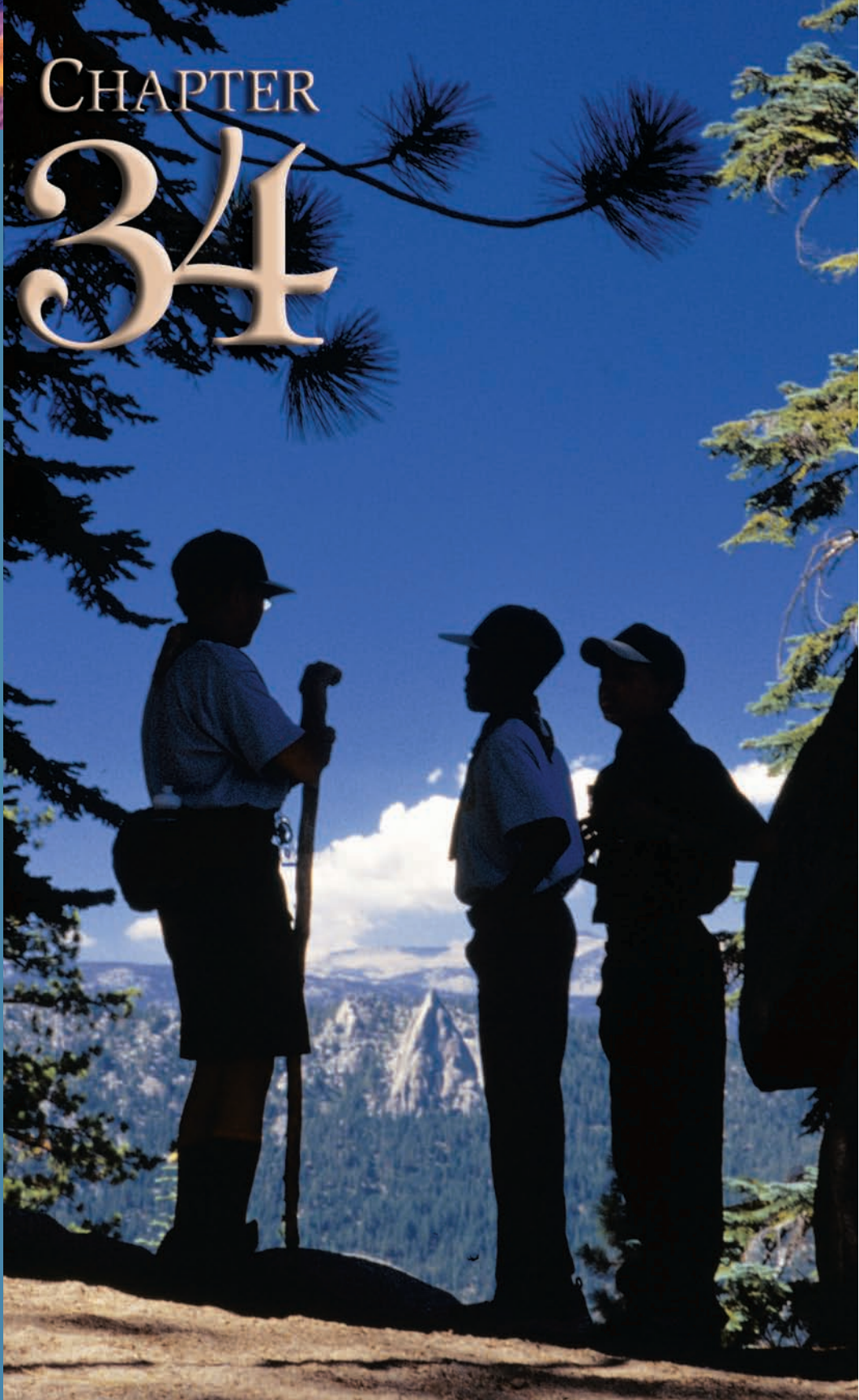
Chapter 34



Being Good Stewards of Our Resources

"Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has."

