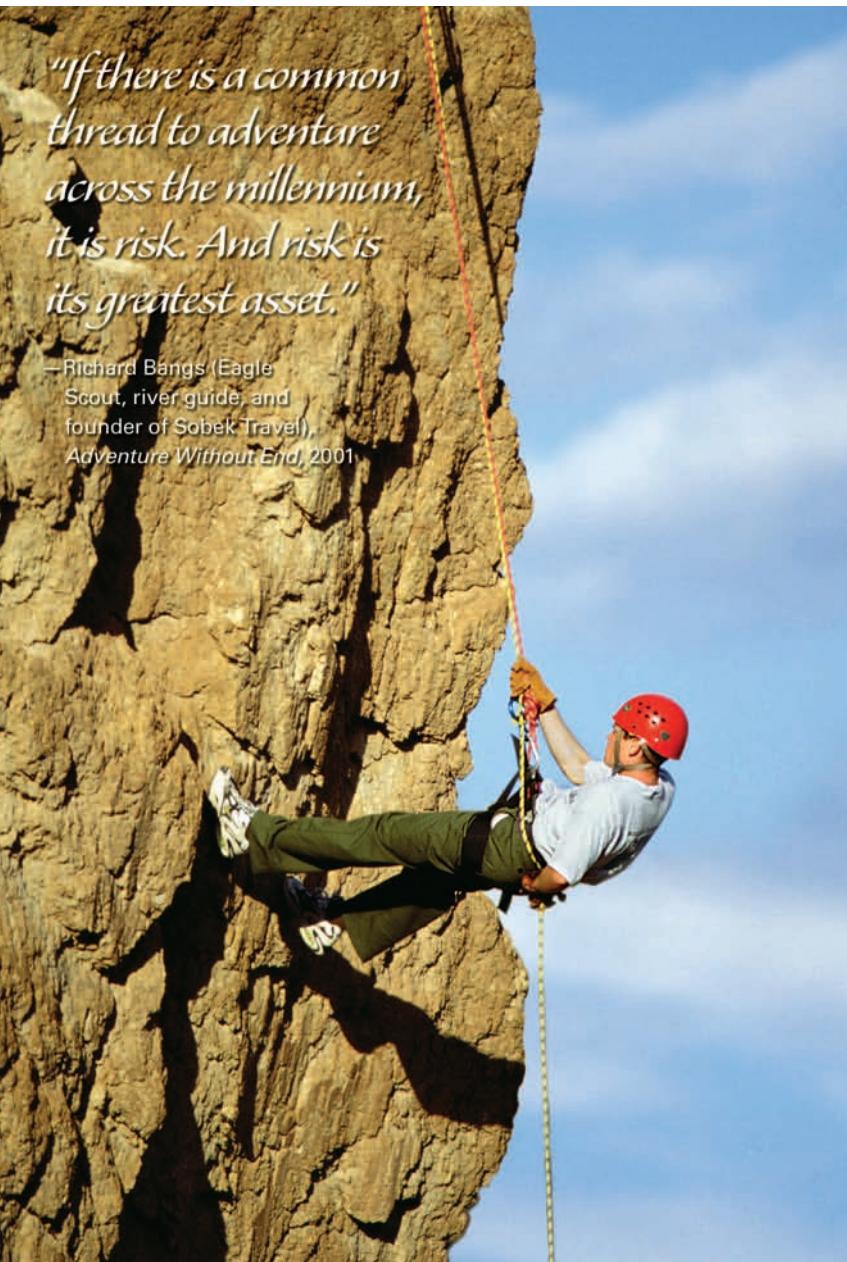
We manage risk in almost every aspect of our lives. There is risk involved in stepping out of our homes in the morning, but we go anyway. There are risks in crossing a street, catching a bus, and taking part in sports, but we find ways to minimize these risks and maximize our safety and well-being.

Risk management is so much a part of outdoor adventures that often we hardly notice we are doing it. When we fill bottles with water from streams and lakes, we deal with the risk of parasites by treating the water with a filter or chemicals, or by boiling it. When we share the outdoors with bears, we protect them and ourselves by hanging our food out of their reach, eliminating odors from our sleeping areas, and keeping campsites spotless. When foul weather blows in, routes become uncomfortably exposed, streams swell, or snow loads make avalanches a possibility, we consider all the available information and then make decisions that keep risks at acceptable levels.

Perceived risk can energize outdoor activities by bringing to them an immediacy that is sharper than what we normally experience. The actual risk on a well-managed ropes course, for example, is relatively low, but participants experiencing the

events of the course might perceive that the risk is much higher than it actually is. That heightened awareness can take them beyond their usual comfort levels and encourage them to accept challenges that will stretch their abilities and build their confidence.

The only way to eliminate risk completely in the out-of-doors is to give up the pleasures, challenges, and satisfaction of taking part in an adventure. Rather than attempting to do away with it, group members and leaders can manage risk by identifying its sources, understanding its boundaries, and tailoring their behavior to minimize exposure to danger.



*"If there is a common
thread to adventure
across the millennium,
it is risk. And risk is
its greatest asset."*

—Richard Bangs (Eagle Scout, river guide, and founder of Sobek Travel),
Adventure Without End, 2001



Shared Management of Risks

Many outdoors-oriented organizations have guidelines to address certain hazards they believe to be of particular concern to their members. This chapter, for example, will discuss hypothermia, lightning, and several other potential risks of great interest to the Boy Scouts of America. A truly effective approach to risk management, though, is found not just in the details, but also in the willingness of everyone in a group to take an active role in maximizing his or her own safety and the safety of others.

A leader who empowers group members with resources, training, and responsibilities for conducting successful treks often will find that they also can be trusted to do their part to manage risk. When each person has a part to play in the success of a trek, everyone has a stake in risk management. Group members are far better prepared to deal with illnesses or injuries if they are versed in response plans and if they know where they are, what resources are at their disposal, and what skills they can draw upon. On the other hand, leaders who expect group members simply to obey rules and instructions—to be followers rather than thinkers and problem solvers—might discover that their groups aren't able to deal effectively with the changing nature of risk.

Risk Management

Here are three keys to effective risk management:

- Everyone in the group commits to having a safe experience.
- Everyone understands and follows group guidelines established to minimize risk.
- Everyone has a say in recognizing and dealing with risks that arise during a trek.

Personal Risk Management Behavior

The more responsibility every member of your group takes for personal health and safety, the more each of you can contribute to a successful trek. You also will be in a stronger position to provide assistance if an emergency does arise. Among the ways you can increase your role in risk management are these:

- Stay in good shape so you are ready for the physical demands of a trek.
- Know where you are going and what to expect.
- Adjust clothing layers to match changing conditions.
- Drink plenty of water.
- Protect yourself from exposure to the sun, biting insects, and poisonous plants.
- Take care of your gear.

A critical aspect of risk management is letting others know when you are having difficulties or are aware of a concern that might affect you or the group. Many people have a tendency to keep things to themselves. They don't want to slow down the group, or are worried about what others will think of them. But stopping for a few moments to deal with a hot spot on a heel can help avoid bringing the group to a long halt later in the day.

Take care of your-self, and you will be far less likely to have trouble on the trail. You also will be much better able to help others deal with difficult situations.



courses available in various parts of the country are Red Cross Wilderness First Aid Basic, Wilderness First Responder, Wilderness Emergency Medical Technician, and Mountaineering Oriented First Aid.

when blisters break out. Voicing concern about changing weather or questionable route decisions can bring important matters to the attention of the rest of your group.

Outdoor-Oriented First Aid

We often go to remote areas to get away from it all, but among the things we are getting away from is quick access to emergency support and care. If someone has an accident in an American city, dial 911 and an emergency team will probably be on the scene in

minutes, ready to treat injuries and to provide transport to a medical center.

The farther that group members are from medical facilities, the more important is their ability to deal with emergencies on their own. Responding to incidents during trek adventures can involve not only immediate treatment, but also evacuating ill or injured persons to the frontcountry, or stabilizing them and maintaining their safety for hours or even days until medical assistance arrives.

Those who intend to travel in the backcountry should prepare themselves with first-aid training, ideally including training in caring for injured and ill persons in remote settings.

Among the training



Preparing a Group to Manage Risk

Risks associated with the outdoors can involve rain, wind, heat, cold, avalanche, water, wildlife, vegetation, and falling. Human elements affecting risk include lack of physical preparation, improper training, poor judgment, and unreasonable expectations by group members, leaders, parents, and others. Many of these concerns can be addressed by leaders helping group members decide upon activities that are appropriate to their skills, experience level, and interests. Preparing a group to manage risk also involves a certain amount of pretrip paperwork and development of an emergency response plan.

For more on matching groups with appropriate activities, see the chapters titled “Organizing for Adventures,” “Outdoor Leadership,” and “Planning a Trek.”

Paperwork

The policies of a given organization will determine the paperwork that must be completed before a trek begins—releases for medical treatment, for example, proof of health insurance, tour permits, and any forms required by land management agencies. Leaders also should be fully informed in writing if a group member requires medications, has any medical issues, or deals with allergies. Always prepare a written itinerary of where you plan to be on each day and night of a trek. Leave copies with several responsible people who will take appropriate action if you haven’t returned according to schedule.

Rescue team professionals and trained volunteers responding to backcountry calls can be exposed to considerable risk. Never hesitate to summon help when you need it, but minimize the need for assistance by preparing well and doing your best to proceed in ways that maximize your safety and that of others.

Emergency Response Plan

Developing a written emergency response plan requires group members to figure out the steps to be taken during trek emergencies and to write down contact information for agency personnel, law enforcement authorities, and medical response networks. The plan should outline strategies for contacting help, if help is needed. Along with your group's roster, itinerary, intended route, and expected time of return, give copies of the emergency response plan to support persons in the frontcountry.

For more on itineraries and emergency response plans, see the chapter titled "Planning a Trek."



GPS receivers and wireless phones are sometimes useful during outdoor emergencies.

Wireless Telephones and Risk Management

Global positioning system (GPS) receivers allow travelers to pinpoint locations, but they are no substitute for mastering the use of maps and compasses. Likewise, wireless telephones can be a convenient means for groups to contact emergency response personnel, but phones are useless if they malfunction, the batteries are exhausted, or distance and terrain prevent clear reception of signals.

Frivolous use of wireless phones can seriously diminish solitude, independence, and challenge in the outdoors. If you carry a portable telephone, stow it deep in your pack and bring it out only for emergency calls. Most of all, never assume that having a portable telephone grants you any protection to attempt activities beyond your levels of skill and experience, especially if you are far from emergency support.



Managing Risk in the Field

The degree of risk in a situation depends on a host of factors that can change from one moment to the next. Take, for example, a log that, a few feet above a stream, offers an inviting route for hikers to reach the far bank. On a warm day in a BSA local council camp, the risk involved in walking across the log might be very low. Even if you fall, it's not far to the water. If you get wet, you can go to your tent and change clothes. If you sprain your ankle, you are close to medical assistance. Do you walk over the log? Probably.

During a backpacking trip, you come upon a similar log lying across a stream, but this one is located miles up a trail and the day is windy and cold. If you slip off the log, you have only the clothing you are carrying to replace wet garments. If your pack is submerged, the clothes, food, and gear stowed in it could become soaked. If you hurt your ankle, you might be stranded miles from a road. Do you use the log to cross the stream? Perhaps, but you might decide to lessen the risk by straddling the log and scooting across in a sitting position, or you might wade if the stream is calm and shallow, or you might seek out a better place to cross. Each option will take longer than walking the log, but not nearly as long as dealing with the possible results of a fall.

Managing risk often is a matter of considering the “what if” of a situation. What if I fall? What if I lose my pack? What if I sprain my ankle? Other considerations that might be factors are the time of day, your group’s level of fatigue, hunger, or anxiety, and the amount of experience you’ve had with similar situations.

Put lots of faith in your gut feeling about a situation. If it doesn’t seem right but you’re not sure why, your instincts might be telling you



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something you need to know, but have not yet fully understood. Take plenty of time to consider your options.

Anyone in a group should feel empowered to call a halt to group activities whenever he or she perceives a risk that should be addressed. In turn, group leaders and other members must respect those concerns and give them full consideration.



While the tone of a group is best when it is upbeat and members strive to see the positive in every situation, it's good to be a pessimist about hazards, erring on the side of too much caution rather than not enough. The risk management portion of your brain should be focused on what could go wrong so that you can act in ways that increase the likelihood of things going right.

"The only reasonable rule in remote regions anywhere is not to take unnecessary chances, weighing always the possible loss against the potential gain, and going about life with as wide a safety margin as practical."

—Bradford Angier (seasoned outdoorsman and author of many books on woodlore), *Living Off the Country*, 1966



Incident Response

Risk management is not built on a list of rules, but rather on good judgment and a willingness to accept responsibility for one's own safety and that of others. Incident response is what happens when an injury or illness has occurred during a trek and a group must decide how to handle it.

Accounts of injuries and illnesses in the outdoors often try to pinpoint a specific cause. Hypothermia, for example, often is blamed on chilly weather, cotton clothing, and precipitation. Of course, the steps that led to poorly dressed travelers shivering in the rain can be traced back to decisions that might easily have prevented that dangerous situation from occurring at all. With qualified leadership, personal responsibility, and effective planning, those travelers would have had warm clothing and rain gear. They would have been well-hydrated and have had energy food in their packs. They would have kept an eye on the weather and made timely decisions about where to go, when to camp, and whether to turn around and go home.

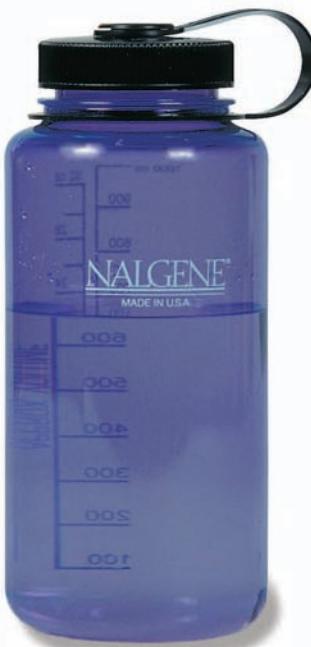
The following pages discuss ways to prepare for and manage certain risks, and also the basics of how groups can respond to incidents brought about by these concerns. (Watercraft adventures and some other trek activities present specific risk management issues that will be addressed in the chapters discussing those activities.)

Dehydration

Water is essential for nearly every bodily function, including brain activity and temperature control. We lose moisture through breathing, sweating, digestion, and urination. A person who gives off more water than he or she takes in risks becoming *dehydrated*. The first sign of dehydration usually is dark urine. Other signs can include weariness, headache and body aches, and confusion.

