

A black and white photograph of a dense forest. The trees are tall and thin, with a large, light-colored rock in the foreground. The text is overlaid on the bottom half of the image.

**Kekekabic Trail Club
Trip and
Trail Clearing
Handbook**

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- Kekekabic Trail Club
- Parks & Trails Council of Minnesota
- Border Route Trail Association
- Minnesota Canoe Association

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The Kekekabic Trail Club maintains hiking trails in Superior National Forest, including the BWCAW, in partnership with the U.S. Forest Service. The club also offers public recreational hikes under a Outfitting & Guiding Special Use Permit.

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Introduction

Welcome! We're glad that you are joining us. Make no mistake about it — we are a working club and our purpose is to maintain hiking trails. If you are ready for hard work and the satisfaction of being in the Boundary Waters Canoe Area Wilderness (BWCAW) with companions who share your love of canoe country, this is the club for you. Consider bringing a camera and a journal so that you can record your experiences and share them with family, friends, and all of the rest of us.

On Kekekabic Trail Club (KTC) trips, we clear trails, do our best to keep everyone safe, and have a bit of fun. This handbook is designed to help us do just that. It provides trail-clearing information, safety information, what you need to know about your upcoming wilderness work experience, references for more in-depth information, and more about the KTC. This handbook cannot be, and is not intended to be, a comprehensive treatise for all of these subjects. We encourage you to read additional resources for those subjects in which you are not well-versed, and ask your crew leader any questions you have.

The Kekekabic Trail Club

The Kekekabic Trail traverses about 38 miles of the rugged heartland of the BWCAW between Lake One near Ely and the Gunflint Trail. The trail originally was built in the 1930s as an access trail for firefighters. Abandoned in the 1940s, it became a hiking trail maintained by the USDA Forest Service. The Forest Service stopped maintaining the Kekekabic Trail in the early 1980s and it became almost obliterated by deadfalls and brush. Its use dwindled from 500 permits annually in the 1970s to fewer than 25.

In 1990 committed individuals from the Twin Cities founded the Kekekabic Trail Club. We of the KTC started clearing the trail with support and cooperation from the Forest Service, and we have maintained it annually. Our efforts have gone beyond removing downed trees. Using hand tools, the KTC helped to build a 32-foot primitive bridge over the Agamok River gorge and accurately mapped the trail in 1992 using the Global Positioning System (GPS).

The KTC has recruited and trained over 1200 volunteers and has an impeccable safety record. With help from the Forest Service—which provides tools and other equipment, training, support, and more—we are proud to say we get the job done.

The Land

You are coming to the largest wilderness area in the Eastern United States. The BWCAW is about 1.1 million acres within the 3-million-acre Superior National Forest. This wilderness, protected under the 1964 Wilderness Act and the 1978 BWCAW Act, is part of the National Wilderness Preservation System. As such, it is a natural area protected from overuse by humanity and preserved for future generations.

The landscape

The landscape in northeastern Minnesota was primarily created by the last ice age. When glaciers receded 10–12,000 years ago, they left behind a uniquely beautiful landscape of rock, forest and lakes. It's a paradise for those who enjoy water travel—especially by canoe.

The lakes

The lakes vary in size and water clarity: in some lakes you can see only inches deep while others are clear fifty feet or more. Most lakes are connected by overland portages, some used by

Native Americans and voyageurs throughout history.

The forests

The boreal and transitional forests meet the lakeshore with red and white and jack pine, black and white spruce, northern white, cedar, fir, aspen, birch, and maples. The topography ranges from bogs to high lichen-covered granite bluffs.

The wildlife

Black bear, moose, otter, beaver, pine marten, and wolves make the forest their home, along with many species of birds like the eagle, osprey and common loon. The waters are filled with northern pike, walleye, smallmouth bass, brook, rainbow and lake trout.

Bugs

Of course, we cannot forget bugs, which can be numerous and annoying. Mosquitoes, black flies, deer flies, and no-see-ums are especially bothersome in late spring and early summer.

The weather

Temperatures vary from 30 to 90 degrees in the warmer

Trail Break

In 1992 the Kekekabic Trail Club (KTC) organized the Minnesota Wilderness Trails Alliance (MWTA), which comprises the KTC, the Parks & Trails Council of Minnesota, the Border Route Trail Association, and the Minnesota Canoe Association. MWTA members coordinate efforts to maintain the Sioux Hustler Trail, the Border Route of Superior National Forest, portages in the eastern part of the BWCAW's Trout Lake area, and the KTC's trails—which include the Pow Wow Trail, Eagle Mountain and Brule Lake Trails, Snowbank Trail, Lima Mountain and South Lake Trails, and the Kekekabic with its side loops.

months. It will be sunny with light breezes and easy, calm paddling one day. The next day will have heavy rains, strong winds and thunderstorms. If you're flexible, you'll keep a positive experience no matter what the weather.

The BWCAW is an incredible place. Your time with us will be exciting and fun, but may also be physically demanding. You will leave with wonderful memories, and with a high level of satisfaction for what you have accomplished!

Physical Preparation

Trail-clearing trips are set up for the average person, but most individuals will need to prepare for the strenuous activities of hiking with full backpacks, portaging canoes, and wielding hand tools.

Remember always to consult a physician before participating in exercise levels you're not used to.

Start a conditioning program about three weeks before the trip.

This may include:

- walking flights of stairs
- push-ups
- sit-ups
- weight training

Ask your crew leader what your particular trip will demand of you, and make sure you can perform the tasks expected. The hardest work will be getting to your base camp and back.

The Trails

The Kekekabic Trail: A 38-mile historic fire trail built in the 1930s running through the heart of the Boundary Waters from Lake One to the Gunflint Trail.

Pow Wow Trail: Built in the 1970s, this is a 28-mile remote loop in the Kawishiwi District of the BWCAW. The trail passes alongside 12 lakes and crosses several beaver dams. The southern and eastern legs of the trail follow logging roads. The remainder of the trail runs through pristine wilderness and offers a challenging backpacking experience.

Eagle Mountain Trail: This 3-mile trail leads to the top of Eagle Mountain, the highest point in Minnesota at 2,301 feet. It also boasts a boardwalk along beautiful swampy beaverland.

South Lake Trail: Once used for running moonshine during Prohibition, this 4-mile trail connects Poplar Lake and South Lake.

Snowbank Trail: This trail features high rock ridges and several excellent overlooks. Most of the trail is inside the BWCAW, starting near outside of Ely and following Snowbank and Lakes.

Old Pines Trail: This trail leaves the Snowbank trail and takes you through large virgin white pine over 300 years old, then back near Disappointment Mountain—with several scenic overlooks along the way.

Sioux Hustler Trail: You've got to wade streams on this 27-mile loop trail. This trail penetrates remote areas of the BWCAW and you should be experienced to hike its entirety.

Brule Lake Trail: This trail runs six miles through diverse ecosystem from Brule Lake to the base of Eagle Mountain, where it meets the Eagle Mountain trail.

For more detailed descriptions and locations of trails mentioned in this handbook, contact us at www.kek.org, or call 1-800-818-HIKE. Trail guides and maps can be found at camping outfitters and libraries all over Minnesota.

The Typical Trip

OK. You've signed up. Now what?

What the KTC will do

The club plans the number and location of the year's trips early in the year, based on the previous year's experience and on reports from trail users, the Forest Service, and fall scouting trips. At this time we also begin recruiting experienced trip leaders and get the volunteer recruitment program under way. In April, before the clearing trips begin, we send out scouting parties, who update us with the number and location of downed trees and other information on trail conditions. We fine-tune our trip strategy accordingly. The KTC works closely with the U.S. Forest Service, making arrangements for tools, safety equipment, and major equipment such as canoes and two-way radios.