—Margaret Mead, American anthropologist and author

Caring for the land is as basic to Scouting as bringing along food for the trail, and as constant as knowing which way we are going and when we will return. Much of this book has discussed terrific outdoor activities and the means to enjoy them in harmony with the outdoors. The principles of Leave No Trace are guidelines for making that happen. When we give careful thought to using a stove or a fire, to choosing appropriate campsites and travel routes, and to other means of minimizing our impact on the land, we are preventing environmental harm.

We can take our responsibilities a step further by rolling up our sleeves and pitching in to help preserve natural resources and restore damaged ecosystems. We have the power to make a difference for the Earth, and there is plenty we can do. Many projects involve stream cleanup, meadow revegetation, erosion control, and habitat improvement. Others address the needs of forests, marshes, lakeshores, campgrounds, beaches, recreational facilities, and trails.

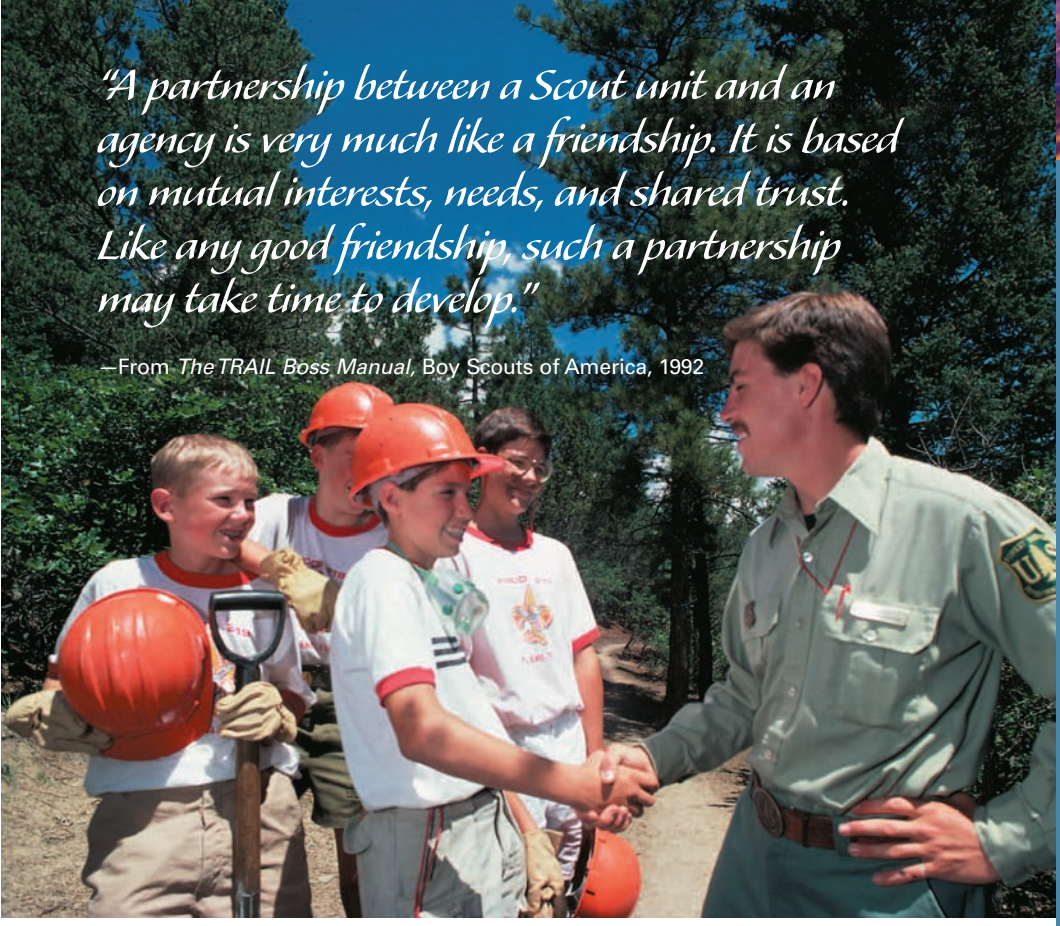
Taking on worthwhile tasks in the field makes the importance of stewardship clear and immediate. That, in turn, helps us understand that we can be good stewards in the daily choices we make as consumers, as users of resources, and as active participants in deciding how to protect the environment.

For more on enjoying the outdoors responsibly, see the "Leaving No Trace" section of this book.