Dehydration can play a significant role in a number of maladies including heat exhaustion, heatstroke, hypothermia, and frostbite.

Help keep your body in balance by eating enough throughout the day. The importance of drinking plenty of fluids cannot be overemphasized. Don't wait until you feel thirsty—that's an indication that you are already becoming a bit dehydrated. Replenish your water supplies at every opportunity and drink often in warm weather and cold alike.



Incident Response for Dehydration

A person showing any indications of dehydration should rest in the shade and sip water until the symptoms subside.

Heat Exhaustion

Heat exhaustion can be brought on by a combination of dehydration and a warm environment. The condition is not uncommon during sports activities and trek adventures conducted in hot weather, especially if participants are not fully acclimated to the conditions. Symptoms can include the following:

- Skin that is pale and clammy from heavy sweating
- Nausea and tiredness
- Dizziness and fainting
- Headache, muscle cramps, and weakness

Incident Response for Heat Exhaustion

To treat heat exhaustion, have the victim lie in a cool, shady place with the feet raised. Remove excess clothing. Cool the victim by applying cool, wet



cloths to his or her body and by fanning. If the victim is fully alert, let him or her sip from a glass of water and take bites of salted food, such as nuts. Recovery should be rapid. If symptoms persist, call for medical help.

Heatstroke

Heatstroke occurs when a person's core temperature rises to a life-threatening level (above 105 degrees). Causal factors include dehydration and over-exertion in hot environments. Symptoms can include hot, red skin that can be either dry or sweaty; confusion; and a rapid pulse.

Incident Response for Heatstroke

A heatstroke victim must be cooled immediately. He or she is in danger of dying. To quickly lower the body temperature and begin restoring hydration, move the victim to a cool, shady spot and cool him or her any way you can. Keep the victim lying down and comfortable, with head and shoulders slightly raised. Remove outer clothing and sponge the victim with cold water. Cover the victim with wet towels, wet clothing, or whatever else is handy, and fan him or her. Place the victim in a stream, in a tub filled with cool (not ice-cold) water, or in front of an air conditioner running full blast in a house or car. Use combinations of all available treatments.

Get emergency medical help as soon as possible. The victim's temperature might go up again, or he or she might vomit or require rescue breathing.

For more on conducting trek adventures when temperatures are warm, see the chapter titled "Hot-Weather Travel and Camping."

Hypothermia

Hypothermia occurs when a person's body is losing more heat than it can generate. It is a danger for anyone who is not dressed warmly enough, though simple exposure to cold is seldom the only cause. Dehydration is a common factor. Wind, damp clothing, hunger, and exhaustion can further compound the danger. The temperature doesn't have to be below freezing, either—a lightly dressed hiker caught in a cool, windy rain shower can be at great risk. So is a swimmer too far out in chilly water or immersed too long.

A person experiencing hypothermia might feel cold and numb; become tired, anxious, irritable, and increasingly clumsy; have slurred speech; shiver uncontrollably; make bad decisions; and lose consciousness.

Incident Response for Hypothermia

Treat a victim of hypothermia by preventing him or her from getting colder and, if necessary, by using any or all of the following methods to help the body warm again to its normal temperature.



- ① If the person is fully conscious and can drink, offer plenty of warm liquids (cocoa, soup, fruit juices, water).
- ② Move the person into the shelter of a building or a tent and get him or her into dry, warm clothes.
- ③ Zip the person into a dry sleeping bag. Cover the head with a warm hat or sleeping bag hood.
- ④ Provide water bottles filled with warm fluid to hold in the armpit and groin areas.
- ⑤ If hypothermia is advanced, help the person to breathe warm, moist air to aid in rewarming.
- ⑥ Monitor closely and be ready to administer other first aid.
- ⑦ Seek medical care.

While one person is being treated for hypothermia, the rest of a group also might be at risk. Protect yourself and others by taking shelter, putting on layers of dry, warm clothing, and having something to eat and drink. Look after one another.

Frostbite

Flesh exposed to low temperatures or cold wind can freeze. Far from the warmth of the body's core, toes and fingers are especially vulnerable, as are the nose, ears, and cheeks. A frostbite victim might complain that his or her ears, nose, fingers, or feet feel painful and then numb, but some victims won't notice anything. Grayish-white patches on the skin are signs of frostbite. Since dehydration increases the danger of frostbite, cold-weather travelers must be every bit as diligent about drinking fluids as they are when the temperature is high.

Incident Response for Frostbite

Only superficial frostbite—frotnip—can be treated in the field. If you suspect that frostbite is deep (extending below skin level), wrap the injured area in a dry blanket and get the victim under the care of a physician as soon as possible. Don't rub the injury.

To treat frostnip, move the victim into a tent or building, then warm the injured area and keep it warm. If an ear or cheek is frozen, remove a glove and warm the injury with the palm of your hand. Slip a frostnipped hand under your clothing and tuck it beneath an armpit. Treat frostnipped toes by putting the victim's bare feet against the warm skin of your belly.

For more on conducting trek adventures in chilly conditions, see the chapter titled "Cold-Weather Travel and Camping."

Sunburn

Although skin appears to recover from sunburn, damage to its cellular structure accumulates. That can lead to premature wrinkling and is a primary cause of skin cancer. Use sunscreen to protect exposed skin, giving special attention to your face, ears, nose, and neck. To be effective, sunscreen should have a sun protection factor (SPF) of at least 15. Apply it liberally before sunlight exposure, and reapply if you are sweating and after immersion in water. Hats with large brims, long-sleeved shirts, and long pants will provide further protection.

Sunlight reflected by water or snow can intensify the damaging effects of solar radiation. Zinc oxide offers total blockage of the sun's rays, and might be what you need for your face and ears during watercraft adventures and treks at high altitudes or on snow. Wear sunglasses to prevent eyestrain, and shield your lips against chapping and sun injury by applying a lip balm with an SPF of 15 or higher.



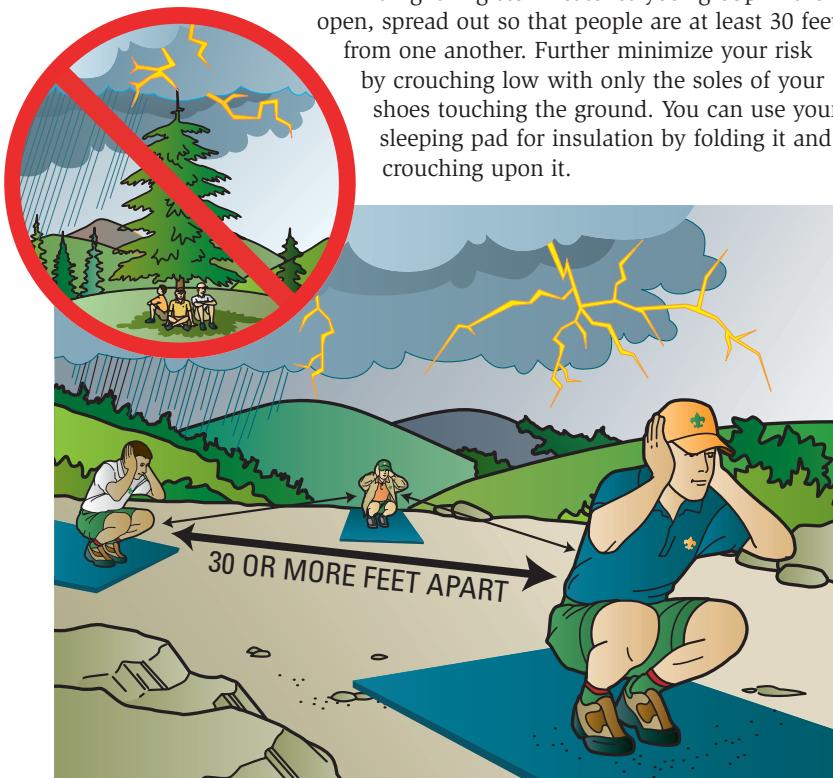
Incident Response for Sunburn

Prevent further injury by getting out of the sun, either by seeking shade or by putting on a hat and clothing that affords protection. Treat painful sunburn with damp cloths. Remedies containing aloe vera also might provide relief.

Lightning

Open water, mountaintops, the crests of ridges, the bases of tall or solitary trees, and large meadows can be hazardous places during lightning storms. Plan to be off peaks and other exposed locations before afternoon when thunderstorms are more prevalent. If you are caught in a dangerous area, quickly move to shore or descend to a lower elevation, ideally away from the direction of the approaching storm. A dense forest located in a depression offers the greatest protection. Stay clear of shallow caves and overhanging cliffs—ground currents might arc across them. Avoid bodies of water and metal fences, too, and anything else that might conduct electricity. In a tent, stay as far as you can from metal tent poles.

If a lightning storm catches your group in the open, spread out so that people are at least 30 feet from one another. Further minimize your risk by crouching low with only the soles of your shoes touching the ground. You can use your sleeping pad for insulation by folding it and crouching upon it.



Incident Response for Lightning Strikes

Persons struck by lightning might suffer varying degrees of burns. Of more immediate concern is the likelihood that their hearts have stopped beating and they are no longer breathing. Treat by checking their circulation and respiration; if necessary, perform CPR (cardiopulmonary resuscitation). Once they are stabilized, attend to burns or other injuries, treat for shock, and closely monitor their vital signs until they are under a physician's care.

For more on lightning and its causes, see the chapter titled “Monitoring Weather.”



Flash Floods

In arid regions of the country, dry streambeds and small creeks can become raging rivers in just a few minutes. The rains causing the flood might be falling right where you are, or they could be coming down miles upstream of your location. When traveling in areas where flash floods are possible, make it a point to always know how to reach the safety of higher ground. Pitch your tents above the high-water marks of past floods. In flowing streams, watch for an increase in the speed or volume of current and for other indicators of imminent flooding. Moving water can be extremely powerful; stay clear of areas that have become flooded.

Incident Response for Flash Floods

If you are caught in a flood, assume a position with your feet aimed downstream, then use them to absorb impact against objects. Should you manage to get to an island or into the branches of a tree, stay calm and wait for assistance.

For more on surviving a fall into moving water, see the chapter titled “Watercraft Adventure Safety.” For more on safely crossing streams, see the chapter titled “Mountain Travel.”

Avalanches

Avalanches are a serious concern for all travelers whose outings take them into snowy, mountainous regions. An avalanche occurs when snow breaks loose on a slope, or when a cornice of snow collapses and tumbles down. Large avalanches can carry away trees and tents, and even a small snowslide can bury a person caught in its path.

Your greatest protection against avalanches is knowing where, how, and when they are likely to happen and then planning routes that take you elsewhere. Indicators of danger include the following:

- Signs of previous avalanches—conditions that were right for past avalanches might well come together again to cause future snowslides.
- Steep terrain—avalanches usually happen on slopes of 40 to 60 degrees.
- Accumulations of new snow—it takes a while for fresh snowfall to consolidate enough to stabilize.
- Variations in the quality of snow layers, especially if one or more layers are airy, granular, or in slabs—a weak layer in the snowpack can allow layers above to break loose and slide.
- Air temperature rising to near or above freezing, causing changes in snowpack stability.
- Sounds that suggest cracking or settling of the snowpack.

**Falling rocks pose
a danger to unwary
backcountry travelers.**

**Loose stones at the
base of a cliff might
indicate a likelihood
of rockfall. If you
hear a rock clattering
down, or if you
accidentally kick
one loose, shout
“Rock!” to warn those
below to take cover.**

**Travel in areas with
significant risk of
avalanche is beyond
the scope of this book
and calls for more
specialized training.**



**As with any trek
adventure risks, don't
be reluctant to
change your plans
or postpone a trip
when avalanche
danger is high.
The mountains will
still be there for you
after conditions
have improved.**

In addition to understanding the basics of avoiding avalanche zones, the following steps will help you prepare for travel in steep, snowy terrain:

- Complete an avalanche-safety training course taught by qualified experts.
 - Check local avalanche-forecasting networks (operated by weather bureaus and land management agencies) before setting out. The most useful networks are updated at least once a day.
 - Choose travel companions who understand the danger of avalanches and will do their part to manage the risk.
-
- Carry avalanche safety equipment and know how to use it. Battery-powered beacons worn by each group member emit a radio signal that can be picked up by the beacons of others.

Incident Response for Avalanches

If, despite your preparations and judgment, you see an avalanche roaring toward you and you can't get out of its path, jettison your pack. Get rid of skis, too, if you are wearing them. When the snow hits, move your arms and legs in a swimming motion to keep yourself upright, and try to keep

your head above the surface. As the avalanche slows and begins to settle, push away any accumulation of snow from your face to form an air pocket that will allow you to breathe.

Should others in your party be caught in an avalanche, keep your eye on them as long as you can, and note the exact place you saw them last. Hopefully, they'll be wearing avalanche beacons so that you can recover them quickly. If not, listen for their voices, probe the area with ski poles from which you've removed the baskets, and don't give up hope. Sturdy short-handled shovels made of plastic or metal can prove invaluable for freeing avalanche victims. People have survived under the snow for 30 minutes before being rescued. Treat avalanche victims for shock and hypothermia. For more on snow shovels, see the chapter titled "Cold-Weather Travel and Camping."

Poisonous Plants

Vegetation greatly enriches outdoor experiences, but there are a few species of plants that outdoor travelers will want to avoid. Poison ivy, poison oak, poison sumac, and nettles can cause skin inflammation and itching. Don't eat wild plants, including mushrooms, unless you are positive that you can identify them and know that they are safe for human consumption. For more on vegetation, see the chapter titled "Plants."

Incident Response for Exposure to Poisonous Plants

The irritants in poison ivy, poison oak, and poison sumac can take up to 10 minutes to bond with the skin. Thoroughly washing with soap and water, or with water alone, soon after exposure to these plants can minimize their effects. The same is true of nettles. Hydrocortisone cream might reduce itching. Avoid scratching affected skin, as that can increase the size of the irritated area.

If someone has ingested poisonous plants, induce vomiting. Save some of the vomit in a plastic bag for medical analysis, and get the person to a physician.

Asthma

The symptoms of an asthma attack can be similar to those of a person suffering anaphylactic shock—a constriction of the throat and increasing difficulty in breathing.

Conditions that might trigger an asthma attack include dust, physical exertion, changes in



Poison ivy



Poison oak



Poison sumac



The foliage of poison sumac stays green from spring through summer (left), then turns red in the fall (above).

humidity, and changes in elevation. Many people coping with asthma use inhalers and other forms of medication to treat asthma episodes. Before a trek begins, they should fully inform group leaders of their health histories, treatment regimens, medications, and the locations of those medications.