What each crew will do

Beyond this type of overall planning, each crew's members are responsible for their own trip. Each crew will arrange their own meeting times, trail food, and group gear such as tents and cooking equipment. Once you've signed up, your crew leader will get the ball rolling for your crew.

What your crew leader will do

Before your trip, your crew leader will call you to find out more about you, inform you of what to expect, and to discuss anything to help him or her plan the trip. Be prepared to talk about

your experience in camping, canoeing, hiking, and trail clearing. Also, be prepared to discuss special health or dietary concerns.

In addition to your personal gear, there are a few pieces of gear (tents, cooking equipment) which are group gear. Your crew leader will ask if you have any of this equipment. If no one has the gear, the KTC arranges for free rental through a sponsor.

Each crew is responsible for planning and buying food for the trip—keeping in mind the dietary concerns and preferences of the crew members. One very important pre-trip task for your crew leader then, is to form a food committee. Please consider being on your crew's food committee. After all, our general rule is that if you are not on the food committee, you cannot whine, grumble, or complain about the food!

What you will do

You should participate in the volunteer training session and be getting in good physical condition, checking with your doctor beforehand if necessary. The KTC recommends that you concentrate your physical conditioning on your legs, arms, shoulders, and building your endurance.

Your crew leader will also help coordinate transportation for the trip. You may carpool from the Twin Cities, meeting at a set location where you can leave extra cars.

You will need to bring money for out-of-pocket expenses such as food on the car trip and, in some cases, your first day's breakfast where you bunk. The cost is usually five to seven dollars. Transportation will also be arranged. Car travel is factored into the trip cost, and drivers who carpool are reimbursed \$20 (as of this writing) per passenger, including the driver.

Traveling

You will leave the Twin Cities the day before the start

of the trip. If you live elsewhere, you may arrange to meet the crew where you lodge, or at the trailhead or entry point. Since it takes 4 to 6 hours to reach our entry points on Gunflint Trail or near Ely, you will leave the Twin Cities in mid-afternoon. You'll stop for a meal on the way up.

You stay the first evening at a pre-arranged resort or lodge. Although this may sound fancy, don't expect first-class accommodations—you'll likely be in a bunkhouse! The good news is that you will not be responsible for accommodation costs out of pocket. Then, it is either off to bed or, if time permits, folks may gather around to discuss the trip and relax. That evening or the next morning, the crew will check the local weather reports. Depending upon the forecast, it may be possible for you to sort through your clothing and leave some items behind in the car. Weather can change very quickly, thought, and this is only recommended for the two-day trips.

The first day

The first morning starts early. Breakfast is either provided as the first crew cookout or can sometimes be purchased at the sponsoring lodge. Be prepared to pay for breakfast. Most groups like to head out by 7:00 to 8:30 a.m. Your crew leader will have arranged with the Forest Service for safety equipment, canoes, and tools. Forest Service personnel will deliver a safety talk at the trailhead or entry point, or at the ranger station the night before.

Then you're off! On the longer trips, you will usually spend the first day traveling to your camp, setting up, and getting settled in. That may change on occasion depending upon which parts of the trail you are clearing and how close you may be to them. On the two-day trips, you will usually reach the clearing point quickly and start clearing by late morning.

The placement of base camp along the trail may vary depending

on how much trail you will be clearing on your particular trip. For example, camp may be at the beginning of the trail, at the point along the trail where you canoed in, at the point along the trail where you will begin clearing, or it may be set up in the center of your clearing area. Occasionally, you may move your base camp if it makes sense with your clearing plans.

The second day

The second morning is early again—heading out to clear about 7:00 to 8:30 a.m. after making and eating breakfast and cleaning up. If your crew is divided and will not meet for lunch, you will need to split up the lunch and snack provisions appropriately. Regardless, each person is expected to carry water and part of these provisions in his or her daypack.

After your fun- and work-filled day, you will return to camp around late afternoon or early evening, while it is still light.

On shorter trips, you may very well clear on the morning of your last day before heading back. On longer trips, you may start heading back to the exit point the night before your last day so that you can be out by noon to 2:00 p.m. You want to be back at the car at this time because you are heading straight home without another overnight.

The return home

Back at the starting point, you usually have the opportunity to

Trail Break

Remember to take a few stretch breaks on the car trip back. You'll have worked hard, and your legs will probably be cramped and sore by the time you reach home.

shower and clean up at the lodge or at an outfitter.

Hopefully, you will have remembered to have a clean set of clothes waiting for you in the car trunk so you can change and not be thrown out of the car on the way back! From this point on, any additional expenses are yours—such as a meal.

Before You Go

- _____ Coordinate with crew leader regarding:
 - experience, skills, group gear, food committee, scheduling, meeting places, allergies (food, medicine, insects, etc.)
- _____ Have a physical examination, if necessary.
- _____ Do physical conditioning, concentrating on endurance, legs, arms, and shoulders.
- _____ Check and recheck the gear checklists (see page 16).
- _____ Pack (and repack!) your pack. Match it to the checklist.
- _____ Leave your plans and KTC phone numbers with somebody at home. Also, leave spare keys and glasses somewhere safe where you can easily access them if necessary.
- _____ Bring a clean set of clothes and a shower towel packed separately. Plan to leave it in the car at the trailhead or lodge.
- _____ Bring money for transportation and for food on the trips up and back and for breakfast at the lodge.

Notes



The beautiful Boundary Waters

Group Dynamics

KTC crews work as teams and our success means maintaining a team concept. We all depend upon each other for safety, fun, and effectiveness in getting the work done.

- Everyone should be informed.
- Everyone should be heard.
- Everyone should have a responsibility.
- Everyone should follow the rules and instructions of the crew leader.

Stay with the group

When hiking or canoeing, the person in the rear should never lose sight of the person in front, and no one should be out of earshot. Groups can easily get split up and misunderstand meeting places, causing lost time and energy while everyone is looking for each other and backtracking. Also, should anyone need assistance, you must be immediately available.

Ask for and be prepared to help

If you need help at any time during the trip, we expect you to ask for it. Likewise, if anyone asks for help, you should pitch in and assist. It is important for you to remain calm and patient with yourself as well as others. Everyone on the trip has a different level of experience and endurance for trail clearing, hiking, canoeing and camping. If you are experienced, share your expertise and help others. If you are inexperienced, do not attempt to do anything of which you are unsure. Otherwise, you may hurt not only yourself but others. Ask questions and clarify answers.

Observe others

We all must frequently check each other's health. The person who is beginning to suffer from hypothermia, heat stress, shock, etc., is too often the last person to recognize symptoms and take corrective action. In short, just watch out for each other and be a team.

Share responsibilities

Everyone assumes a group responsibility such as cooking or cleaning or setting up camp or breaking camp. Also, everyone is expected to pack group items in their backpacks along with their personal gear.

No one is expected to be an expert at everything. When we all pool our ideas and experiences together, the group—and trip—will be a success.

Selecting Clothing

Although the usual temperatures range from 30 to 70 degrees, you need to be prepared for more extreme weather conditions. With a little thought and organization, planning your camping wardrobe need not be an overwhelming task. Here are some important clothing tips:

Layering

Wearing layers of clothing, as opposed to one heavy shirt or

Trail Break

Alcohol, tobacco, illegal drugs, and bad attitudes are not allowed on KTC trips. Please leave these items at home.

sweater, allows you to add or subtract clothing to keep your body temperature constant as you gain and lose heat through activity, rest, and changes in the weather.