The Meaning of Stewardship

Historically, a *steward* is a person who cares for the property of others, striving to return it in comparable or better shape than when it was received. Each of us is a steward of the Earth, entrusted with the planet's care for the years we are here. The condition in which we leave it is our legacy to our children, our grandchildren, and all the generations that follow.

Stewardship is important for many reasons. It allows us to give back something important in return for what we gain from the outdoors. It makes us much more aware of the intricacies of the natural world and the ways in which our actions affect it when we see the environment in terms of maintaining healthy ecosystems rather than simply as consumable resources. It meshes with Leave No Trace ethics by providing the means to erase those traces of human activities that, over time, have injured the environment. As a means of practicing thrift and service, stewardship is an extension of the foundations of Scouting expressed in the Scout Oath and Law, the Outdoor Code, and the Venturing Oath.



Active Stewardship

The trails we hike and the campsites where we pitch our tents probably fall under the jurisdictions of land management agencies, conservation organizations, or the Boy Scouts of America. By becoming involved in environmental protection, maintenance, and improvement, we can enrich our outdoor experience by serving as active stewards of the places we use and enjoy. Of course, conservation projects must be done correctly or the effort will be wasted. For guidance, groups often can draw on the knowledge and support of BSA camp staffs and of land management personnel overseeing America's public and private lands.

Land managers associated with local agencies such as community parks departments might care for only a few acres. Those involved with large agencies, including the USDA Forest Service, National Park Service, Bureau of Land Management, U.S. Army Corps of Engineers, and U.S. Fish and Wildlife Service, administer tens of thousands of square miles of the American landscape.

BSA local councils and district offices might be able to refer you to agency professionals, Scout camp personnel, or other Scout groups experienced in volunteer stewardship projects on public or BSA property. Many land management agencies and organizations have designated coordinators who are experienced with stewardship volunteers, but some agency personnel might not know what to expect or what is expected of them. That's all right;

developing a conservation project partnership includes the time it takes for agencies and volunteer groups to get to know each other.

For more on land management agencies, see the chapter titled "Planning a Trek." For more on organizations involved with stewardship, see the *Fieldbook* Web site.

Involving volunteers in active stewardship is not appropriate for every local land management office or for every group of backcountry users. Some agency personnel simply do not have the time, the resources, or the need. Some groups are not sufficiently committed to the responsibilities involved in developing long-term conservation partnerships. When everyone is willing to explore the potential, though, the possibilities are remarkable.

Planning Stewardship Projects

Volunteers who take on conservation efforts are contributing their time and energy for the good of the environment and should feel pride in their important accomplishments. The following guidelines will help groups and land managers plan projects that serve the needs of the environment and ensure that those involved are using their time well.

Use Good Leadership

Venturers, Boy Scouts, and members of other groups succeed best when they are led well. Leaders can share their responsibilities by involving other members of the group in planning and then providing them with the materials, tools, and skills they require to successfully complete the project.

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

Work Closely With Land Managers

First projects with a particular agency often are as much about getting acquainted with land managers as they are about helping the land. The project should be limited in scope, lasting perhaps a few hours or an afternoon, so that participants can sample hands-on stewardship, and land managers can get a sense of a group's ability and commitment. As volunteers gain experience and confidence, projects can become more lengthy and complex. Each project must have prior approval from the land management agency or the landowner. Once a project is planned, following it through to proper completion is appreciated by land managers.

Consider Skill Levels

A demanding goal can set people up to fail and cause them to lose interest. On the other hand, the best opportunities challenge people to push a little beyond their current abilities and to master new skills. Choose a project with a level of challenge that best fits the group's skills.

Make a Difference

Effective projects allow participants to see that their efforts have meaning. They will be eager to return for future projects if they have gained a sense of pride in doing their best for the land.

Adopt-a-Site

Adopt-a-site partnerships allow Venturing crews, Scout troops, and other groups to pledge themselves to providing long-term care of a campsite or trail, and to see how their efforts protect and improve the area over the months and years.

Preproject Visit

Visiting the project site a week or two before the effort begins allows land managers and group leaders to clarify expectations and to draw up lists of tools, materials, and logistical tasks. Among the questions to be answered during a preproject visit are the following.