Anaphylactic Shock

In rare cases, stings or bites of insects can cause *anaphylactic shock*, a condition that restricts breathing passages and requires immediate treatment by a physician or a person trained in emergency first aid. People who are allergic to peanuts, shellfish, and certain other foods can have similar reactions if they ingest those items.

Travelers who know they are susceptible to anaphylactic reactions (and anyone dealing with asthma) should consult with their physicians to prepare themselves for the outdoors with strategies and treatment kits, and should share that information with the leaders of their groups.

For example, the emergency kits carried by people who know they might suffer from anaphylactic shock often include an EpiPen® for injecting a measured dose of epinephrine.



EpiPen®

Animals

Seeing animals in their natural habitat is always a pleasure, but it's wise to remember that they are the permanent residents of the backcountry while we humans are the visitors. Treat animals with respect, give them enough space so they won't feel threatened by your presence, and properly manage your food storage, and they seldom will present a risk to your safety.

When it comes to insects, accept the fact that there are lots more of them than there are of us, and that some will be delighted to take a bite out of you. Reduce the likelihood of that happening by applying repellents or by wearing long pants, long-sleeved shirts, and head nets.

For more on wildlife, see the “Leaving No Trace” section of this book, and the chapters titled “Observing Nature” and “Wildlife.” For more on insect repellents, see the chapter titled “Hot-Weather Travel and Camping.”

Incident Response for Animal-Caused Injuries

In the event that you are scratched or bitten by an animal, seek medical attention; a physician must determine whether antibiotic, rabies, or other treatment will be necessary.

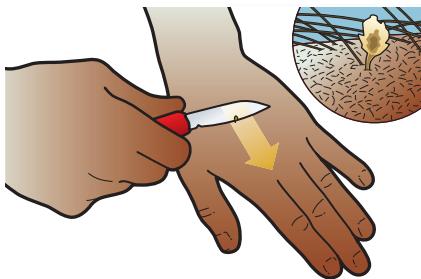
Bears

For guidelines on managing risk in bear country, see the chapter titled “Traveling and Camping in Special Environments.”



Bee and Wasp Stings

Scrape away a bee stinger with the edge of a knife blade, but don't squeeze the sac attached to the stinger—that might force more venom into the skin. An ice pack or cool compress might reduce pain and swelling. Watch for any indications of anaphylactic shock.



Tick Bites

Ticks are small bloodsucking arthropods that bury their heads in the flesh of their hosts. Protect yourself whenever you are in tick-infested woodlands and fields by wearing long pants and a long-sleeved shirt with snug cuffs and collar. Button your collar and tuck the cuffs of your pants into your boots or socks.



Inspect yourself and other group members daily, especially the hairy parts of the body, and immediately remove any ticks you find.



If a tick has attached itself, grasp it with tweezers close to the skin and gently pull until it comes loose. Don't squeeze, twist, or jerk the tick, as that might leave its mouthparts in the skin. Wash the wound with soap and water, and apply antibiotic ointment. After dealing with a tick, thoroughly wash your hands. If a tick has been embedded more than a day or poses difficulties in removal, see a physician.

Lyme disease is an illness carried by some ticks. A red ringlike rash might appear around the bite. A victim might feel lethargic and have flulike symptoms, fever, a sore throat, and muscle aches. Anyone experiencing these symptoms in the days and weeks following a trek adventure, especially activities in areas where ticks are known to carry Lyme disease, should be checked by a physician.



Chigger Bites

Almost invisible, chiggers burrow into skin pores where they cause small welts and itching. Try not to scratch chigger bites. You might find some relief by covering chigger bites with hydrocortisone cream or by dabbing them with clear fingernail polish.

Spider Bites

The bite of a female black widow spider can cause redness and sharp pain at the wound site. The victim might suffer sweating, nausea and vomiting, stomach pain and cramps, severe muscle pain and spasms, and shock; breathing might become difficult.

The bite of a brown recluse spider might not hurt right away, but within two to eight hours there can be pain, redness, and swelling at the wound. An open sore is likely to develop. The victim might suffer fever, chills, nausea, vomiting, joint pain, and a faint rash.

Victims of spider bites should be seen by a physician as soon as possible.

Scorpion Stings

Scorpions might startle you if you find them underneath your tent or ground cloth, or shake them out of your boots first thing in the morning. They usually are more imposing than they are dangerous, and scorpions that can cause humans serious injury are uncommon. Ordinary scorpion stings usually are not as dangerous as bee stings; they can cause severe, sharp pain, swelling, and discoloration, but generally have no lasting ill effects. If you are stung, cool the wound area with cold water or ice and seek medical attention.

Snakebites

Snakes are found in many parts of the country, but bites from them are rare. Snakes try to avoid humans, usually striking only when cornered or surprised. Use a hiking stick to



poke among stones and brush ahead of you when you walk through areas where snakes are common. Watch where you put your hands as you collect firewood or climb over rocks and logs. Snakebites seldom result in death.

The bite of a nonpoisonous snake causes only minor puncture wounds and requires only ordinary first aid for small wounds—scrubbing with soap and water, then treating with an antiseptic.

A poisonous snakebite might cause the victim to feel sharp, burning pain. The area around the bite might swell and become discolored. However, a poisonous snake does not inject venom every time it bites. Know which poisonous snakes are native to the area you plan to hike, and know how to identify them.

Snakes are not warm-blooded and so cannot carry rabies, though any bite that breaks the skin has the potential of causing infection.



Incident Response for Poisonous Snakebite

Get the victim under medical care as soon as possible so that physicians can neutralize the venom. A person who has been bitten by a poisonous snake might not be affected by the venom for an hour or more. Within that time, the closer to medical attention you can get the victim, the better off he or she will be. The victim might be able to walk; carrying him or her also might be an option. Before setting out, do the following:



- ① Encourage a frightened victim to remain calm, and give reassurance that he or she is being cared for.
- ② Remove rings and other jewelry that might cause problems if the area around a bite swells.
- ③ If available within three minutes of the bite, apply a Sawyer Extractor® directly over the fang marks and leave in place for no more than 10 minutes. Properly used, the extractor can remove up to 30 percent of the venom. *Do not* make any cuts on the bite—that's an old-fashioned remedy that can cause the victim much more harm than help.
- ④ Immobilize a bitten arm with a splint and a sling, keeping the wound lower than the level of the victim's heart.
- ⑤ *Do not* apply ice to a snakebite. Ice will not help the injury, but could cause damage to skin and tissue.

If the victim must wait for medical attention to arrive, add these treatment steps:

- ① Have the victim lie down and remain still. Position the bitten part lower than the rest of the body. If you have not done so already, immobilize the bitten limb with a splint.
- ② Put a broad constricting band (a bandanna or a strip of cloth at least 1 inch wide) around the bitten limb 2 to 4 inches above the bite (between the heart and the bite) to slow the spread of venom. This is not a tourniquet; it is intended to impede the lymphatic system but not the circulation of blood. The band should be snug, but loose enough to slip a finger under easily. Periodically check for a pulse on both sides of the band. You must not cut off blood circulation entirely. Do not use a constriction band around a finger, a toe, the head, or the trunk.
- ③ Treat for shock, but keep a bitten extremity lower than the heart.



When helping victims of bites or stings, do whatever you must to avoid being bitten or stung yourself. A rescuer who becomes injured could greatly complicate any emergency situation.



Shark Attacks

Though rare, shark attacks on humans create dramatic headlines in the media. Many more people die each year from the effects of bee stings than from shark bites. Reduce even that remote likelihood of a shark attack by avoiding areas where sharks are known to congregate. Don't enter the water alone. Blood, fish bait, and human waste in the water might attract sharks, as can bright objects such as jewelry. If sharks are sighted, return to shore quickly but with a minimum of splashing.

Jellyfish Stings

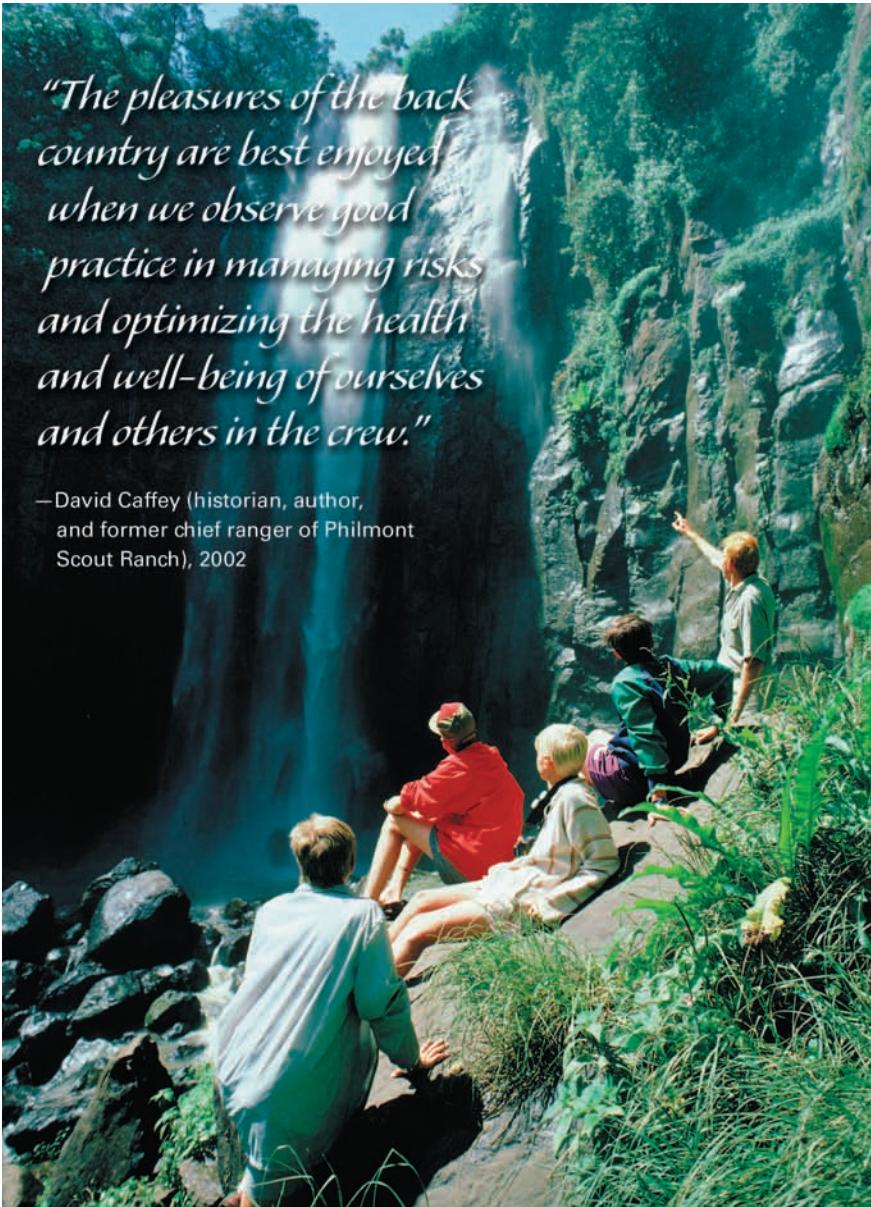
Your trips along shorelines and on the open sea can bring you within proximity of a variety of animals you will enjoy observing from a distance. The Portuguese man-of-war and jellyfish have stinging cells on their tentacles. When touched, the toxins in those cells may attach to the skin and cause a sharp, burning pain.

Do not wash affected skin with fresh water, as that can cause the release of more toxin. Instead, soak the injury for 30 minutes in alcohol or vinegar, then use tweezers to remove the remaining tentacles. Quickly get the victim under medical care. People who are allergic to jellyfish stings might go into deep shock.



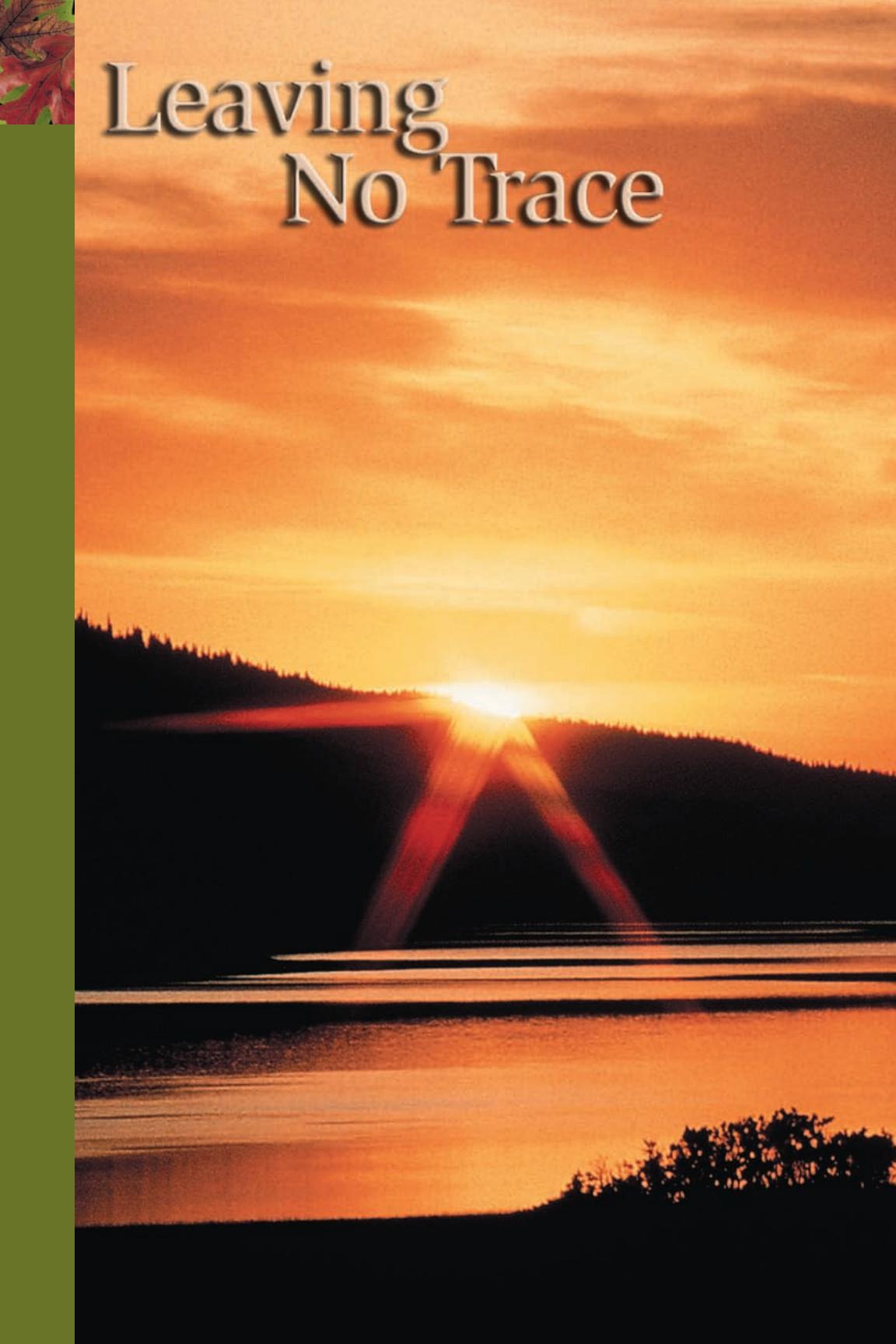
Keeping Risk in Perspective

Perhaps the greatest risk to be managed during trek adventures is also one of its real attractions—the simple matter of distance. The farther you travel from clinics, physicians, and rescue squads, the more you must rely upon yourself and your companions to maintain your safety. Of course, the best response to risk is to stay out of trouble in the first place. That requires planning, leadership, and an awareness of your surroundings so that you can make good decisions every step of the way. Add the first-aid training you need to respond effectively to an illness or injury that might arise, and you can make the management of risk second nature on every outdoor adventure.