Consider bringing shirts and jackets that have button or zip openings. When you need to cool down or warm up, opening and closing buttons and zips saves a lot of time and hassle over taking off and putting on entire layers. Also, plan to bring clothes that you don't mind getting wet and muddy. Trail work can be hard on clothing, so do not bring your dress best. Remember the parka shell and wind/rain gear!

Clothing Material

We suggest synthetic or wool clothing. These fabrics will keep you warm by retaining heat even when wet.

Cotton, on the other hand, does not retain heat when wet and may even make you lose heat. You can get wet from rain, mist, or your own sweat. If you cool down too much, you could get hypothermia—even if you're just resting after exertion. It is important to remain dry to keep warm so you should have a change of clothes ready. Remember to pack long underwear—we recommend synthetics such as polypropylene.

One tip to determine if you've brought enough warm clothes: Put them all on. On the coldest day expected, would you be warm?

Footwear

For your feet, you should have solid hiking boots. Tennis shoes are too flimsy for the trail conditions and will not provide enough support for your feet whether you are packing or clearing. Expect your footwear to get wet and muddy. Also bring two pairs of extra wool socks and two pairs of polypropylene

liner socks to keep moisture away from your feet. You may also want to pack lightweight shoes to wear while in camp.

Hands, Head and Eyewear

Bring a hat for protection from cold and sun. Protective eyewear and leather gloves will be provided on the trip. Again, don't forget good rain gear.

Jewelry

Leave jewelry at home. You certainly do not want to lose it on the trail. Also, your jewelry may get stuck on tools and clothing during physical activities and you could get hurt (think torn earlobes from caught earrings, or cuts and bruises from caught necklaces or bracelets).

Clean Clothes

Pack a clean set of clothes to leave in the trunk of the car at the entry point for your trip home.

Gear

KTC trips require both personal and group gear.

Personal Gear

You are solely responsible for your personal gear.

Trail Break

If you plan on buying hiking boots for this or any other trip, make sure you *properly break them in*. Wear your new boots for several hours a day for two weeks or more. We do not recommend breaking in new boots on the trail—you'll end up with painful blisters and still have miles to hike.

The group gear comes from members of your group.

If no one has a needed item, KTC sponsors will lend it to you.

Before the trip, your crew leader will survey your group to determine what equipment everyone can bring and share. If you wish to bring your own tent, check with your crew leader. The group will bring the number of tents they determine is needed, considering the size and gender makeup of the crew.

Safety Equipment

You needn't worry about bringing gloves, safety glasses or hard-hats. These will be provided by the Forest Service and distributed the night before or morning of your first day on the trail. Some people do prefer to bring their own gloves to ensure a good fit.

Daypack

You must bring along a daypack to carry each day's food, snacks, and water, as well as dry clothing items and rain gear that you may need while away from camp working on the trail.

Don't Worry

If you don't have all of the personal gear you need, do not be dismayed. Take an inventory of what you need and discuss it with your crew leader. You may be able to rent it or buy it inexpensively at a surplus store.

Group Gear Checklist

- | | | |
|--------------------|-----------------------|-------------------|
| ___ tents | ___ food bags | ___ First Aid kit |
| ___ stove and fuel | ___ camp saw | ___ rope |
| ___ tarps | ___ water filters (2) | ___ cooking kit |
| ___ matches | ___ toilet paper | ___ plastic bags |
| ___ food | ___ large water bag | |
| | ___ tool cleaning kit | |

Personal Gear Checklist

- ___ Duluth pack or backpack
- ___ shell parka (lightweight jacket)
- ___ daypack
- ___ synthetic or wool pants
- ___ sleeping bag (3-season)
- ___ synthetic or wool shirt
- ___ foam sleeping pad
- ___ synthetic undershirt
- ___ compass
- ___ shorts
- ___ 2 filled water bottles
- ___ t-shirts
- ___ bowl (synthetic)
- ___ cup (synthetic)
- ___ underwear
- ___ spoon, knife, fork
- ___ sunglasses
- ___ wind/rain jacket
- ___ wind/rain pants
- ___ waterproof matches or lighter
- ___ small flashlight and new batteries
- ___ wool socks (2 pairs)
- ___ sunscreen/lip balm
- ___ polypropylene sock liners (2 pairs)
- ___ bug repellent
- ___ synthetic or wool hat

- ___ gaiters
- ___ hiking boots (not athletic shoes)
- ___ cap with visor
- ___ camp shoes
- ___ bug hat (mosquito net)
- ___ extra sweater or vest
- ___ towel
- ___ toiletry items (only in the amounts you need for the trip. If you bring soap, make it biodegradable.)

Optional (think light):

- ___ maps
- ___ games
- ___ camera and film
- ___ books
- ___ survival kit
- ___ pen/paper
- ___ fishing gear
- ___ cards
- ___ repair kit: clevis pins, quick release buckles, spare straps, stove parts, tape, small amount of rope
- ___ small knife or multi-purpose tool

One final note: leave radios, CD players, and cell phones at home.

Almost Perfect First Aid Kit

- | | |
|--|---|
| ___ a few adhesive strips
(1x3 straps) | ___ moleskin and/or non-
stick dressing |
| ___ sterile gauze pads
(4x4) | ___ a few pain killer tablets
(aspirin or ibuprofen) |
| ___ roll of athletic tape
(1 inch x 10 yards) | ___ elastic wrap
(2-inch Ace bandage) |
| ___ tincture of benzoin
compound | ___ safety pins |
| ___ wound closure strips
(Butterfly/Steristrip) | ___ a few mild antihistamine
tablets |
| ___ an individually wrapped
sanitary napkin | ___ a couple of tablets of
Imodium |
| ___ 10% povidone-iodine
solution | ___ antimicrobial ointment |
| | ___ scissors and tweezers |
| | ___ rubber gloves |

Food

Great! You are on the food committee! Soon you'll see how fun, easy, and rewarding planning the food for your trip will be. Food is essential not only for energy and warmth, but also for individual and collective morale. In the words of one KTC member: "Dinner is the accolade for a full day's effort."

It doesn't have to be bad

The term "trail food" often elicits thoughts of food that is freeze-dried, full of sodium and chemicals, bland, uncooked or a hassle to cook. Banish those thoughts! We will share a few tips here on how to plan nutritious, delicious, and easy meals.

Plan one meal at a time

Plan it out: Day 1 Lunch, Day 1 Dinner, Day 2 Breakfast, etc. Using separate pieces of paper or notecard, jot down the recipes for each meal, being sure to include all ingredients, condiments, spices, and beverages. Note whether you will need a stove, fuel, matches, pots and pans, leather gloves (as potholders). Once you have all this information handy, shopping and packing will be a breeze.

Packing food

We have an idea that's not only easy, but will allow anyone on the crew to pick out a meal and cook it without your supervision: Pack whole meals in two plastic bags (double-bag all food) along with the meal plan, recipe cards, and directions.

Cleaning up

We encourage crew members to take turns cooking and cleaning up. No one or two people should assume full food responsibility for the entire trip.

Trail Break

Don't forget the spices! Pack a spice kit with your favorites and don't forget to include lemon juice, lime juice, barbeque sauce, and hot sauce. Many camping outfitter stores, and even Target and Wal-Mart, carry special spice containers made specifically for camping. Packets of condiments from fast food restaurants also carry well.

For ideas, look in trail cookbooks. You can find cookbooks at the library or on the Internet, or purchase one at a camping outfitter or bookstore.