- Where is the project located, and how will everyone reach the site?
- What is the project's goal, and who should be included in the planning process?
- What portion of the project can the group reasonably expect to finish?
- What are the steps for completing the project?
- Is the project site safe? If not, assist the agency in eliminating any safety concerns, or move the project to another site.
- Does the group have the skills needed? If not, who can provide the information and/or training they need and help oversee the project?
- What tools and materials are required, and how will they be provided? Will there be enough tools to keep each participant busy, productive, and safe?
- Is the extent of the project comparable to the size of the group? Is leadership adequate?
- Will volunteers need special clothing or personal gear? If they might get wet or muddy, should they bring a change of clothing for the trip home?
- What activities, such as cleaning up the project site, completing evaluations, and returning tools, will effectively conclude the project?

Emergency Response Plan

As with any outdoor activity, a troop, crew, or other group planning a stewardship project should put together an emergency response plan that includes emergency contacts in case of injury or illness, the location of the closest medical facilities, and the means of transporting people to and from the project site. Make sure a first-aid kit is available and that there will be people at the project site who know how to use it.

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

Risk Management

Address safety right from the start of project planning. Agencies often have their own safety standards and will expect volunteers to follow their guidelines. Group leaders and land management personnel should identify any hazards to be avoided and incorporate any methods to enhance safety.

A tailgate safety talk can be a standard project feature. Before the project begins, gather all participants to discuss project goals and safety concerns. In addition to the usual safety issues of being outdoors (weather, insects, sun exposure, etc.), conservation projects have some specific safety considerations:

- **Clothing and equipment.** Depending on the project, sturdy boots, hard hats, gloves, and eye protection might be needed.
- **Safe spacing.** Anyone swinging a tool should be at least two tool-lengths away from every other person.
- **Body mechanics.** Conservation projects provide great opportunities for participants to learn the right ways to lift objects, handle tools, and pace themselves through a day of outdoor activity.

Documentation

Keep a written evaluation of each project for your group's records, and provide a copy to the land managers with whom your group is cooperating. Including before-and-after photographs can provide clear evidence of the value of the volunteers' efforts. A typical evaluation answers the following questions:

- How many people were involved in the project, and how many hours did they dedicate? (To figure person-hours, multiply the number of participants by the number of hours it took to complete the project. For example, over an eight-hour day, a group of 10 volunteers has contributed 80 person-hours of effort.)
- What was accomplished? (Detail numbers and/or amounts—feet of trail cleared, number of trees planted, length of shoreline protected, percentage of a campsite repaired, etc.)
- Are there tools or skills that could improve the volunteers' efficiency? Could group leaders or land management personnel provide additional support? Add any comments and recommendations that might help everyone do a better job next time.

Recognition

The BSA honors the importance of stewardship in a variety of ways, including with patches, awards, and advancement. Agency personnel assisting volunteers in the completion of stewardship projects also deserve recognition, and they might be eligible for certain Scouting awards. A letter to an agency supervisor thanking someone for his or her help is always appreciated. Perhaps the most meaningful recognition is sincere thanks and handshakes from volunteers in the field.

The William T. Hornaday Award was established in 1914 by Dr. Hornaday, then director of the New York Zoological Park. The award recognizes BSA members and units for service to conservation and environmental quality. Other BSA awards relating to stewardship are the Conservation Good Turn Award, World Conservation Award, and the Keep America Beautiful Award.

For more on conservation awards, see the *Fieldbook* Web site.

Sample Stewardship Projects

The following is an overview of a few stewardship efforts that volunteers can carry out effectively.

Trail Maintenance

Trails are at the mercy of erosion, encroaching vegetation, and user impact. Water from rain, springs, and snowmelt gouges gullies in trails and narrows the tread with silt deposits. Brush and tree branches can make trail corridors almost impassable. Misuse by hikers, bicyclists, horseback riders, and others creates damaging shortcuts and unnecessary tread widening. Bridges, water bars, and other wooden trail structures eventually will rot away and require replacement. Steps, retaining walls, and other stone fixtures also demand occasional attention.

Nearly every kind of trail damage can be fixed. All it takes is time, skill, and enthusiasm.