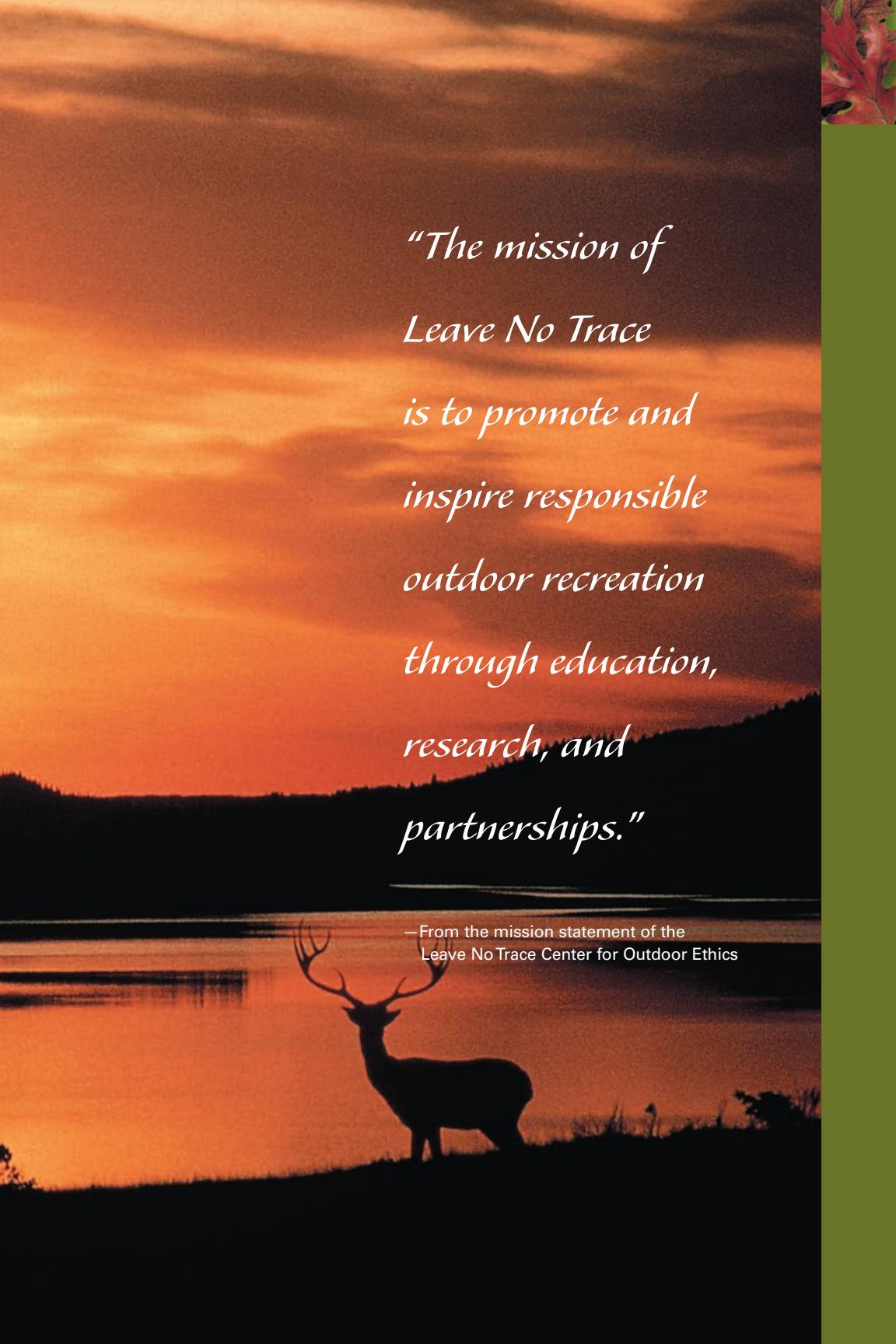


"The pleasures of the back country are best enjoyed when we observe good practice in managing risks and optimizing the health and well-being of ourselves and others in the crew."

—David Caffey (historian, author, and former chief ranger of Philmont Scout Ranch), 2002



Leaving No Trace

A landscape photograph of a lake at sunset. The sky is filled with warm orange and yellow hues, transitioning into darker blues and purples. The dark silhouette of a deer stands in the foreground on the right, facing left. In the background, there are dark silhouettes of hills or mountains. A small portion of a red leaf is visible in the top right corner.

*"The mission of
Leave No Trace
is to promote and
inspire responsible
outdoor recreation
through education,
research, and
partnerships."*

—From the mission statement of the
Leave No Trace Center for Outdoor Ethics

CHAPTER

7





Implementing Leave No Trace

"We should all realize that every right implies a responsibility, every opportunity an obligation, every position a duty, and that the most effective sermon is expressed in deeds instead of words."

—Waite Phillips (1883–1964), whose gift of property to the BSA became Philmont Scout Ranch



Until a few hundred years ago, nearly all of North America was wilderness. Human impact on the land was relatively minor. To start with, there weren't very many people. Their lifestyles tended to be compatible with their surroundings. Even when those early Americans did scar the land with fire or overuse, often the environment recovered soon after their activities ceased.

By about 1900, though, so much of the North American landscape had been settled and developed that many believed the era of the frontier was over, that wilderness was no longer in unlimited supply.

North Americans also began to realize the importance of wild lands as ecosystems for wildlife and vegetation. Watersheds provided clean water. Forests purified the air and provided food and shelter for many animals. Open territory allowed wild animals the space and resources they needed to survive.

Urban dwellers started looking to the backcountry as an escape from the demands of life in the cities. They gradually came to realize that mountains, forests, prairies, waterways, and deserts had recreational value. The outdoors attracted people of all walks of life. In canoes, kayaks, and rafts, they set off on lakes and rivers. They swung packs on their shoulders and headed up the trails. They climbed mountains, explored caves, and snowshoed and skied across landscapes buried in snow.



Just as backcountry travelers know that a few basic essentials carried in their packs and pockets can enhance their safety (a pocketknife, a water bottle, rain gear, etc.), outdoors enthusiasts can carry in their heads and hearts the principles of Leave No Trace to help ensure the well-being of the land.

With so many visitors, the environment began to suffer. Campsites were beaten down and trails eroded. Pressure on wildlife caused species to abandon areas that had long been important places for finding food and raising young. In short, the outdoors was in danger of being loved to death.

Today, caring for the environment has become a key aspect of enjoying the outdoors. The ability to travel and camp without leaving any sign of one's passing is among the most admired skills of outdoors experts. The principles of Leave No Trace can help you to attain that level of skill and to enjoy your adventures even more fully by knowing that, in every way possible, you are doing what's best for the environment.

Leave No Trace

Protecting the environment is a cooperative effort involving those who use the outdoors and those who manage it. Members of Scout units bring with them a clear understanding of responsible behavior. They want to take good care of the areas where they travel and camp, and will gladly do so if they know how that can be done.

Those who manage public and private lands try to balance the needs of the environment with the wishes of its users. To that end, agencies and landowners develop management plans identifying how and when various areas may be used. Their intent is to encourage people to enjoy the outdoors in ways that have little negative impact upon the land.

Leave No Trace principles provide a common base for users and managers of public and private lands to work with one another toward the goal of enjoying and protecting the land. The reward for everyone is a healthy environment that can be enjoyed today and by generations to come.

Innovations in outdoor equipment have helped change many camping habits. Efficient backpacking stoves allow wilderness travelers to cook without campfires. Secure tents with waterproof floors make lean-tos and ditching unnecessary and allow hikers to camp on durable surfaces where they will not harm vegetation. Lightweight cooking gear and group equipment allow backpackers to travel in groups that are small and compatible with a wilderness experience.

Frontcountry outings—car camping, camporees, jamborees, and the like—also can be conducted in ways that are environmentally sound while still affording a maximum of enjoyment. A goal of Leave No Trace is that *every outdoor activity*, from an afternoon gathering in a city park to a monthlong expedition in a remote wilderness, is planned and carried out in ways that provide the greatest satisfaction for participants and the highest level of protection for the environment. The guidelines for making that happen are the principles of Leave No Trace.

Everybody's Leaving No Trace

Leave No Trace—it's what the experts do. Mountaineers climbing the highest peaks in the world nearly always plan to bring down with them more pounds of trash than they create. River guides make it their business to help people camp comfortably with little impact on fragile shorelines. Long-distance hikers, desert travelers, professional trail maintenance crews, and others who live for long periods of time in the backcountry take pride in their skill at protecting the environment.

Scouts today have the knowledge and the equipment to pack light, wander far, and leave no sign of themselves as they go. Outdoors enthusiasts everywhere are embracing this as the new standard for enjoying the backcountry. They thrive on



the challenge and accept the responsibility of mastering forms of outdoor recreation that leave no trace upon the land.

Leave No Trace is a national education program designed to promote practical skills and an outdoor code of ethics that preserves the integrity of protected lands and high-quality recreational experiences. The Boy Scouts of America has adopted Leave No Trace as an important tool for guiding its members in appropriate ways to enjoy and protect the outdoors.

For more information, see the *Fieldbook* Web site links to Leave No Trace.



Leave No Trace

Plan Ahead and Prepare

- *Know the regulations and special concerns for the area you'll visit.*
-  *Prepare for extreme weather, hazards, and emergencies.*
- *Schedule your trip to avoid times of high use.*
- *Visit in small groups.*
- *Repackage food to minimize waste.*
- *Use a map and compass to eliminate the use of rock cairns, flagging, or marking paint.*

You would almost never set out on an adventure without first figuring out the gear you would need and the food you would carry. As part of your preparations, it should be just as automatic to plan the most effective means for conducting your outdoor activities without leaving a trace.

Thinking through the Leave No Trace principles is a good way to start. As you begin organizing an outdoor trip, ask yourself how you can apply each of the principles. Will you need any equipment? Should you alter the size of your group or change your activities to match the area you will visit? Is there a less popular time to go when you can have the area more to yourselves?

Well before your departure, contact the land management personnel of the area you intend to visit. Explain the journey you have in mind and ask how you can best implement Leave No Trace. Many agency staffers are familiar with the principles and can advise you how to use them to make the most of your time in the outdoors.

For more about planning ahead and preparing, see the chapters titled “Organizing for Adventures,” “Planning a Trek,” and “Outdoor Menus.”

Travel and Camp on Durable Surfaces



- *Durable surfaces include established trails and campsites, rock, gravel, dry grasses, or snow.*
- *Protect riparian areas by camping at least 200 feet from lakes and streams.*
- *Good campsites are found, not made. Altering a site is not necessary.*

In popular areas:

- *Concentrate use on existing trails and campsites.*
- *Walk single file in the middle of the trail, even when it is wet or muddy.*
- *Keep campsites small. Focus activity in areas where vegetation is absent.*

In pristine areas:

- *Disperse use to prevent the creation of campsites and trails.*
- *Avoid places where impacts are just beginning.*

Some surfaces are better able than others to withstand human impact.

Trails and designated campsites can increase your pleasure in the outdoors by making it easier for you to go from one place to another and to find convenient places to pitch your tents at the end of the day. When you stay on existing pathways and campsites, the surrounding landscapes will be protected from being trampled, eroded, and compacted.

Disperse use in pristine areas. When traveling off-trail, use durable surfaces such as rock, gravel, sand, bare soil, ice, snow, and dry grass. Hike abreast rather than in single file to avoid creating a new trail. When camping in pristine areas, locate your kitchen and concentrate your activities on durable surfaces. Vary your route to get water and to go to the bathroom to prevent new trails from being formed. When leaving, help return a pristine site to its natural condition by replacing any rocks that were moved and scattering leaf litter or pine needles to make the site look as natural as possible. Be sure to consult local land managers before planning to travel and camp in pristine areas.

For more about traveling and camping on durable surfaces, see the chapters titled “Planning a Trek” and “Traveling and Camping in Special Environments,” and the “Trek Adventures” section of this book.





Dispose of Waste Properly

- *Pack it in, pack it out. Inspect your campsite and rest areas for trash or spilled foods. Pack out all trash, leftover food, and litter.*
-  *Deposit human waste in catholes dug 6 to 8 inches deep at least 200 feet from water, camp, and trails. Cover and disguise the cathole when finished.*
- *Pack out toilet paper and hygiene products.*
- *Carry water for washing dishes or for bathing 200 feet away from the source; use only small amounts of biodegradable soap. Strain dishwater, then scatter the water when you are finished.*

“Pack it in, pack it out” is a tried-and-true guideline for responsible outdoor travel. That’s easiest to do when you limit the amount of potential trash you take with you and refine your food lists so that you will eat most of your provisions during your trip.

Even more important are the ways you dispose of human waste and washwater. You can do that effectively even in fragile environments if you have learned ahead of time what to do.

For guidelines on properly disposing of waste, see the chapters titled “Hygiene and Waste Disposal” and “Traveling and Camping in Special Environments,” and the “Trek Adventures” section of this book.