Get an idea of types and amounts of food that your crew will need and whether anyone has any dietary restrictions. Speak with your crew members beforehand about what they like to eat or avoid—and the size of their appetites. Also, pay attention to the time of year and anticipated weather—the colder it is, the more food you will need to generate energy as warmth.

How much

Generally speaking, plan about 3600 calories per person per day for our spring KTC trips, or about 2 lbs of food per person per day. We are working hard and need plenty of energy food available.

Think practical

Think about how much time the crew will want to spend making and cleaning up after each meal, as well as the circumstances under which they will be eating each meal.

For instance, although pancakes sure sound like a great way to start the day, most crews don't want to spend the time it takes to make them and then clean up the pots and pans. People will be anxious to get out on the trail. For breakfast, think hot or cold cereals, bagels, fruit, cheese, coffee, tea, hot chocolate, and juice.

Lunches are on the trail, so think easy-to-carry, easy-to-snack, easy-to-throw-together. You may want to consider several varieties of gorp so that people can choose what they like (salty/spicy, sweet/salty, one with chocolate). Think cheese, dried fruit, bagels, tortillas, pita bread, peanut butter and jelly, salami and beef sticks, honey, Irish soda bread, carrots, hard candy, granola bars, ginger snaps, Fig Newtons, and Rye Krisp.

For dinner, bear in mind that people are relaxing—they're hungry and thirsty. First be concerned about drinks. Soups and hot drinks are great to sip while the cooks prepare dinner. Give the crew something nutritious to take the edge off while the meal is under way. That said, your only limit is your imagination. We recommend pasta, rice, stews, enchiladas, potatoes, veggies, desserts, and beverages. The trail is no place to cut back on carbs—you'll need them to sustain your energy. Variety, variety, variety. One-pot meals are satisfying and reduce the cleanup.

More tips

Stroll through your grocery's health-food section for ideas. On short trips, fresh veggies keep nicely and are most welcome. Think versatility: dried fruit, for example, works as a breakfast food, as a trail snack, and as a compote after dinner. Pasta is easy and quick—it makes a great dinner when spiced up and full of veggies. Do not *dream* of depriving coffee lovers of their morning cup of java!

Packing the Pack

Everyone's pack will have both personal and group gear, so make sure to leave about one cubic foot of empty space for the group equipment.

Do not carry more than 1/5 to 1/4 your body weight. Be sure to mention any pack weight restrictions or concerns to your crew leader well in advance of the trip.

Pack light

Keep your personal gear at about 25 to 30 pounds or less and plan on room for an additional 9 pounds of group gear, 2 pounds of food per day and 4 pounds of water. Bring along a *small* tube of toothpaste. If you want to bring wet wipes, bring *only a few* and put them in a plastic zip-

lock baggy. Place lotions into small squeeze containers or bring along a travel size tube. If you bring a book, make it a small paperback.

In other word: Be sensible. While the optional items may be fun, they can add up in pack weight.

How to pack your pack

How you actually pack a backpack (heavy items on the bottom, middle or top) varies with each pack and person. If you have any questions about your particular pack, read the instructions or call a camping store and ask their advice. Generally, you want to pack the heavy items nearest your back.

Keep important gear accessible

Think about the items you'll want to access easily and frequently and pack them in easy-to-reach places. These items may be snacks, bug repellent, rain gear, water, hat, camera, and your warm layer. Some people find it useful to mark the contents of their pack pockets with masking tape and marker.

Keep it balanced

Remember to keep your pack balanced so that one side is not noticeably heavier.

Test it ahead of time

Always pack far enough in advance so that you can try on your pack and rearrange it until it fits well.

If you're canoeing . . .

You will want a waterproof canoe pack or Duluth pack. If you don't have a Duluth pack, our sponsors can supply one at no cost. Make arrangements with your crew leader.

If you are using a Duluth pack, there are several ways of using plastic bags to help keep the contents dry. You can put the

entire packed pack in a couple of plastic bags, keeping the whole pack dry. You can place a large plastic bag inside the pack as a liner and seal it when you are finished packing. You can pack your stuff in individual plastic bags of various sizes within the Duluth pack. Or you can try a combination of these methods. Please note: Even the “waterproof” canoe packs can get wet on the inside. We recommend that you pack everything in plastic.

Bring large plastic bags

These will come in handy to protect your pack and sleeping bag from rain. Make sure the bags are large enough to cover your entire pack, or get a rain cover for your pack. You may also want to pack all of your gear in individual plastic bags, as described above, just to ensure safety from sudden rains, puddles, or unexpected swimming adventures. Also, bring along a plastic sheet to place in or under the tent as protection from ground moisture.

Any gear that needs to be strapped to the outside of a pack should be wrapped in heavy-duty plastic bags and securely fastened with ropes, bungee cords, or straps.

Bugs and Other Little Nasties

No discussion of northern Minnesota is complete without mention of bugs and poisonous plants: big ones, small ones, pretty ones, nasty ones. By working on trails in spring, we reduce

Trail Break

Some people recommend that you leave your toothpaste at home and use salt or baking soda instead. Toothpaste can attract bears. If you do bring toothpaste, swallow it after brushing or spit it far away from the campsite.

our bug encounters. Nevertheless, there are still bugs and other little nasties for which we should be on the lookout so that we can reduce bites and possible disease.

Mosquitoes and no-see-ums

Mosquitoes like lower, swampy areas and the dampness and shade of woods. Bug repellent is a great help and bug hats save the day. Bug hats (mosquito nets that cover the head) can be purchased cheaply at most outdoors stores. They are light, fold down flat, and are a must to bring along. While no-see-ums can pass through netting, they usually aren't a problem on KTC trips.

Biting flies—black flies and deer flies

Flies tend to congregate in the shade of the woods and can be overwhelming if you're unprepared. Bug repellent can help somewhat, but the best defense is to wear long-sleeved shirts, long pants, and a bug hat. Dark blue clothing attracts black flies.

Deer ticks and wood ticks

Deer ticks thrive in the woods and in grass. They are smaller—about 1/4 the size of a wood tick—and can be as small as the head of a pin when young. Deer ticks have become infamous because they spread the bacterium that causes Lyme disease. While Lyme disease may affect people differently, it typically affects the skin, joints, nervous system, and heart.

Both kinds of ticks hang out on foliage near the ground, most often in grassy areas, and can get on your feet and legs.

The best defenses for tick bites are:

- wear long pants, tucking your pant legs into your socks;
- check your clothes often for ticks;
- spray bug repellent around your ankles, waist, and wrists; and
- check your skin and hair for ticks before retiring for the night.

Ticks like the warm moist areas of your body, so be sure to check closely your groin area, ears, hairline, armpits, navel, and behind your knees.

If you find a tick crawling on you, remove it and burn it. More than once a tick has been known to crawl right back on! If a tick has bitten you and is still attached, remove it with tweezers. Be sure to place the tweezers as close as you can to your skin, grasping the tick's head.

Pull the tick straight out without twisting. Remove the tick slowly and try not to squeeze. If you squeeze too hard, or leave its head embedded, you may unintentionally cause it to secrete its liquid, and Lyme bacteria, into you. If a deer tick has bitten you, try to preserve it to aid in your medical evaluation.

Giardia

These parasites live in the lakes and streams of the BWCAW and are spread primarily by our beaver friends. If you drink water without first filtering, treating or boiling it, you will ingest infectious Giardia.

At first you will not notice any effects and may finish your trip feeling fine. About two weeks later you will have either an abrupt or gradual onset of watery diarrhea. You may also experience abdominal pain, bloating, nausea, and weight loss. These unpleasant effects of the Giardia may last one or two weeks.