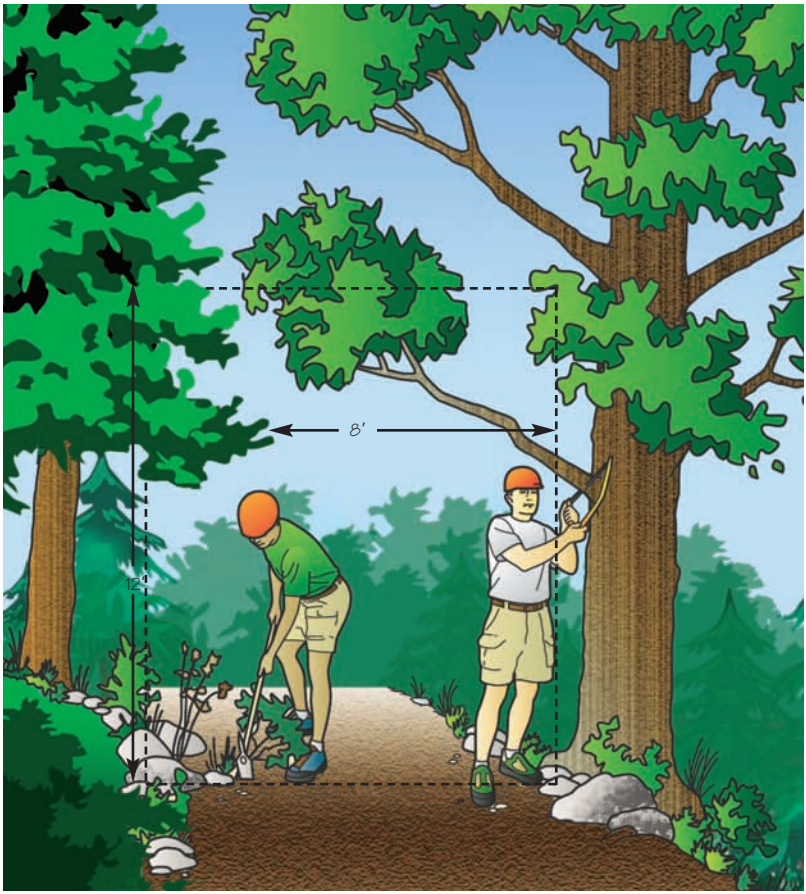
"Our ideals, laws, and customs should be based on the proposition that each generation, in turn, becomes the custodian rather than the absolute owner of our resources and each generation has the obligation to pass this inheritance on to the future."

—Charles Lindbergh, 1971 (Celebrated for his 1927 solo flight across the Atlantic Ocean, he became an advocate of stewardship and environmental protection.)

Brushing

Brushing removes branches, bushes, vines, fallen trees, and other vegetation to maintain a clear travel corridor of sufficient width and height to allow trail users to pass without difficulty. Brushing tools include loppers, bush saws, clippers, and pole saws. The following guidelines will enable volunteers to brush a travel corridor so that it looks as natural as possible.

- Cut bushes flush with the ground to avoid leaving a stump that might trip a hiker. Cut branches close to tree trunks to avoid leaving "hat racks" that might snag clothing, packs, horses, or people.
- Undercut tree branches by sawing through about one-third of their diameter from underneath, then complete the cut from above. That will prevent the falling branch from stripping the bark from living trees.
- Scatter brush and branches out of view of the trail. Cut brush and pruned branches that lie flat on the ground will decompose quickly. Do not leave piles of brush that might attract harmful insects.



Brushing and limbing for a hiking trail

Maintaining Drainage Structures

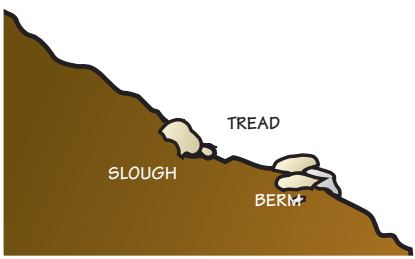
Many hillside trails deter erosion with embedded *water bars* that divert rainwater and snowmelt from the tread. Built from large rocks, logs, or lumber, water bars should be placed with enough care to withstand hard use by hikers and horses while still accomplishing their task.