Leave What You Find



- *Preserve the past: Observe but do not touch cultural or historic structures and artifacts.*
- *Leave rocks, plants, and other natural objects as you find them.*
- *Avoid introducing or transporting nonnative species.*
- *Do not build structures or furniture, or dig trenches.*

A cluster of flowers beside an alpine trail. A few bricks from a historic farmstead. A bird nest on the low branch of a tree. A rack of elk antlers in a meadow. Petrified wood in a desert. The discoveries you can experience in the outdoors are rich and varied. Every journey will bring with it something new for you to see and enjoy. With every discovery, you can make the choice of leaving what you find. Here are some reasons why:

- Future outdoor visitors will have the excitement of discovering for themselves what you have found.
- Plant communities and wildlife environments will not be negatively impacted.
- Researchers can make the most of archaeological and biological sites.
- Archaeological, cultural, and historic artifacts preserve a record of our country's past. Some artifacts and locations are sacred to American Indians; others might contain clues to the past that anthropologists and archaeologists can help us interpret.

For more on ways to enjoy what you see and leave what you find, see the "Appreciating Our Environment" section of this book.

A disturbed artifact has been taken out of context, and this can remove chapters from important stories. So important is this concern that on public lands these resources are protected by law.

See the *Fieldbook* Web site for links to more information about resources like the Archaeological Resources Protection Act of 1979 and the National Historic Protection Act of 1966. ▶



Minimize Campfire Impacts

- *Campfires can cause lasting impacts on the land. Use a lightweight stove for cooking and enjoy a candle lantern for light.*
- *Where fire is permitted use an established fire ring, a fire pan, or a mound fire lay.*
- *Keep fires small. Only use sticks from the ground that can be broken by hand.*
- *Remove partially burned garbage, including that left by others.*
- *Burn all wood and coals to ash, put out campfires completely, then scatter cool ashes.*



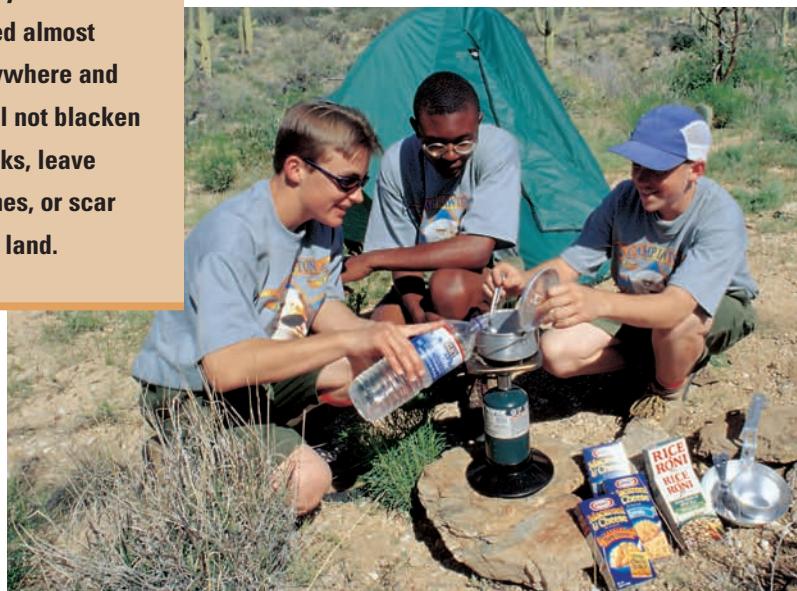
Today's outdoor travelers have a wide range of options for cooking without an open fire and for staying warm and creating a focus of evening activities.

They also have a much greater understanding of when a campfire can be kindled and when a fire could have a lasting impact on the land.

Choices concerning campfires are among the most important made in both the frontcountry and the backcountry. Where open fires are appropriate, Leave No Trace guidelines offer clear direction for the best ways to collect firewood, establish fire lays, and manage open flames.

For more on minimizing campfire impacts, see the chapter titled "Using Stoves and Campfires."

Camp stoves enable outdoor travelers to heat water and cook meals quickly and efficiently. They can be used almost anywhere and will not blacken rocks, leave ashes, or scar the land.





Respect Wildlife



- *Observe wildlife from a distance. Do not follow or approach wild animals.*
- *Never feed animals. Feeding wildlife damages their health, alters their natural behaviors, and exposes them to predators and other dangers.*
- *Protect wildlife and your food by storing rations and trash securely.*
- *Leave pets at home.*
- *Avoid wildlife during sensitive times: mating, nesting, raising young, or wintertime.*

Among the great pleasures of Scout adventures is sharing the environment with wildlife. In fact, it goes beyond sharing. We are the visitors in most outdoor settings, while wild animals are the real residents. We are, in effect, visiting their homes.

An important aspect of Leave No Trace is to reduce the impact we might have on wildlife. Travel quietly and give animals the space they need to feel secure. Avoid nesting areas, calving sites, and other areas critical to wildlife. Picking up wild animals, chasing them, or otherwise altering their normal activities can be stressful and could compromise their ability to survive. You are too close if an animal changes its activities because of your actions or presence.

Bears, moose, raccoons, and other animals can become aggressive and dangerous if they feel provoked or threatened by people. Failure to protect your food supplies might attract bears and other animals to your camp in search of a meal, and that, in turn, can lead to their destruction.

Respect wildlife. Photograph, observe, and enjoy from a distance the permanent residents of the backcountry, and do your part to help keep wild animals wild.

For more on respecting wildlife, see the “Appreciating Our Environment” section of this book. For guidelines on traveling and camping in bear habitat, see the chapter titled “Traveling and Camping in Special Environments.”

Be Considerate of Other Visitors



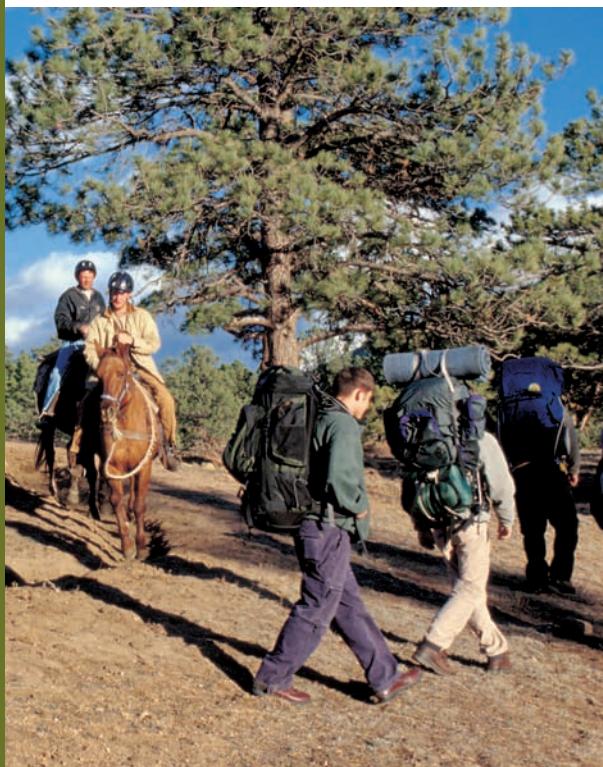
- *Respect other visitors and protect the quality of their experience.*
- *Be courteous. Yield to others on the trail.*
- *Step to the downhill side of the trail when encountering horseback riders or pack animals.*
- *Take breaks and set up camp away from trails and other visitors.*
- *Let nature's sounds prevail. Avoid loud voices and noises. Respect other visitors who might be seeking solitude.*

Extending courtesy to other hikers and campers is a natural inclination of outdoor travelers. Remember, though, that everyone in camp and on the trail is seeking a certain balance of socialization and solitude. Enjoy the company of those you encounter on the trail and at campsites near yours, but respect their desires for quiet and space.

Leave portable radios and sound systems at home. You will find it much easier to appreciate the outdoors, and you are far less likely to disturb other outdoor travelers and wildlife. A cellular telephone may be carried as

a means of emergency communication, but stow it deep in a pack until it is really needed. If you must make calls, do so out of the sight and sound of others.

For more on being considerate of other visitors, see the “Leadership and Trek Preparation” section of this book.





Erasing the Traces That Exist

The principles of Leave No Trace are intended to help people enjoy the outdoors in ways that leave no sign of their passing. Using these principles is a tremendous way to show your concern for the health of the environment and your dedication to visiting the outdoors in ways that are appropriate for you and for the land.

With the freedom to use the outdoors for recreational purposes come the responsibilities and opportunities to roll up your sleeves and help repair damage done by others. You can do a lot to help repair damage and to shield the environment from further harm. In cooperation with land management agencies, Scouts can take on projects to repair trails and campsites and to restore wildlife habitats. Effective projects require thorough planning and guidance from knowledgeable experts.

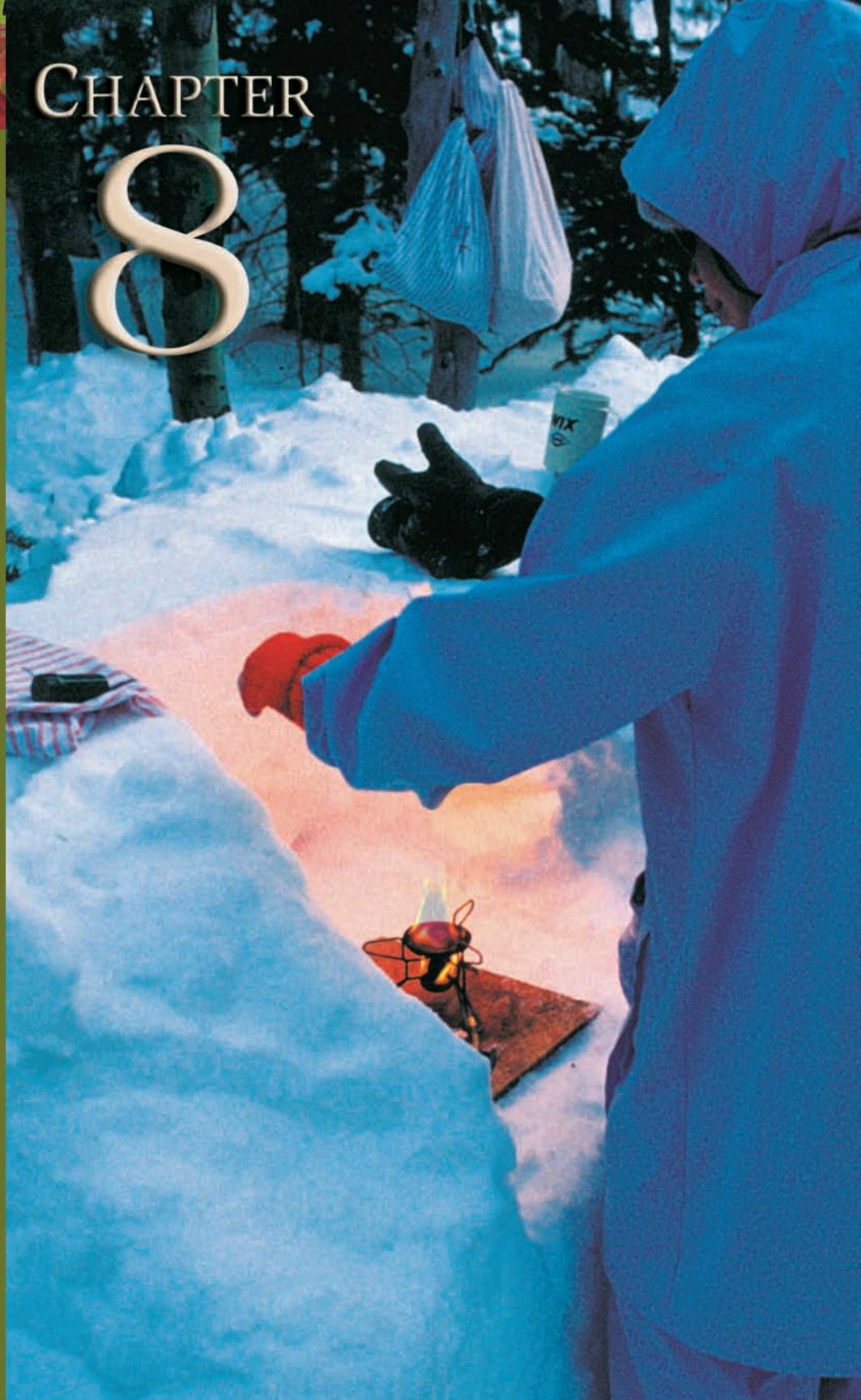
For more on caring for the environment, see the "Appreciating Our Environment" section of this book.



LEAVE NO TRACE AWARENESS AWARD

Youth and adults who master and practice responsible outdoor ethics may be eligible to receive the BSA's Leave No Trace Awareness Award. Visit the *Fieldbook* Web site for more information and applications for this award. ➤

CHAPTER 8





Using Stoves and Campfires

"Our mountaineering equipment was very simple and extremely light. . . . For fuel we had wood alcohol to be burned in aluminum stoves and also petroleum to be burned in a Primus stove. The latter proved by far the more successful."

—Frederick A. Cook, *To the Top of the Continent*, 1908 (Among the first to attempt a climb of Mount McKinley, he reminds us that decisions concerning stoves and fires have confronted campers for a very long time.)



There was a time when campers could build fires wherever they wished. The skill with which they could kindle a blaze was a mark of their woodland expertise, and the fires they created became the centers of their camp activities. They cooked over them, dried wet clothing next to them, warmed themselves by them, and gazed into the embers. Few could imagine an evening without a fire, and even so thoughtful a wilderness advocate as Henry David Thoreau saw nothing wrong with building a bonfire in the Maine woods and leaving the glowing coals behind as he moved on.

We live in a much different age from that of Thoreau. There are still times when a campfire is appropriate and even desirable. If it is built in the wrong place or in the wrong manner, however, a campfire can leave scars on the ground that will take a very long time to heal. The mark of experienced campers has become not just the ability to build a fire, but also the wisdom to know when not to light one.

Reliable, lightweight stoves offer today's campers a reasonable alternative to open fires. By considering the advantages and disadvantages of campfires and stoves and then using the heat source that's right for a given situation, you will find that your own outings will be enhanced and that you will have one more means available in your quest to travel the outdoors without leaving a trace.

Minimizing Campfire Impacts by Using Camp Stoves

The most effective way to minimize campfire impact is to not build a fire at all. Camp stoves make that possible. They also extend the range of outdoor travelers by giving them a reliable means of generating heat anywhere, anytime, and in any weather.



Reliability, ease of use, and minimum impact make stoves a good choice for most backcountry journeys.

Advantages of Camp Stoves

- They will not scar the ground or damage trees.
- They burn nothing native to the backcountry.
- They operate reliably under adverse conditions.
- They create steady heat that won't blacken rocks or cooking gear.
- They are quick and convenient.
- They make travelers more self-sufficient and able to camp high on a rocky mountain, deep in a treeless desert, and in the drifts of a snowy forest.