Trail Break

For bug repellent, we recommend a lotion-style bug repellent containing no more than 30 percent Deet. Concentrations of Deet higher than 30 percent can damage your gear.

Antibiotics such as Flagyl are often prescribed and Pepto-Bismol and Imodium help with the diarrhea.

To keep from ingesting Giardia, you must purify all water before use: drinking water, dish water, and tooth-brushing water. Each KTC crew will have water filters provided by the club. It is not necessary for you to bring your own.

Bears, wolves and large animals

Although not bugs or other little nasties, bears and wolves deserve a brief mention since popular conceptions of the BWCAW conjure up images of bears and wolves. In reality, KTC groups rarely see either. The most common critters we run into are mice and squirrels hanging around our campsites looking for crumbs and food.

Regardless, animals of all kinds are attracted by food odors. You should never feed or corner a wild animal. Store your food in plastic bags inside plastic containers and hang it on a bear pole or between trees. When hung, food and packs should be 6 feet from all trees, 12 feet off the ground, and 5 feet down from the branches. Hanging food also deters mice.

If a bear does happen to stroll into your camp, make certain that you do not corner it and that it has a clear escape route, and that you do not come between a sow and her cubs. Then yell and shout and try to shoo it away. If making noise work, you may have to throw egg-sized rocks at the bear as a last resort.

Poison Ivy, Poison Oak

Poison ivy is a small plant with three branches each containing three leaves. Poison oak forms erect shrubs and has blunt-tipped leaves resembling oak leaves. Both produce a resin that is poisonous to the touch and can be carried on clothing. If you are sensitive to poison ivy or poison oak, you will

develop a rash which often burns and can be quite itchy.

Stinging Nettles

Stinging nettles have heart-shaped, jagged leaves with tiny green flowers in drooping spikes. The entire plant is covered with stinging needles containing acid, which break off and pierce the skin when touched. Like poison ivy and oak, there is often a burning itch where the needles have pierced.

Navigation in the Wilderness

This is one of the most important subjects covered in a wilderness training handbook. It's also one of the most difficult to explain. To truly understand orienteering and wilderness navigation, you must have in-the-field training and practice. This trail-clearing trip will give you the opportunity to gain map and compass experience.

What is navigation?

When navigating, one matches land features, or landmarks, with landmarks on a map. A compass maintains continuity between the map and the land. By continually monitoring your location on a trip, you should have no problem reaching your destination.

The compass

Any north-pointing compass will do the job you need, but a compass with a dial marked in degrees will be more accurate. A compass with a straight edge works better on maps.

Maps

Each KTC crew will have two sets of maps. Most experienced hikers will carry their own maps. The trail routes have been updated with GPS in recent years, but this new information may not appear on older maps.

1. Have your compass on your person at all times.
2. Study your route before your trip so you are familiar with the surrounding area.
3. When moving, continually monitor your progress so you know where you are at all times.
4. Stay on the trail. It's your best landmark. Of course, it is narrow, and in some places may be difficult to see.
5. If you find yourself lost or separated from your group, stay calm. Stop and assess your situation. Your group will be looking for you. If it only took a few steps for you to loose your way, it should take the same amount to find it again.

First Aid and Health Concerns

First Aid is a combination of prevention and preparation. Each crew leader will have a First Aid kit for the crew and you are welcome to bring our own. If you do bring your own, please see the First Aid checklist on page 18 of this handbook for our recommendations.

Fatigue

This is a working trip and you must be in good physical shape. Even so, it is important to bear in mind that changes in your sleeping, eating, and physical activity routines can leave you fatigued. Fatigue will build up a little each day without your even noticing it. Weeks before your trip, you should begin conditioning your body for the hiking, canoeing and trail clearing by doing whatever physical exercising your body and muscles need. We recommend you concentrate on your legs, arms, shoulders, and building your endurance.

Allergies, medication, and special conditions

If you have any allergies (especially food or drug allergies) or special physical or mental conditions, you must inform your crew leader well in advance of the trip. You should also inform your crew leader of any medications that you take. Bring enough medications for the trip plus a few days. Although we always plan to return on the date planned, you should prepare for any unexpected delays. You must also be aware of any possible adverse interactions which your medications may have with possible First Aid treatments and medicines.

According to the United States Forest Service, the most common injuries are, in this order:

dehydration, blisters, sunburn, sprained ankles, cooking burns, hypothermia, constipation, eye injuries from brush scratches, insect bites and stings, and itching and rashes.

Stay positive

If you should ever encounter trouble in the wilderness and need to be rescued, keep in mind that a positive attitude about rescue and survival, and the will to live, does make a difference and will increase your chances and time margin for survival.

Here are common injuries and suggested treatments. Of course,

Trail Break

The risks of accidents increase as you get more tired and daylight diminishes. To help prevent these accidents, be sure to keep your energy levels constant by eating, snacking, drinking plenty of water, taking regular rests, and making sure that you have the right amount of clothing to keep warm, but not overheated.

we are not medical doctors nor do we pretend to be. You should seek proper medical advice which takes into account your individual needs, allergies and tolerances.

Abrasions: Clean, preferably with biodegradable soap, but if severe, clean with antibiotic soap (like Hibiclens surgical soap) and apply antibiotic ointment; cover with a non-stick dressing.

Animal Bites/lacerations: Animal bites can be very dangerous because of the risk of both tetanus and rabies. No one has yet been bitten by an animal on a KTC trip and we hope to keep it that way. In the BWCAW, the animals most likely to carry rabies are skunks and raccoons. Be sure to have your tetanus immunization up to date before the trip. Close lacerations with Steristrips and then dress. Keep punctures open. Clean with biodegradable or Hibiclens soap and apply antibiotic ointment. Because of the risk of rabies, you must check with a physician upon your return if you are bitten.

Blisters: You can reduce the number and size of blisters on your hands by wearing gloves. To help protect your feet, wear good hiking socks and sock liners. Be sure to break in new hiking boots well before the trip. When you do get a blister, it is usually not a good idea to break it. Instead, use a non-stick dressing to help prevent the blisters from breaking open.

Burns: Always use sun block or sunscreen, even on cloudy days. If you do get either of these burns, you should consider using ibuprofen or acetaminophen. Put an anesthetic ointment on the burn and cover with non-stick dressing. If the skin blisters or appears hard and leathery, seek medical attention. Third-degree burns are the most serious, but not painful. For third-degree burns, immerse the burn in cool water and clean

without removing any foreign objects or removing tissue. Apply anesthetic ointment and cover with non-stick dressing and 4x4. Burns can easily become infected, so keep them well covered.

Breaks and dislocations: The area around a break or dislocation may be painful, swollen, red, numb, tingling, deformed, or paralyzed. Immobilize it with a soft or rigid splint. If you use a rigid splint, place a little padding in it. A good commercial product is the SAM splint.

Constipation: To prevent constipation, drink fluids, eat fruit and fibrous foods, and exercise. If you need a treatment, try a mild cathartic.

Cuts: First, apply pressure to stop bleeding. Then apply a clean dressing material to the wound and hold it in place with a pressure bandage. If the dressing becomes soaked with blood, put more dressing material on top. Do not remove the old dressing.