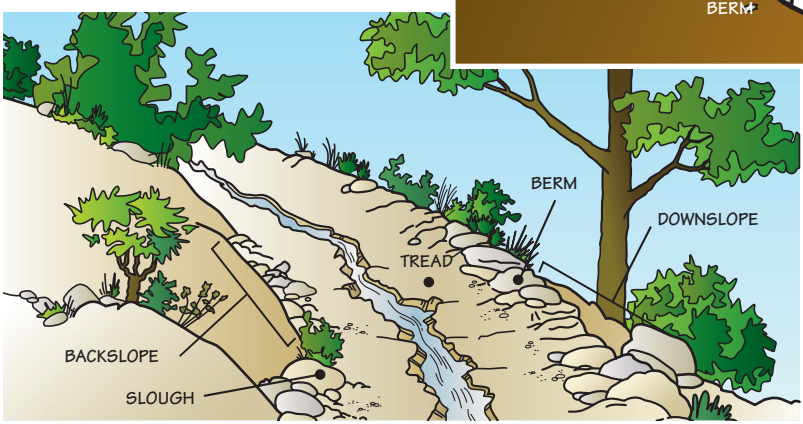
Silt building up behind a water bar can render it useless. Using a shovel, mattock, Pulaski, or even the heel of your hiking boot, scrape away the silt and restore the shape of the drainage slope so that the water bar will be effective again. Where necessary, replace rotted logs and reset loose rocks.

Maintaining Tread

A common trail concern is silt buildup on the inside edge of the tread (where it is called *slough*) and the outside edge *(berm)*. Slough and berm narrow the tread, making passage more difficult. Water trapped between slough and berm can cause erosion as it flows along the trail.

Mattocks, Pulaskis, shovels, and rakes are effective tools for removing compacted slough and berm. Loosened silt can fill in ruts along the trail or be scattered over a wide area beyond the trail.





Compaction of the tread can create a berm on the outside edge. Rainwater running from the backslope to the downslope of a trail may deposit silt on the tread. Removing this slough and berm can restore a trail's proper appearance.

"We should know the Great Spirit is within all things: the trees, the grasses, the rivers, the mountains, and the four-legged and winged peoples."

—Black Elk (1863–1950), Oglala Sioux holy man

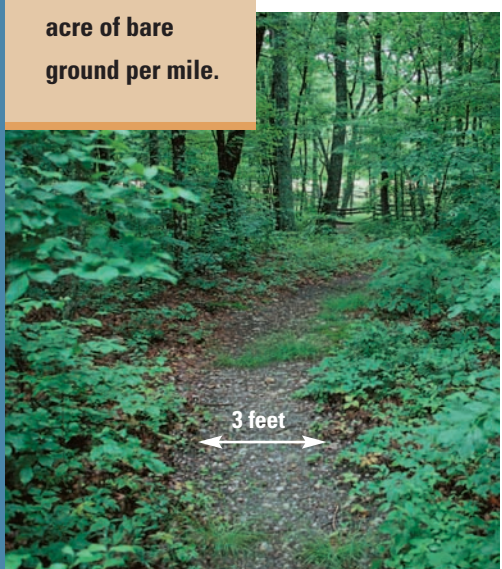
This restored wetland near Jackson Hole, Wyoming, provides good habitat for fish and other wildlife.

Restoration, Revegetation, and Habitat Improvement

Lakeshores, stream banks, trails, campsites, meadows, alpine tundra—all environments that humans use extensively will show signs of erosion and vegetation loss. The encroachment of nonnative vegetation also threatens many ecosystems vital to wildlife. Progress in repairing damaged sites is often slow, but groups serious about revegetation and restoration will see dramatic long-term changes.

A trail 3 feet wide represents nearly a quarter-acre of bare ground per mile.

Revegetation is the art of reintroducing plant communities to areas where vegetation growth has been discouraged. Revegetation improves an area's appearance, protects it from erosion, and enhances it as an inviting wildlife habitat. Sowing grass seed on mine tailings is a good example of a revegetation project.



Restoration is an attempt to heal the land by returning it to its natural integrity. In addition to sowing seed, restoration of mine tailings might include contouring the terrain and bringing in topsoil.