Disadvantages of Camp Stoves

- They have to be carried.
- They require the handling of flammable liquid or gaseous fuels.
- Empty fuel canisters must be packed out for disposal or recycling.

Choosing a Stove

Of the many stoves on the market, those burning the following fuels are most useful. Always read and follow the manufacturer's instructions for carrying, fueling, using, and storing camp stoves.

White-Gas Stove

White gas, a refined naphtha petroleum product commonly used in lightweight stoves in North America, is available at most camping stores. Choose only white gas specifically approved by stove manufacturers. White gas is very volatile and must be carried, stored, and used with the utmost caution. Legal restrictions often prohibit transporting white gas on aircraft, ferries, and other means of public transport. Scouts planning adventures that will involve travel on boats or airplanes should research their options well in advance to determine how best to get their stove fuel to the trailhead.

More advanced white-gas stoves are equipped with pumps to pressurize their fuel tanks, which can be a real advantage in cold weather.

Kerosene Stove

Kerosene is a hot-burning, nonexplosive fuel available almost anywhere in the world. While kerosene camp stoves are unusual in North America, they are a familiar sight on international expeditions. A kerosene stove must be preheated before it can be lit.

Cartridge Stove

Simplicity, safety, and convenience are features of butane and propane cartridge stoves. Cartridge stoves need no pumping or preheating; simply attach a fuel canister, turn the control knob, and light the burner. Cartridge stoves work well in warm weather and at high altitudes, but they lose efficiency as the temperature drops.



Carefully follow stove manufacturers' instructions when selecting fuel. Some stoves operate only with white gas, while others also burn unleaded gasoline, kerosene, or even jet fuel.





**KNOW AND FOLLOW
CAMPFIRE RESTRICTIONS
AND ALWAYS CARRY
A STOVE**

Before setting out on an adventure, check with the land managers of the area you intend to visit for current campfire regulations. Fires may be banned in sensitive environments where high use has caused excessive impact, and during dry or windy periods when there is an increased danger of wildfires. Carrying a stove allows you to cook meals even if you discover at the last minute that you can't kindle a campfire.



Propane Tank Stove

Two-burner propane stoves are too heavy for backpacking but can be just right for larger groups on river rafting expeditions, frontcountry camping close to a road, or remote base camps of conservation work crews supplied by pack animals.

Using Stoves Safely

Stoves of different designs operate in different ways. Read and understand the manufacturer's instructions before lighting any stove, and then follow them exactly. In addition, *always* heed these stove safety rules:

- Position the stove in a stable location.
- Use pots appropriate in size for your stove.
- Always attend a lighted stove.
- Let a stove cool completely before you put it away. (If storing for a month or more, empty the fuel tank.)
- Never attempt to open or refuel a hot stove.
- Store liquid fuel in well-marked bottles designed for that use.
- Even if they are empty, keep fuel bottles and canisters away from sources of heat.
- Reduce fire danger at home by storing all fuel containers in a shed, detached garage, or other uninhabited structure.
- Never use a stove inside or near a tent.



Minimizing Campfire Impacts

An open fire creates heat, and that can be good. You can use a campfire for warmth, for cooking meals, and for the sheer joy of a fire in camp. Unfortunately for the environment, the heat of a campfire radiates not only upward, but also down into the soil where it can kill organisms that enrich the soil. Without a long period of recovery, that soil will not be able to support plant life, and the scar on the land caused by a fire might be visible for many years to come.

<i>Advantages of Campfires</i>	<i>Disadvantages of Campfires</i>
<ul style="list-style-type: none"> • They create heat suitable for cooking food, drying gear, and warming chilly campers. • They require no special equipment. • They provide a psychological lift on cold, stormy days and can be the focus of fellowship and contemplation. 	<ul style="list-style-type: none"> • Fires can char the ground, blacken rocks, and sterilize the soil. Vegetation can have a hard time growing again where a fire has burned. • Fires consume dead branches, bark, and other organic material that could have provided shelter and nutrition for animals and plants. • Firewood collection can create new trails and damage trees. • Campfires must be closely watched to prevent them from spreading into surrounding vegetation. • Fire sites mar the natural appearance of an area.

Appropriate Fires

A good way to think about a campfire is to consider it a tool to be used for specific and important uses. If you are prepared to use a stove, too, or to go without an open flame at all, you can make appropriate choices about when and how to kindle a campfire.



Selecting and Preparing a Leave No Trace Campfire Site

A Leave No Trace campfire site has the following advantages:

- Fire will cause no further negative impact on the land.
- Fire cannot spread from it, and the area surrounding the site will not be further degraded by the concentrated trampling of people cooking and socializing.

The best places for your campfires are sites designated by the land managers. Many of these sites

have metal rings, grills, or stone fireplaces that should be used where you find them. Otherwise, shield durable surfaces (exposed rock, for example) and more fragile earth (the forest floor or a meadow) from heat damage by using a *mound fire* or a *fire pan*.

Leave No Trace Campfire Checklist

Ask yourself the following questions before building a campfire. A yes answer to every question indicates a fire might be appropriate. If any of your answers is *no*, don't build a fire.

<input checked="" type="checkbox"/>	YES	NO	
			<i>Do current land management regulations permit open fires?</i>
			<i>Will the fire be safe?</i>
			<i>Will having a fire cause little or no damage to the environment?</i>
			<i>Is firewood plentiful?</i>
			<i>Can signs of the fire be erased?</i>



Mound Fire

To make a *mound fire*, collect a good supply of *mineral soil*—silt, clay, or sand that does not contain organic matter that could be harmed by heat. Among the places you can find mineral soil are streambeds, gullies, beaches, and within and beneath the roots of toppled trees. Use a pot or stuff sack to carry the mineral soil to the fire site. Pour the soil onto a tarp, ground cloth, or trash bag, then form the soil into a mound 4 to 5 inches thick and 18 to 24 inches in diameter. Build your fire on top of the mound. After burning the wood to ash, extinguish any remaining coals. Crush the ashes and spread them over a wide area, then return the mineral soil to the site from which you borrowed it.

Fire Pan

A *fire pan* is a metal tray with sides high enough (more than 3 inches) to contain burning wood and ashes. Backyard barbecue grills and clean oil-drain pans can be used as fire pans on river trips, horse-packing journeys, frontcountry campouts, and other trips when the weight and bulk of gear are not great concerns. For backpacking, a lightweight aluminum pan designed for roasting turkeys can be folded to fit under the top flap of your pack. Protect the ground from heat by elevating fire pans on rocks or by lining them with several inches of mineral soil.



NO PIT FIRES

Removing sod and digging a hole to contain a blaze is no longer considered an acceptable method for reducing campfire impact. Even if the pit is carefully refilled, the replaced sod often dies and the soil beneath it settles, leaving a noticeable scar on the land. Rely instead on a fire pan or mound for open fires, or use a light-weight camp stove.

Gathering Firewood

Fire building requires three types of flammable material—*tinder*, *kindling*, and *fuelwood*.

Tinder

Tinder is fine, dry material that will burst into flame at the touch of a match. Pine needles, the inner bark of dead branches, weed fluff, dry grasses, and slivers shaved with a knife from a stick all make effective tinder. Gather a double handful.

Kindling

Kindling is material that will burn with a little encouragement. Twigs no thicker than a pencil are the easiest to find. You'll need a small armload.

Fuelwood

Fuelwood is dead and downed wood no thicker than your wrist that you'll use to keep your blaze burning. Since you want to keep the fire small, you almost always can gather what you need without using an ax or saw. Place fuelwood near the fire lay and, if bad weather threatens, protect it with a ground cloth or dining fly.

Limiting the Impact of Gathering Firewood

Gathering tinder, kindling, and fuelwood for a fire is not as simple as picking up the first sticks you find. Standing and downed timber can serve many purposes in an ecosystem, some of them critical to wildlife. The visual impact caused by removing wood also can be a factor in where and how you collect fuel for your fire.

Build campfires only where you can find plenty of dead wood. Avoid scouring every last stick from a campsite by walking a few minutes to areas where wood is more abundant. Use only sticks from the ground or of a size that can be broken by hand—don't snap branches off of living or dead trees or strip the bark. On backcountry treks, plan to leave axes, hatchets, and saws at home. For camporees and other frontcountry campouts, consider bringing bundled firewood or bags of charcoal from home. Always be prepared to use a stove instead of a fire.

Laying and Lighting a Fire

Heat rises. That's the secret to successfully building a fire. Take advantage of that fact by placing a handful of tinder on your fire site, then arranging kindling above that and the fuelwood over that. Light the base of the tinder and make sure that your fire gets plenty of air. Flames forming in the tinder

will make their way up into the kindling. As they gain strength, they will ignite the fuelwood, too. That's really all there is to starting a fire, though there are dozens of ways to organize tinder, kindling, and fuelwood into a fire lay. Here are two:

Tepee Fire Lay

Mound plenty of small kindling over a big, loose handful of tinder in the center of your fire site. Arrange several pieces of fuelwood above the kindling to form the shape of a tepee. Leave an opening in the "tepee" to allow air in to the fire. Light the tinder, and the flame should rise through the tinder and crackle up into the kindling and fuelwood above.

Add larger pieces of fuelwood as the flames grow stronger. When the fire is strong enough for the tepee to collapse, use a stick to push the embers into a compact bed.



Lean-to Fire Lay

Push a stick at a 45-degree angle into the fire site, the upper end of the stick pointing into the wind. Place tinder beneath the stick and lean kindling against both sides of the stick. When the kindling is burning well, add fuelwood. Air drawn into the lean-to will help keep the flames going.

Extinguishing a Fire

One of the most important moments in tending a campfire occurs when you are finished using it.

Allow a fire to burn down to ash or very small coals by tossing all partially burned sticks into the fire and letting them burn to ash. Extinguish the fire by dousing the embers with plenty of water. Stir the ashes to moisten them thoroughly. Don't stop until you can *safely* place your hand on the extinguished coals. Remove any litter and scatter unused firewood where you found it.

When a fire ring or other designated fire site is full, or if you have used a fire pan or mound, broadcast cold ashes over a wide area of vegetated ground well away from camp. Return mineral soil to the location from which it was borrowed. Finally, replace any ground cover you disturbed, and do whatever else you can to restore the fire site to the condition in which you found it.

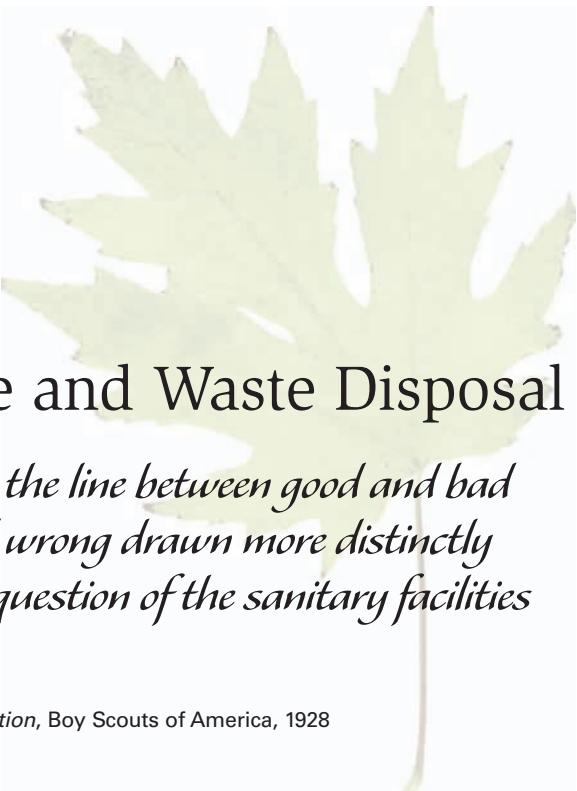
A Final Word

The ability to generate heat can enrich your outings, but with fire comes the responsibility to use it wisely. Do your part by carrying a lightweight stove on all your camping trips and using it whenever an open fire might harm the environment. You will have the convenience of a stove when you need it, the pleasure of an open fire when you want it, and the satisfaction of traveling the backcountry cleanly, responsibly, and well.

CHAPTER

9





Hygiene and Waste Disposal

"Nowhere is the line between good and bad or right and wrong drawn more distinctly than in the question of the sanitary facilities of a camp."

—From *Camp Sanitation*, Boy Scouts of America, 1928



In the outdoors there seldom is much in the way of plumbing. There is no on-demand hot water for washing dishes or for bathing, and no flush toilet for getting rid of human waste. There are no garbage disposals for leftover food. Doing without those conveniences can be one of the more interesting delights of outdoor adventures. So, too, can practicing good hygiene and waste disposal as a means of protecting both the health of the outdoors and the health of you.

Maintaining good hygiene in the outdoors ensures that you are doing all you can to protect yourself, your companions, and your surroundings for the duration of every adventure. Your ability to do that increases dramatically if you have prepared yourself before a journey by getting in shape, eating well, and getting plenty of rest. Have a yearly physical checkup and keep your immunizations up-to-date.

For more on personal health and fitness, see the chapters titled "Becoming Fit" and "Outdoor Menus."

When expedition leaders and members of their groups do all they can to practice good hygiene, others in their groups are likely to follow their example.

What Can Make You Sick in the Out-of-Doors

The causes of illness during outdoor adventures include microscopic organisms and chemical residue.



Protozoa



Bacteria



Virus

Protozoa

Protozoa are single-celled organisms found in nearly every kind of habitat, but most are found in aquatic habitats. *Giardia*, a parasitic protozoan, is commonly spread from hand to mouth. Thoroughly washing your hands after using a cathole is one of the most effective ways to avoid it. *Giardia* sets up residence in your intestines, where it can cause diarrhea, nausea, and vomiting.

Bacteria

Bacteria are single-celled microorganisms, some of which can be passed from one person to another. They also can be contracted from streams and lakes, and can be present in the soil. Avoid bacterial infections by keeping your tetanus immunizations current, by washing your hands frequently, and by thoroughly disinfecting any cuts or scratches you might suffer.

Viruses

Viruses are submicroscopic infective agents, many of which can spread easily from one person to another. Fortunately, most viruses do not survive long when exposed to the environment.

Chemicals

Residue of agricultural pesticides and fertilizers can endure a long time in the outdoors. Heavy metals can leach into streams from mines and construction sites. Avoid still water, especially if it has a sheen of unnatural color.



Most outdoor travelers do not have the means to treat water contaminated with chemicals or heavy metals.