Dehydration: Dehydration occurs when you lose more fluid through sweating and urinating than you replace. This lost fluid also contains electrolytes which are important for muscle coordination, including your heart muscle. To prevent dehydration, you must constantly replenish your body fluids with water and salt / sugar liquids. Since your thirst lags behind your fluid requirements, you should drink plenty of water throughout the day, making sure the water is Giardia-free. In short, don't wait

Trail Break

Your body is approximately 45 to 75 percent water. An average adult of 150 lbs should drink approximately 2½ quarts of water daily. We recommend that you bring two one-quart water bottles on your trip for use on the trail each day.

until you are thirsty before you drink.

Signs and symptoms of moderate dehydration are flushed and dry skin, dry mucous membranes, restlessness, concentrated urine, thirst, headaches, and weight loss. Signs and symptoms of severe dehydration are cold and clammy skin, dry and cracked tongue, fast pulse and low blood pressure, lethargy, thirst, weight loss and fever.

The treatment for dehydration is to *drink water*. If you have been thirsty for a while, is it a good idea to drink glucose in your water. Electrolytes are usually replaced with your food intake. But, in a situation where there is a lot of fluid loss, you may need to replace the electrolytes along with the water. Some fluid replacement packets have electrolyte replacements. Of course, if your health is compromised, you should seek immediate medical attention.

Diarrhea: Treat with Pepto-Bismol or Imodium.

Eye injuries from brush scratches: To prevent eye scratches, wear glasses or safety goggles. If scratched, though, try to remove any foreign matter and flush your eye with cold water. Use a medicated eye drop or tetrahydrozoline (Visine) and apply compression dressing.

Giardia: The parasite Giardia, which lives in water, will make you very sick if you ingest it. After about two weeks of being in your system, you will have either an abrupt or gradual onset of watery diarrhea. You may also experience abdominal pain, bloating, nausea, and weight loss. These unpleasant symptoms may last up to two weeks. Antibiotics such as Flagyl are often prescribed; Pepto-Bismol or Imodium can help with the diarrhea.

The good news is that you can easily prevent all of this by filtering the Giardia out of the water, treating the water, or

boiling water before using it to drink, wash dishes, or brush your teeth. Giardia protozoa are 7 to 15 microns in size and can be filtered with a filter rated at 6 microns or less. Such filters are usually charcoal or ceramic.

There are several different tablets available that can be used to treat water before drinking. Also, a 10-percent povidone-iodine solution (Betadine) can be used and double as a topical wound disinfectant as well. Be sure to read the instructions before buying and using any of these types of products.

Finally, Giardia will be killed in boiling water. Be sure to bring the water to a good boil, and that should be sufficient to kill all Giardia. Remember, you must purify water not only before drinking, but also before washing dishes and brushing your teeth.

On our KTC trips, each group will have at least 2 water filters. It is not necessary to bring your own.

Heat illness: Heat illness encompasses a spectrum of problems, from minor reactions like prickly heat, to common heat exhaustion, to heat stroke, which is a life-threatening emergency. Heat illnesses result from dehydration. Major heat illnesses occur result from excessive sodium loss, rather than water loss alone, or loss of electrolytes due to perspiration or diarrhea. Usually, food intake is adequate to replace sodium loss. If that isn't enough, you can drink lightly salted water (0.1% or 1 teaspoon per gallon). As a guideline, replace your salt with salted fluids at a rate of 13 to 20 ounces before activity and 3 to 6 ounces during every 10 to 15 minutes of activity. Also during increased physical activity, drink water at least every 30 minutes. Sodium depletion can result in nausea, muscle twitching, and at times, severe abdominal muscle cramping, leg cramping and cramping

elsewhere. For treatment, stretch your muscles but do not aggressively massage them. Also, rest in a cool place and replace lost sodium with 10 to 15 grams in a generous amount of water.

Heat stroke is classic compensatory-type shock. With blood vessels dilated and fluid lost by sweating, blood pressure can fall and deprive the vital organs of blood. The victim may be and have nausea, dizziness, headache, light-headedness, and fever. Treat for shock, laying the victim down and elevating the feet. If conscious, the victim should be given copious fluids.

Hypothermia:

(Much of this information comes from "Hypothermia . . . the Cold Facts," a State of Minnesota publication)

Hypothermia occurs when heat loss from the body is faster than the body's ability to produce heat. It is defined by a core body temperature of less than 35° C (95° F). Hypothermia can happen in water or on dry land. It may happen quickly, from immersion in cold water for instance, or may develop over hours or days. It can arise merely from resting in cool air after heavy exertion—in fact, the threat is greatest on rainy, windy days between 40 and 60 degrees! Hypothermia can kill and must be taken very seriously.

In water, hypothermia most likely may arise by falling in the water from the shore or from a canoe. Generally speaking, water less than 70 degrees is cold and most people will become hypothermic. The State of Minnesota estimates that about half of all boating deaths are caused by hypothermia.

On land, hypothermia may develop by simply not taking care to stay warm and dry.

Hypothermic symptoms are: continual shivering, poor coordination, a slower pace, increasingly numb hands and feet leading to

stumbling, clumsiness and dexterity loss, dazed and confused behavior, slurred and slow speech, hallucinations, dilated (wide) pupils, decreased attention span, and pronounced changes in personality, often to the exact opposite of the person's norm.

If any of these symptoms appear, you should immediately begin warming procedures. The longer the delay in warming, the poorer the chances of recovery.

To prevent hypothermia, keep warm and dry and eat plenty of energy food. Avoid alcohol. Before resting from activity, put on a hat and an extra layer of clothing so that you do not get chilled. A great way of layering your clothing is to have button or zip shirts and jackets. You can save a lot of time by opening and closing your clothes rather than taking them off and putting them back on. If you wait and start shivering first, you have already become slightly hypothermic. Shivering is the body's first line of defense to heat loss: it slows hypothermia but does not prevent it. (Note that you may stop shivering when your core body temperature reaches the dangerous level of 92 degrees.)

Trail Break

In 50-degree water, a strong swimmer has only a 50/50 chance of making it to shore a half mile away. In fact, swimming and treading water may actually speed up heat loss. Do not waste your body heat. Float motionless, face *out of the water*, hands stretched behind your head. If in rough water, SLOWLY tread or dog paddle with *face out of the water*. If you must swim, use the breaststroke keeping your head out of the water. Unconsciousness can come as soon as 15 minutes after being in cold water.

In water, always wear your personal floatation device (PFD) or life preserver. Sit low in the boat and do not move unnecessarily. Do not overload your boat as overloading is a common cause of capsizing. Also, be careful not to slow down too quickly.

If you do capsize or fall into the water, get back into or on top of the boat. Do not try to swim to shore unless the boat is sunk. Aluminum canoes will submerge but not sink.

Keep your clothes on! Your clothes will float for a long time and will retain air for heat and buoyancy. Button up your collars and force air into your shirt between your top button and collar by blowing into it and forcing air with your hand. Hip boots and waders will actually help you stay afloat and keep warm so keep them on too!

Since we travel closely together on our KTC trips, with several boats, help will always be immediately available. Nevertheless, you should be familiar with water safety techniques if you plan on doing any water activities in the future.

To learn more about water safety and survival techniques, check out our suggested resource readings in the back of this manual.

Treatment for hypothermia: Put on warm clothing and eat energy food. If hypothermia is more serious, also get into a warm sleeping bag in a tent or cabin. Body contact is often very effective if more aggressive warming is needed. This is now considered a last resort, however, and the United States Forest Service no longer recommends it as it puts the other people in danger of hypothermia. If absolutely necessary, two people should get into the sleeping bag with the hypothermic person—everyone's clothes off or just in underwear—to form a sandwich. Before getting into the bag, the warmers should exercise

vigorously. Approximately every half hour, the warmers should be replaced. Warm compresses (up to 100 degrees) or warm rocks wrapped in towels can be placed next to the hypothermic person's trunk (ideally the neck, armpits and groin). If in a place with a shower or bath, and the victim is CONSCIOUS, warm the person at 70 degrees and, after 10 to 20 minutes, slowly heat the water to 110 degrees.