It might not be possible to restore a site to its condition before being disturbed by human activity. For example, a climax forest that has been cleared away cannot be recreated even if volunteers were to devote the rest of their lives to it. However, they can recreate the early stages of such a forest so that natural processes can move forward. Restoration gives an area a jump start on recovery, allowing the land a better chance to heal.

Erasing Inappropriate Trails and Campsites

Little will grow where the weight of many footsteps has compacted the tread's soil, so an inviting trail emerges. By concentrating use on the trail rather than on the surrounding environment, impact is limited to the tread. A planned trail is a sacrifice zone that we accept because it makes travel easier and it limits human impact to the pathway.

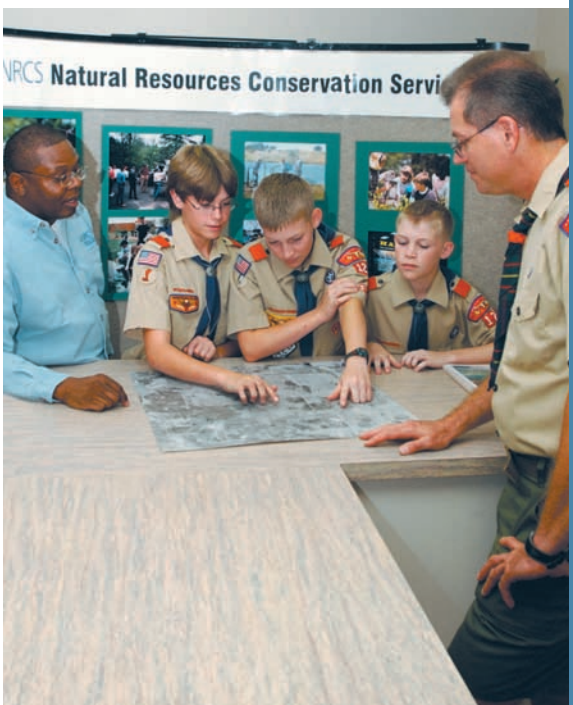
Problems arise when people stray from designated trails and, by trampling vegetation and compacting soil in other areas, create *social trails.* Many land managers try to solve that problem by selecting one route through an area, enhancing a single trail for everyone to follow, and then erasing the social trails.

Likewise, heavily used campsites often are so barren of vegetation that more camping on them will cause little further damage. Resource managers often encourage people to continue using those campsites to protect the surrounding vegetation. However, where there are too many campsites or when campsites appear in inappropriate places, it might be wise to close certain sites and restore them as much as possible.

With guidance from restoration experts and land managers, volunteer groups create visual barriers to discourage people from camping where they shouldn't. Loosening compacted soil and transplanting vegetation creates conditions that will help damaged areas recover much of their natural diversity and appearance.

Steps in Restoration and Revegetation

As with any conservation project, land managers and group leaders should do some careful planning before volunteers arrive at a restoration site. The planning process will help determine attainable goals and increase the environmental education opportunities for everyone.



Study the Area

Determine the causes and extent of the environmental damage at a site, then develop a coherent, overall plan to deal with it. Consider the soil type, annual precipitation, length and timing of the growing season, and plant communities native to the area, as well as the amount of time volunteers are willing to dedicate to improving the site.

Provide Options for Human Activity

Areas often become damaged because people use them. Efforts to restore vegetation will not be very effective if visitors continue to trample and compact repaired sites. Providing attractive alternative routes and campsites will help persuade people to avoid areas undergoing restoration.

Loosen Compacted Soil

When many people walk in the same area, their weight compacts the soil, collapsing tiny air pockets, hardening the ground, and driving out earthworms, small insects, and other creatures that enrich the soil as decomposers and aerators. Tiny root ends can no longer push through the compressed earth. Mycelia, bacteria, and other microscopic organisms essential to vegetation health might also be unable to survive.

The first step in restoring closed campsites and abandoned trails is to loosen the top 6 inches of compacted soil using shovels, garden tools, Pulaskis, and picks. Loosened soil is an inviting bed for seeds drifting in from surrounding vegetation. Scattering leaves on the disturbed area creates mulch that can protect seedlings from drying out.