Personal Cleanliness

According to the U.S. Centers for Disease Control, the human hand is the most likely source of infectious microbes. Washing your hands is especially important after bowel movements and just before handling food.

Handwashing Stations

Encourage everyone in your Scout unit to wash regularly by setting out a pot of water and a small plastic bottle of biodegradable soap. Dispose of washwater by broadcasting it at least 200 feet away from any campsites, trails, and sources of water.

Waterless Hand Cleansers

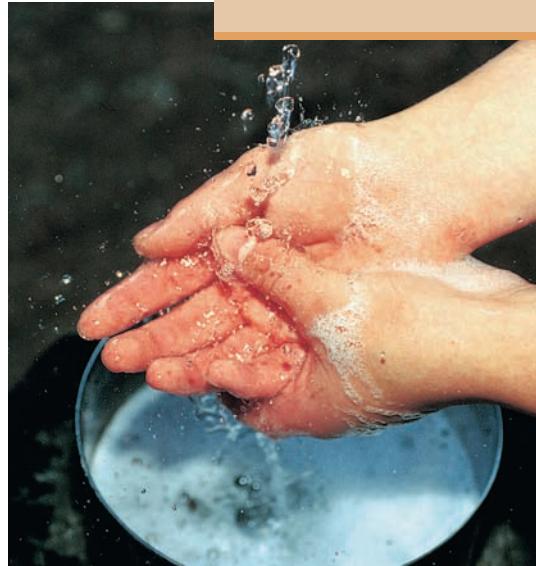
Waterless hand cleanser, often in the form of alcohol-based gel, is available at many grocery stores and drugstores. It can be an ideal aid for maintaining hygiene in camp and on the trail. A small dab rubbed on the hands will kill most harmful germs and then evaporate, leaving hands dry without the need of a towel. A small plastic pump bottle set out in camp can be used by those about to handle food or returning from having relieved themselves. Waterless cleanser is also convenient to use on the trail, during watercraft trips, and in other situations where washing with soap and water is not a convenient option.

Bathing

Bathing while camping usually is more important psychologically than it is from the standpoint of health. If you do want to bathe, you'll need a couple of pots of water. Carry them at least 200 feet from springs, lakes, or streams. Use biodegradable soap and the water from one pot to give yourself a thorough scrubbing. Use water from the second pot for rinsing by dipping it out with a cup. In the summer, you can let the pots of water warm in the sun before you use them, while chilly weather might call for heating the water over a stove. After your bath, broadcast the used water over a large area.

THREE IMPORTANT THINGS YOU CAN DO TO KEEP YOURSELF AND OTHERS HEALTHY

- ① Wash your hands.**
- ② Wash your hands.**
- ③ Wash your hands.**





Water used to wash dishes does not need to be treated, though it is wise to allow everything to air dry before using it again. Most harmful microorganisms that exist in water cannot survive in a dry environment.

Safe Drinking Water

The safest water to use on a Scout outing is that which you have carried from home. Always start out with one or more full water bottles and replenish your supply from tested public systems whenever you can. On adventures of longer duration, streams, lakes, springs, and snowfields are potential sources of water, but be sure to treat all water you get in the wild, no matter how clean it appears to be.

Three effective ways to treat water are *boiling*, *chemical treatment*, and *filtering*.

Boiling

The surest means of making your water safe is to heat it to a rolling boil—when bubbles $\frac{1}{2}$ inch in diameter are rising from the bottom of the pot. (According to research conducted by the Wilderness Medical Society, simply reaching the boiling point is sufficient to kill any organisms that water might contain.) If water used for food preparation comes to a boil at least once, it requires no further treatment. Cooking pasta noodles, for example, will kill any germs that might have been in the water when you first filled the pot.

Advantages of Boiling

- 100 percent effective
- Simple to do

Disadvantages of Boiling

- Requires a stove and fuel or a campfire, as well as a pot
- Takes time

Chemical Treatment

Chemical treatment tablets employ iodine or chlorine to kill waterborne bacteria and viruses.

Advantages of Chemical Treatment

- Effective against viruses and bacteria
- Simple to use
- Inexpensive, lightweight, and convenient to pack
- A good backup to carry in case you can't boil or filter water



Disadvantages of Chemical Treatment

- Not always effective against all protozoa
- Requires a waiting period before water can be considered safe to drink
- Can leave a chemical taste in the water
- Can lose potency over time

Filtering

Most portable filters are simple handheld pumps used to force water through a screen with pores so small that bacteria and protozoa cannot get through. The finer the screen, the more effective the filter. Information provided with new filters describes their use and maintenance, and the degree of filtration they can provide.

MUDGY WATERS

Allow muddy water to stand in a pot until the silt settles to the bottom. Dip the clear water off the top and remove any remaining organic debris by straining the water through a bandana into a clean container. Ensure its safety by using a filter or chemical treatment tablets, or by bringing it to a boil.

Advantages of Filtering

- Effective against protozoa and bacteria. Filters equipped to add chemical treatment might also kill some viruses.
- Filters come in a range of capacities and designs to fit the needs of groups according to their size and the duration of their journeys.

Disadvantages of Filtering

- Filters can be expensive.
- Filtering elements must be cleaned or replaced frequently.
- Pump mechanisms of filters might malfunction.



**To help prevent
the spread of
germs, all
members of a
crew or patrol
should have and
use their own
water bottles and
eating utensils.**

Food Handling and Storage

Caring for provisions is important both for your palate and for your health. The ways in which you store food can affect the well-being of wildlife, too.

- Plan meals around ingredients that need no refrigeration.
- Estimate portion sizes to minimize leftovers.
- Keep all food items out of the reach of animals.

For more on food handling and storage, see the chapters titled “Outdoor Menus,” and “Traveling and Camping in Special Environments.”

Washing Dishes in Camp

Start a trip with clean utensils, pocketknives, and kitchen gear. Larger groups at base camps or on extended journeys can set up a three-step dishwashing system:

- *Wash pot*—contains hot water with a few drops of biodegradable soap
- *Cold-rinse pot*—cold water with a sanitizing tablet or a few drops of bleach to kill bacteria
- *Hot-rinse pot*—clear, hot water

If each person washes one pot, pan, or cooking utensil in addition to his or her own personal eating gear, the work will be finished in no time. Use hot-pot tongs to dip plates and spoons in the hot rinse. Some travelers also dip their plates, cups, and utensils in boiling water before a meal to ensure they are sanitary. Lay clean utensils on a plastic ground cloth to dry, or hang them in a mesh bag or lightweight net hammock.

Smaller groups in more extreme settings can devise variations on the basic dishwashing theme, starting with menu planning. Meals that require no cooking or that can be prepared by boiling just a few cups of water can minimize cleanup chores. Scour pots and pans with a small scrub pad, sand, or snow. Managed with care, a couple of pots of hot water are all you need to clean up after most meals.

Hygienic First Aid

Modern first-aid training teaches important methods for protecting care providers from pathogens potentially carried in blood and other bodily fluids.

Boy Scouts of America Recommendation

Treat all blood as if it were contaminated with blood-borne viruses.

Do not use bare hands to stop bleeding; always use a protective barrier, preferably latex gloves. Always wash exposed skin areas with hot water and soap immediately after treating the victim. The following equipment is to be included in all first-aid kits and used when rendering first aid to those in need:

- Latex gloves, to be used when stopping bleeding or dressing wounds
- A mouth-barrier device for rendering rescue breathing or CPR
- Plastic goggles or other eye protection to prevent a victim's blood or other bodily fluids from getting into the rescuer's eyes in the event of serious arterial bleeding
- Antiseptic for sterilizing or cleaning exposed skin areas, especially if there is no soap or water available



Thoroughly wash your hands before and after treating a sick or injured person.

Soiled bandages, dressings, and other used first-aid items should be burned completely in a hot campfire or stored in double plastic bags and discarded in the frontcountry.



"It is very important that perfect cleanliness be observed in camp, as it adds much to health and comfort."

—M. Parloa, *Camp Cookery*, 1878

In a nutshell, here is what you need to know about getting rid of trash. Plan a trip carefully and you will create very little that needs to be disposed. As for the rest, if you pack it in, then pack it out. That includes the nutshell.



All trash that is packed in should be packed out.

Proper Waste Disposal

No matter how heavy your pack feels at the beginning of a trip, it will be lighter on your way home. You will have eaten most of your food, and that should leave plenty of space for your trash and that left by others—a few flattened cans, some food wrappers, a small plastic bag containing orange peels and leftover macaroni, perhaps a broken tent pole. Anything you leave behind is trash to the next person who sees it, so don't leave anything behind.

Disposing of Human Waste

Does a bear poop in the woods? Yes, it does, and so do we. The difference is that bear scat is compatible with the outdoors, while human waste has the potential of introducing lots of nasty bacteria and protozoa. There also are strong aesthetic differences. Finding wildlife droppings can add to our appreciation of the identities, diets, and activities of animals. Finding piles of human waste, especially flagged with shreds of soiled toilet paper, will add nothing to your outdoor experience except disgust for those who care so little for the out-of-doors and its visitors.

Here, then, are the basics of how to dispose of human waste in ways that minimize contamination of the environment and limit the risk to wildlife and people.

Urine

If toilet facilities are available, use them. Otherwise, urinate away from trails, camps, and places where people gather. Choose rocks or bare ground; animals may defoliate vegetation in their efforts to absorb the salts left by concentrations of urine.

Solid Waste

Nobody wants to come across a pile of human waste on a trail or near a campsite. It's unsightly, it's an immediate health hazard, and it can be a major contributor of pathogens seeping into springs, lakes, and streams.

Dispose of human waste in one of three ways:

- Use existing toilet facilities.
- Use a cathole.
- Pack it out.

Toilet Facilities

When you are traveling or camping near rest rooms, outhouses, or other toilet facilities, use them. (Most rustic facilities are designed only for human waste. Anything else will take up valuable space and may attract wild animals. Pack out all your trash and leftover food.)

Cathole

Where no toilet facilities exist, dispose of human waste in a cathole. Choose a private spot at least 200 feet from camps, trails, water, and dry gullies.



Collect and bag toilet paper to carry it out.

With a trowel or the heel of your boot, dig a hole 6 to 8 inches deep, but no deeper than the topsoil (humus). Take care of business, then cover the hole with soil and camouflage the site with leaves or other ground cover. Organic material in the topsoil will break down the waste over time and render it harmless.

Packing It Out

In certain pristine environments—deserts, canyons, caves, alpine tundra, snowfields and glaciers—waste might not easily decompose. The leavings of large numbers of people would negatively impact the health of the environment and the quality of everyone's experience. The best way to deal with human waste in those settings is to carry it out. That requires a few simple preparations and a supply of *pack-it-out kits*.

Land managers of areas requiring you to carry out human waste will give you guidance on how to dispose of it at the end of a trip, usually by placing it in special receptacles near trailheads. Do not toss pack-it-out kits into outhouses, trash cans, or any other trash receptacles; that can create a health hazard and in many places is prohibited by law.

MAKING A PACK-IT-OUT KIT

- 1 1-gallon self-sealing plastic bag
- 1 paper bag
- 1/4 cup of cat litter
- 1 8½-by-11-inch sheet of typing paper to use as a target

Assemble each kit by putting the cat litter in the paper bag, folding it closed, and placing the paper bag inside the plastic bag. Slip the sheet of target paper into the plastic bag, too, and seal the bag shut.

Your Scout unit will need one kit per person per day, plus a few extras just in case. You should also have several sturdy plastic trash bags.



Using a Pack-It-Out Kit

- ❶ In an out-of-the-way place, put the target paper on the ground and secure the corners with small rocks or snow. Take careful aim and accomplish the task at hand.
- ❷ Put the target paper, its contents, and any toilet paper you might have used into the paper bag. The cat litter will control odors.
- ❸ Roll the paper bag closed and seal it inside the plastic bag.
- ❹ Place all used pack-it-out kits in one or more trash bags that can be packed to the frontcountry for proper disposal.



Wash your hands with soap and water or disinfect them with waterless hand cleanser.

Environmentally friendly human waste kits are commercially available to make carrying out your waste even easier. These kits are lightweight and can be disposed of in a trash receptacle.

Disposing of Dishwater and Washwater

The dishes are done, faces are washed, laundry is drying on a line. How best can you dispose of soapy water so that it doesn't harm the environment?

The most important step was the one you took before you began—selecting a wash site at least 200 feet from any streams, lakes, or other sources of water. Next is straining any food particles out of dishwater, using a strainer, a sieve, or a piece of fiberglass screen. Put the particles in a plastic bag along with other bits of leftover food to be packed out to the trailhead. (Water used for personal washing or for laundry does not need to be strained.) Finally, broadcast the water over a wide area.

Disposing of Leftover Food

By planning well, you should have few leftovers to manage. When you do, though, stow them in double plastic bags, along with any food particles strained from dishwater, to pack out to a trailhead.



From planning menus to carrying home leftovers, use a Leave No Trace approach to food management.

CHAPTER 10





Traveling and Camping in Special Environments

"Our camp in the cool mountain air banished the fatigues of weary miles; night, under the mountain stars, gave us refreshing sleep; and, from the morning we crossed Pitt Ferry, we dated a new life."

—Clarence King (American explorer, scientist, and, from 1879 to 1881, the first director of the U.S. Geological Survey), *Mountaineering in the Sierra Nevada*, 1872



An evening in the desert, a tent above tree line, a night under the stars. Camping in special environments can be just what the word suggests—special. Taking you far from home, removing you from the usual routines and distractions of modern life, journeys into special environments can be filled with discovery and adventure.

Of course, every environment is special in its own way, and each deserves your best effort to treat it well. The principles discussed in the chapter titled “Implementing Leave No Trace” outline the basic means you can use to enjoy any outdoor setting responsibly. The unique qualities of certain environmental areas demand that visitors make additional preparations and apply specific methods in order to use Leave No Trace most effectively. The following guidelines can help you minimize your impact when traveling or camping in the deserts, in alpine tundra regions, along shorelines, and in bear habitat.



With the freedom to enjoy the outdoors comes the responsibility to pitch in now and then to help repair damaged landscapes. The chapter titled "Being Good Stewards of Our Resources" explores many opportunities for volunteers to help the environment.

Deserts

Treks into arid regions of the continent can be among the most rewarding and challenging of journeys. The rewards come from finding yourself in the midst of magnificent scenery, difficult terrain, and complex ecosystems. The challenge is twofold. First, you must keep yourself safe in an environment not always suited to human comfort. Second, you must see to it that you do no harm to an environment that is sensitive to human impact.