To prevent more heat loss in a hypothermic person, raise them off the ground on blankets, air mattresses or whatever is available. You can also place them in a hypothermic "burrito-style" wrap by laying them diagonally across a prewarmed blanket with the top corner of the blanket over their head. Next, fold the left and right sides of the blanket horizontally over their trunk. Finally, pull the bottom corner of the blanket up and over the groin area and then slightly elevate the feet.

When dealing with a hypothermic person never leave the victim alone and, if help can arrive, do not evacuate. Do not give any alcohol. If the victim is conscious, administer warm liquids sweetened with sugar or honey. Do not administer medications, including pain killers, aspirin, etc. Do *not* massage the muscles, but do shield the victim from wind.

Most importantly, a person who has been hypothermic should receive a physician's care at the earliest opportunity. This is true even if the person seems to have made a full recovery.

Insect bites and stings: Remove the stinger if it's present and treat with antihistamine and a possible pain reliever. You may also use a cold compress. The honey bee will most likely be the only insect to leave its stinger in you.

Itching/rash: Treat with salt water soaks, cold compresses, antihistamines and topical hydrocortisone

cream. If available, you may use baking soda.

Joint pain: Take Motrin or other anti-inflammatory medication and alternate hot and cold packs.

Lyme disease: Lyme disease can affect the skin, joints, heart, nervous system and other areas; it is transmitted through the deer tick. The early symptoms actually vary from person to person, but 60 to 80 percent of people experience a round rash at the point of the tick bite. It may be flat or raised. The center may become clear as the rash spreads out. Beyond that, you may experience fever, chills, fatigue, muscle aches and joint pain, and swollen lymph nodes. These early symptoms start 3 to 30 days after infection.

As the disease progresses, the telltale rash may appear elsewhere on the body. If untreated in these early stages, people with Lyme disease have a 65-percent chance of suffering arthritis attacks.

In its late untreated stages—weeks, months or years later—victims may suffer from arthritis; meningitis; Bell's palsy; weakness, numbness or pain in the arms and legs; and heart rhythm irregularities.

Lyme disease can be treated in its early stages with antibiotics. It is important to seek treatment as soon as possible because even after treatment, some of the symptoms may remain.

The best prevention against Lyme disease is to avoid tick bites. Ticks especially like the warm moist areas of your body so be sure to closely check your groin area, ears, hairline, armpits and behind your knees. See page 24 for more information on ticks.

Be sure to check for the characteristic round ring rash and if you think you have Lyme disease, see your doctor.

Muscle pain: Apply muscle cream or take Motrin and/or Tylenol.

Plants:

Stinging Nettles: Apply “jungle juice” which is 75 percent Deet and 25 percent isopropyl alcohol. Do not scratch.

Poison Ivy or Poison Oak: Treat with antihistamine and topical hydrocortisone cream or ointment. Do not scratch.

Shock: During shock, the circulatory system is not providing enough blood or oxygen to vital parts of the body. Victims may become restless, combative, or disoriented. Their pulse and breathing rates will increase from a normal pulse of 60 to 80 beats per minute and a normal breathing rate of 12 to 20 breaths per minute. The skin may be pale or blue. Keep them lying down, at rest, and warm. Raise their legs 8 to 12 inches. This may be a life-threatening condition so be sure to take appropriate action.

Sprains and strains: Until you know differently, treat sprains and strains as if they are broken. The area may be painful, swollen, red, numb, tingling, deformed, or paralyzed. Ankle sprains specifically should be rested, iced, and immobilized. Use a cold compress, elevate, and support the ankle with taping or splinting. Take anti-inflammatory medication such as Motrin.

Toenails: As a little side note, trim your toenails. Hiking can be hard on the feet and untrimmed toenails may be uncomfortable and tear.

Trail Break

If you are not trained in CPR and wish to be, we suggest you contact your local Red Cross. In Saint Paul call 651-291-6789 and in Minneapolis call 612-871-7676. Whether on the trail or at home or work, you may save a life by knowing CPR.

Above all, always wear a life preserver, do not overload, stay low and steady, and canoe together as a group.

Loading and unloading the canoe

Load the canoe while it is in water, making sure the load is balanced and kept low in the canoe with slightly more weight to the rear. Do not overload! Be sure to keep all gear and people within the canoe's weight limits.

When unloading, put your gear in a pile out of the way of your canoe. You don't want your gear to be an obstacle for other groups who are also landing and unloading. In order to keep track of all the gear when portaging, carry your own gear on each portage.

When reloading, keep the same gear in each canoe.

Shoving off

When shoving off, the person in front should get in first. Likewise, when landing, the person in front should get out first, stabilize or brace the canoe, and remove the gear. Do not pull the canoe out of the water until the person in back is out. If you do pull the canoe up while the person is still in the back, the canoe can easily tip.

Work together

Always remain with the group when canoeing. It is also much safer to stick to the sides of a lake rather than paddling through the middle.

The person in the rear of the canoe does most of the steering; if you are not an experienced canoeist, take the front seat.

Paddling

It is important that the two paddlers act as a unit. Not only will you travel faster when paddling in sync with each other but you

will be able to steer better and keep your energy levels higher. In order to paddle in sync, the two paddlers must find a paddling speed and rhythm that works well for them both.

Often, the person in the stern (the rear of the canoe) takes longer to execute each stroke than the front person. This is because the person in back is steering with each stroke and compensating for the strength of the front stroke. Find a speed that works well for both of you.

When the person steering instructs the other paddler to execute a stroke, do so without hesitation. The person in front should also promptly notify the steerer of upcoming obstacles. Usually, the paddlers are paddling on opposite sides of the canoe.

If you get tired of paddling on one side of the canoe or want a change, ask your partner if you can switch sides. Under most circumstances, everyone should agree to switch. In fact, it is a good idea to switch sides every so often in order to reduce muscle tension and stress. You should be able to paddle well on both sides of the canoe. The steerer must be able to do so.

Keep movements low

Do not stand in the canoe, suddenly turn around, or suddenly reach out or lean. All movement in the canoe must be low, steady, and slow to prevent tipping and capsizing.

Rough water

In rough water with waves, never paddle parallel to the wind or waves. This is a very vulnerable position and you can easily capsize. On the other hand, you do not want to paddle directly into the waves either. The ideal position is to cut into the waves at a slight angle. If you must tack, or zigzag, to your destination, so be it. You will arrive safely.

If you are going downwind, it is okay to ride

To portage a canoe, put the two paddles in the canoe. Then:

- (1) lift the canoe from just behind the center point and move forward to place the yoke on your shoulders, or
- (2) lift the front of the canoe with a partner and while your partner is holding up the front of the canoe, walk under the canoe and place the yoke on your shoulders.

perpendicular to the waves. In very rough water, lower your center of gravity by kneeling down in the canoe for more stability.

If the water is extremely rough, you can lash two canoes together, at 4 feet apart, with two 10- to 12-foot poles. This is a catamaran style rig.

It may sometimes be possible to canoe on the calm side of the lake or to canoe within the protection of an island. Always check for those possibilities along your route.

If a storm with lightning is approaching, immediately get off of the water and seek shelter in the woods, following the safety tips set forth in the hiking section of this manual.

Hiking Safety

Always hike together in your group. The lead and tail hikers should always be within sight or hearing distance of each other.