Install Barriers and Camouflage

Among the most satisfying aspects of a restoration project is developing natural-looking visual barriers to discourage people from entering an area. That can give plants the time they need to become reestablished. If people can't see through a site, they are not likely to walk through it, and they

will not be tempted to pitch tents there if stones and clumps of thorny bushes are covering the ground.

Restoration experts can show you how to install logs and rocks, transplant prickly native species, and then step back to examine what you have done. Can you make it look more natural? Let your efforts spill over into undisturbed areas to erase the boundary between a restored zone and the natural environment around it.

The same holds true in closing trails. Rather than simply throwing armloads of brush on the tread and ending up with an eyesore of woody debris, blend rocks and brush into the visual background to block the trail but not attract undue attention.

Transplanting

Transplanting bushes, clumps of grass, and saplings into loosened soil speeds the healing of a restoration site, but its success depends upon a project crew's knowledge of local vegetation, proper planting times and methods, and a commitment to the ongoing care of the area.

The best time to transplant usually is autumn, when vegetation is becoming dormant and will be less affected by the shock of being moved. In spring and summer, transplanting can stress plants, especially when most of their energy is going into producing flowers, seed, and roots.

Transplanted grass can thrive in new locations. Select native species from adjacent areas so that the vegetation taking root in a restored area will be the same as what was there before the damage occurred. Take plants from areas that are similar to the restoration area in terrain and amount of sunlight. If shaded plants from a moist forest floor are moved to the edge of a dry, sunnier meadow, for example, they are not likely to survive.

Before you dig up a plant, prepare the hole that will receive it by pouring in some water and perhaps a mixture of mulch and a natural fertilizer such as fish meal. Carefully remove the plant from its original location and immediately transplant it. Remove dead, damaged, and crowded limbs to shape the tree and reduce the transplanting shock to the roots. The less time fragile roots are exposed to the air, the less likely they will be to dry out. Give the transplant plenty of water after replanting. Depending on climate and weather patterns, it might require a few more irrigations in the days or weeks that follow.

Weed Control

Among the more labor-intensive challenges facing many land managers is limiting the spread of weeds. A weed is any unwanted plant. Land management agencies often approach a weed problem with a four-step plan:

Prevention—educating the public on ways to avoid transporting weed seeds from one area to another

Removal—removing weeds from an area

Restoration—helping native vegetation reestablish itself

Monitoring—diligently seeking and eliminating new weed growth

With their numbers and enthusiasm, volunteer groups can help with all four steps of weed control. Assisted by land managers, the group's plan to effectively deal with weeds in an area will clearly identify the plants to be removed and the most efficient removal methods. Considerations for a weed-removal plan include the following.

- Identify the plant. If in doubt, don't pull it out.
- Pull weeds at the right time of year, ideally before they produce and disperse their seed.
- Wear long-sleeved shirts, long pants, and gloves when working with weeds that have thorns or sap that can irritate the skin.
- Pull small infestations of weeds by hand, especially when a noxious plant has first been detected in an area. Hand pulling also is a good alternative in sites where herbicides and mechanical removal methods cannot be used.
- If weeds have deep root systems that cannot be pulled out by hand, try cutting them flush with the ground or using shovels, Pulaskis, and other tools to dig them out.
- Land managers will direct you in the best ways to dispose of the weeds you remove.

For more on weeds, see the chapter titled "Plants."

Canada thistle, Cirsium arvense, *is a troublesome perennial weed throughout the United States.*

A South Dakota rancher discusses grazing management techniques with a conservationist from the National Resources Conservation Service.

Lifelong Stewardship

Stewardship is an obvious extension of trek adventures. In fact, caring for the environment can be an adventure that lasts a lifetime and ranges wherever our travels take us. As with other outdoor skills, the more we practice active stewardship, the more easily we can find what needs to be done and the means to achieve our goals. That serves not only the well-being of the land, but also the betterment of ourselves in our appreciation, enjoyment, and protection of natural resources.

"The nation behaves well if it treats the natural resources as assets which it must turn over to the next generation increased, and not impaired in value."

—Theodore Roosevelt, United States president, 1900–1908