Most desert landscapes consist of scattered islands of life and fertility surrounded by rock and inorganic mineral soil. Because of the general scarcity of water and organic soils, arid lands lack the capability to recover from damage caused by careless visitors. For example, slow-growing desert plants, once they have been injured, will take longer to repair themselves than those in a lush environment.

Traveling and Camping

Plants and *cryptobiotic soil crusts* that have been trampled beneath boot soles, bicycle wheels, or tents can take years to recover. Avoid disturbing desert vegetation and crusts by using existing trails and campsites whenever you can.

Where there are no trails, travel in dry washes, along bedrock, and across other areas where not much grows. Choose similar sites for camping, but avoid dry watercourses; these can flood with little warning even when storms are some distance away.

An obvious feature of deserts is the lack of water. Where it does exist, protect its purity and access, and take only what you need. Camp well away from pools and streams to reduce chances of polluting them and to allow wildlife to approach them.

Protect desert cultural heritage by viewing but not altering ancient dwellings, rock art, or other artifacts. Leave everything where you find it and camp well away from these areas.

Sanitation

Dispose of human waste in catholes 4 to 6 inches deep that are located at least 200 feet from permanent and temporary water sources, trails, or campsites. The sun's heat will desiccate waste and kill harmful microorganisms. Where land managers expect it, use pack-it-out kits.

For more on sanitation, see the chapter titled "Hygiene and Waste Disposal."

Campfires

Desert vegetation grows very slowly, and the debris from dead, decaying wood can provide critical nutrients to ensure soil fertility. Plan ahead so that you can do your cooking over backpacking stoves rather than relying on open fires.



Cryptobiotic soil crusts
are a unique feature
of some arid ecosystems
in the American West.
The crusts are self-sustaining biological
communities formed by
living organisms, such
as lichens, and their
by-products. Many
have the appearance
of tiny, black, irregular
pedestals. They reduce
erosion, fix nutrients in
the soil, and increase
water absorption, thus
creating a hospitable
environment for plants.

Protecting Riparian Zones

Some arid regions are broken by lush vegetation growing along the sides of streams. These *riparian zones* can be essential to the survival of wildlife and vegetation. They also can be a magnet to outdoor travelers seeking water and shade. Protect riparian zones by concentrating your impact on rock, sand, and other durable surfaces.



Alpine Tundra

The gorgeous tundra of high mountains is windy, treeless, and covered much of the year by snow. Scattered with rocks and covered in places by a thin mantle of soil, tundra can support communities of vegetation that have adapted specifically to endure the harsh conditions of cold, wind, intense sunlight, and brief growing seasons. While able to thrive on its own, tundra vegetation is especially vulnerable to damage from trampling or from poorly located tent sites.

Traveling and Camping

Stay on existing trails and use established campsites. Where no pathways exist, travel and camp on rock or snow. Spread out as you hike, going abreast rather than in single file.

Sanitation

Decomposition of human waste in alpine areas can be extremely slow. When using a cathole, find a private site where you can make the hole in organic soil. If local regulations require that you carry out your waste, use pack-it-out kits.

Campfires

Wood is extremely scarce in tundra regions and of much greater importance as a component of soil nutrition than as campfire fuel. Carry a backpacking stove on trips into the high country and save campfires for more appropriate locations.



Shorelines

Kayaking, canoeing, rafting, sailing, and other adventures on water often bring outdoor travelers to shorelines for campsites, rest areas, and portages. The recreational use of certain watercourses means that many popular stopping points and layover sites can receive a heavy amount of use. That use often is concentrated in areas important to wildlife and vegetation.

Traveling and Camping

Unnecessary impact in river corridors can be avoided by carefully preparing for your trip. For example, if river runners fail to bring proper clothing to stay warm and dry, they might be forced to build large fires that can have a negative impact on the land. Proper preparation includes knowing what to expect, repackaging food supplies, having the proper equipment, and having knowledge of the river you plan to visit.

Limit your camping to established sites. When that is not possible, seek out durable surfaces such as gravel bars and sand beaches with little or no vegetation. Otherwise, a good rule of thumb is to camp at least 100 feet from the shoreline, and 200 feet from side streams and springs.

Along ocean coastlines, camp between the highest daily tide mark and the seasonal high-tide/storm-wash line. Check with local land managers to learn where this is.

Sanitation

Travel by watercraft generally makes it easy to carry the necessary facilities to pack out human waste. Otherwise, use catholes located at least 200 feet from open water, trails, and campsites, and well above high-water lines.

Campfires

The capacities of most watercraft allow you to carry the stoves, fuel, and provisions you need to make cooking a high point of each evening's entertainment. Consider building a fire only when driftwood is plentiful or when you have packed in a supply of charcoal, and then use fire pans or mound fire lays.



Bear Habitat

One principle of Leave No Trace is to respect wildlife. That applies to animals in any setting, though it can take on added significance in special environments. These often are critical wildlife habitats—nesting areas, feeding grounds, travel corridors, haul-out sites for marine mammals. Wherever your adventures take you, enjoy wildlife from a distance and do nothing that might cause animals to alter their natural behavior. When it comes to bears, that can require added preparation, knowledge, and diligence.

Bears have come to symbolize the wildness of the outdoors. Their size, power, range, and intelligence have allowed them to thrive for eons in many regions of North America. The pressures of land development and urban expansion have reduced bear habitat.

Left to themselves, bears eat a wide range of food, including berries, grubs, fish, and small mammals. Wild bears typically are shy and try to avoid people. However, bears that get easy meals from campsites can lose their fear of humans, and that can lead to the animals' destruction.

Ensuring your own security and that of all others in your group is very important. Protecting the safety of bears is a high priority, too. Follow the principles of Leave No Trace and you will be well on your way to traveling and camping responsibly in bear country.

The following recommendations are intended to minimize bear-human encounters, but no one can guarantee that an individual will not be injured by a bear even if these recommendations are followed. Bears are wild animals. It is ultimately your responsibility to be cautious and respectful when traveling and camping in bear habitat.

Traveling and Camping

Do the following before going into bear country:

- Check with local land management personnel for current information on bear activity and the best ways to keep yourself and the bears safe.
- Find out what gear you will need to “bear-proof” your camp—nylon cord and food bags for *bear bags*, for example, or food storage canisters (discussed later in this chapter). Learn how to use those items, and include them on your list of bear country essentials.
- Plan menus with ingredients that won’t create unnecessary odors. Avoid strong cheeses, cans of tuna fish and sardines, grease, and other smelly food items.

Do the following while you are on the trail:

- *Stay alert.* Study the terrain ahead. Be on the lookout for bears or signs of bears. Almost the only occasions for problems with bears on the trail occur when people startle a bear or come too close to a bear’s cubs or sources of food.
- Make noise so that bears can hear you coming and get out of your way. Sing, whistle, clap your hands, and talk loudly. Some hikers hang small bells on their packs.
- Never leave packs or food items unattended, even for short periods of time.

Do the following while camping:

- Be especially cautious where there are signs of recent bear activity. Moist bear droppings, newly overturned rocks, and fresh claw marks on tree trunks all are indications that the bears, rather than you, have already reserved the spot.
- Accept the fact that bears will investigate your camp. Your goal is to make camp completely uninteresting to them. Bears that find nothing to eat will sniff around and then move on.

“Your best weapon to minimize the risk of a bear attack is your brain. Use it as soon as you contemplate a trip to bear country, and continue to use it throughout your stay.”

—Dr. Stephen Herrero (professor of biology and environmental science, University of Calgary, and a leading authority on ecology and bear behavior), *Bear Attacks: Their Causes and Avoidance*, 2002

- Set up your sleeping tents 200 feet or more away from your camp cooking area. Allow nothing in the tents except sleeping bags and pads, flashlights, and perhaps a book or two. Since the clothing you wear during the day can pick up odors from food, sunscreen, and toiletries, change into clean sleeping clothes before going to bed. Store your day clothes along with your other gear under a rain fly near the cooking area. (Clothing that smells of spilled food should be hung in a bear bag.)
- At night and whenever you leave the cooking area unattended, put every bit of food, trash, and smellables in a bear bag at least 300 feet from your campsite, or stow them in bear canisters or in the bear boxes provided at some campgrounds. Canisters and bear boxes might have insufficient capacity to store more than a couple days' food.
- Clean up any spilled food or crumbs and store them with your trash.
- Thoroughly wash and rinse pots, plates, utensils, and other kitchenware after meals. Strain washwater and scatter it over a wide area at least 200 feet from camp. (Place any bits of food in a plastic bag and store it with the trash.)

If a bear approaches your campsite, make loud noises to discourage it from coming closer. If a bear enters your campsite, leave the area and stay away until the bear is gone. Don't risk injury by attempting to save your food or gear; it would be much easier to replace provisions and equipment than it would be to replace you.

Follow any other advice provided by the land management agencies of the bear habitat you are visiting.

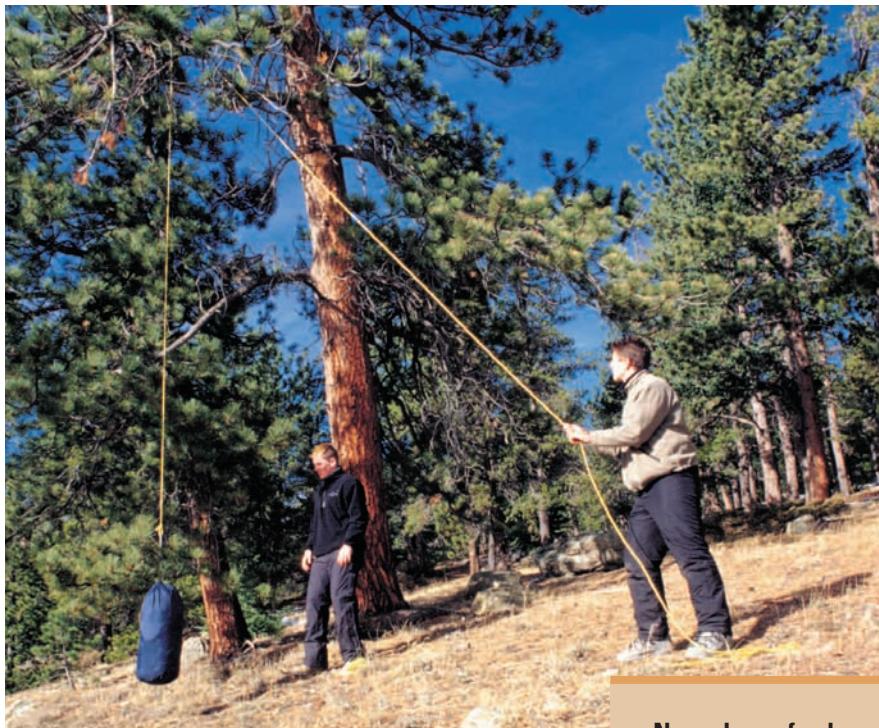
How to Protect Your Food and Other Smellables

Wherever you camp, it's a wise practice between meals to stow your food beyond the reach of wildlife. If there are bears around, it is extremely important that you get all the smellables out of your tent and pack whenever you will be away from camp or are bedding down for the night. Even in the absence of bears, ground squirrels, mice, raccoons, and other animals can create havoc with unprotected provisions.

Three effective means of bear-proofing your provisions are *bear bags*, *bear boxes*, and *bear canisters*.



"Smellables" include food (including candy and trail mix), garbage, soap, shampoo, deodorant, lotions, toothbrushes and toothpaste, sunscreen, lip balm, insect repellent, film, first-aid kits, feminine hygiene products, and anything else that has an odor.



Bear Bag

While there is still plenty of daylight, find a tree with a sturdy horizontal branch about 20 feet above the ground. Put a couple of handfuls of soil in a bandanna and secure it to the end of a 50-foot length of nylon parachute cord. Toss the weighted cord over the branch. Stash your provisions in a sturdy plastic trash bag or in a waterproof stuff sack. Twist it closed and secure it to one end of the cord with a clove hitch. Pull the other end of the cord to raise the bag until the bottom of the bag is at least 12 feet off the ground and 8 feet away from tree trunks—well beyond the reach of any bears that might stand beneath it, climb the tree, or venture out onto a branch. Secure the free end of the cord to a tree.

A second bear-bag technique requires two 50-foot cords. Toss the end of one over a high branch. Toss the second cord over a branch of equal height on a second tree at least a dozen feet away from the first. Secure one end of each cord to the bear bag. Pull on the free ends of the cords to hoist the bag, centering it between the trees. Tie off the cords.

Some designated campsites are equipped with a wire cable or pole secured horizontally between two trees at a height of 16 feet or more. Toss a cord over the center of the cable or pole and use it to hoist bear bags out of the reach of animals.

**Never leave food unattended.
Hang food and all smellables well out of the reach of bears, or store them in bear-proof containers.**



Bear boxes are most often found at frequently used campsites.

Bear Box

Some popular campgrounds in bear territory, especially those in state or national parks and forests, have metal containers that can be used for storing food and other smellables. Follow the instructions to close and lock the lids.

Bear Canister

Much of North America's bear habitat includes tundra and other regions with few trees tall enough to make bear bags effective, and so remote that bear boxes are few and far between. An effective solution to the problem of protecting food and other smellables is to carry bear canisters with you. These canisters are made of a very strong, lightweight plastic and have lids that cannot be pried open by animals. Simply place food and smellables in the canisters and leave them on the ground at least 200 feet from the tents where you intend to sleep. Relying upon canisters demands careful planning to ensure that provisions, toiletries, and all other odoriferous items carried on a trip will fit inside.



Bear canisters are ideal for protecting provisions in treeless terrain.

Sanitation

Avoid using scented lotions, soaps, deodorants, and shampoos while in bear habitat. Wash early enough in the day that residual aromas will have time to dissipate before bedtime.



Bear Safety Checklist

Review this list before setting out on a bear country trip. Go through it again each morning and each evening while you are in bear habitat.

<input checked="" type="checkbox"/> YES	
	<i>While hiking, alert bears to your approach by making noise. Never approach or provoke a bear.</i>
	<i>Set up your sleeping area at least 200 feet away from where you will cook and eat.</i>
	<i>Ensure there are no smellables in sleeping tents.</i>
	<i>Clean up any spilled food, food particles, and campsite trash.</i>
	<i>Use a bear bag, bear box, or bear canister to protect all unattended smellables.</i>
	<i>Dispose of strained dishwater at least 200 feet from your campsite and sleeping area.</i>
	<i>Clean fish far from campsites. Toss entrails in flowing water, or pack them out.</i>
	<i>Wash early in the day. Avoid using scented lotions, soaps, deodorants, or shampoos.</i>
	<i>Change into clean sleeping clothes before going to bed.</i>