No one should ever go off alone on the trail—at least, not very far (if, for instance, a crew member needs a bathroom.) The usual KTC crew is nine people. When divided into subgroups, the smallest number per subgroup is three.

When on the trail, designate a lead and a tail. Each subgroup should carry a compass, map and whistle. Groups should have

more than one map, which they frequently check to know where they are and what to expect next. You always want to know where water and camp are and how far you are from them. The reason for the whistle is to be able to signal another group on the trail or if you are lost. Whistle sounds do not carry far, however, so do not hesitate before signaling.

Bring along 2 quarts of treated water and drink as much of it as you can. Bring power bars or snack food to eat during the day for continual energy replenishment. Hike at a steady pace and do not overexert. Take the longest strides that are comfortable for you. The longer the stride, the less energy you use. Take several shorter breaks rather than one longer break. Your body gets the most rest and rids itself of waste buildup within the first part of your rest; a longer rest isn't necessarily more beneficial for your body. When breaking, take off your pack or sit on a log or rock and take the pack weight off of your shoulders. Also, check your feet. If you are developing blisters, treat them with moleskin or tape.

Warm up

Before starting your hike, limber up and do stretching exercises. Do them again before retiring to bed. In the evening, wash off with water or wet wipes and sleep in clean clothing. Be sure to have your flashlight and toilet paper nearby.

Crossing streams

When crossing a beaver dam or stream, loosen your pack so that if you fall, you can get your pack off without delay. You may want to release your pack's waist buckle before starting across the stream. Use a hiking stick. If the water is deep, look straight ahead and not down at the water; this will give you better balance. If the water is swift, lock arms in a group of two or three when crossing. When you

lock arms together, face into the current in a line and walk sideways to the other side of the stream.

Rain

Always keep your rain gear close by and easily accessible. During lightning storms, be as low as possible in the dense woods and stay away from isolated trees.

If the lightning strikes are close, try to insulate yourself from the ground with something containing no metal, such as insulated sleeping pads or sleeping bags with plastic zippers. Stay clear of any metal including your pack, belts, knives, tools, etc.

Camp Safety and Leave No Trace

One of the primary concerns for all of us is to preserve that which we love so dearly—the wilderness. Over the years, we wilderness enthusiasts have learned much about how to do just that.

Of course, this means understanding primarily how our human actions impact wilderness and how to modify our behavior to minimize that impact. While we may all agree on the goal, we may not all agree on how to accomplish it.

With that in mind, we assume that we all care deeply and want what is best for nature. Here are some basic KTC concerns and suggestions for how we think we can best preserve the BWCAW during our trips. If you have additional knowledge or suggestions, please share them with us so that we can all keep learning and doing what is best for our forest home.

Compacting soil

One of the big dangers of our wilderness visits is that we compact soil wherever we walk or camp. What's the big deal? When soil gets compacted, plants cannot grow. Therefore, we

are very concerned with reducing soil compaction when we walk and camp. What this means is that we stay on designated trails. Where there are no trails, walk on the hardest surface. When we camp, we camp in pre-existing sites and stay on the compacted areas. When making fires, we prefer to use a lightweight stove. If not, we build fires only in a designated fire ring.

Pollution

Another big danger of our trips is pollution. This includes food wrappers, soap and toothpaste waste, as well as our own human body waste. If we pack it in, we pack it out. We store our food securely in reusable containers (or zip-lock baggies) and pick up all spilled food. Lighters are preferable as you take them with you and do not leave matches behind. Use fire starters such as tinder kindling fuel. We use biodegradable soap. We also thoroughly check our camp before leaving to make sure we haven't unintentionally left any litter such as orange peels and twist-ties. As for going to the bathroom, if no latrine is available, we

Trail Break

Layering your clothes is important. After hiking for awhile, you will be generating a lot of body heat and you may need to unzip or take off a layer to prevent sweating. You do not want to sweat if you can avoid it as it will get your clothing wet.

When you are breaking and cooling off, put on an extra layer before you get cool. Consider putting on a hat as you begin your break to prevent too much heat loss.

recommend carrying a hand trowel and a small amount of toilet paper, keeping them both in a handy place. When not at a designated toilet, find a spot at least 200 feet from the nearest water source and bury your waste 4 to 6 inches deep. The microorganisms that break down waste live in the top 6 inches of soil. Be sure to cover and disguise everything—including the toilet paper.

Since you are looking for a spot at least 200 feet from water, the ends of portages are not good places.

Do not feed the animals

We humans pose yet another danger to animal life not only by leaving pollution that can choke animals, but also by intentionally, or unintentionally, feeding them. We never have food, candy, or toothpaste in our tents. We hang anything edible with the food packs in between the trees. All edibles are either hung on bear poles or are suspended between trees with ropes at all times in order to keep them safe from curious, hungry bears and mice. If you leave anything edible in your tent or packs on the ground, you may well find your tent or pack destroyed. Also, brush your teeth and bury food leftovers and crumbs well away from the camp, as these also attract animals.

Respect for the land

Finally, we want to ensure that we treat our wilderness respectfully. No souvenirs. Don't unnecessarily yell or speak loudly. No "furniture" building for the campsite. By using a map and compass, we do not need to leave trails signs such as ribbons. We collect only dead, downed wood and avoid snapping branches off of fallen trees. We never cut branches off of live

trees or cut live trees down. Always remember to put out your fire completely so that it is cold and then scatter the cold ashes in the woods.

In general, always learn about special regulations of the area you are visiting and only go in small groups. Avoid popular areas during high-use times. Choose equipment and clothing in subdued colors (except during hunting seasons, in which case know what hunters are seeking and wear bright clothing).

A few more general camping tips:

- Purify all water before drinking, washing dishes, or brushing your teeth to ensure that you do not ingest Giardia.
- Put up the cooking tarp for shelter from the wind and rain.
- Secure canoes by turning them over and placing them far enough away from the lake to prevent them from blowing away in a storm. If possible, tie the canoes to a nearby tree.
- When breaking camp, always ensure that it is left completely clean of food, peels, crumbs—everything.

Trail Break

Biodegradable soap is **ONLY** biodegradable in the ground. Never wash your hair, bathe with soap, wash dishes or brush your teeth in or near a lake. Wash yourself and dishes at least 200 feet from shore and use biodegradable soap sparingly. Pour the used dishwater over a wide area and not all in the same place.

Since last year's clearing there have been strong winds, dying trees, storms, and winter. There will be fallen trees on the trails and vegetation trying to establish itself on the trail.

Be prepared by bringing along a daypack. You will need to carry water, lunch, and personal gear such as rain gear, any additional clothing, hat, bug repellent, camera, map, wet wipes, snacks, and toilet paper. You don't need to bring along a First Aid kit unless you want to; the crew leader will have one.

Be careful

Your health and safety is the highest priority. So, no heavy lifting, drink plenty of water, pace yourself (we are not in a marathon and there is no one to impress) and be wary both of overheating while working and of getting too cold when breaking.

Tools

The number-one safety rule is: NEVER attempt anything you are uncomfortable doing!

The KTC uses these clearing tools: crosscut saws, bow saws, pruning shears or nippes, and scythes and other brushing tools.

When getting the tools, inspect them carefully for any damage, loose handles, and anything that appears unsafe. When traveling with the tools, even a short distance, put on the tool guards or sheaths and keep the pruning shears closed and pointing away.

Never:

- Carry saws over your shoulder. Do not even blow your nose without covering or sheathing the tool in your hand.

- Set the tools off the trail tread as they can easily be lost.
- Stand closer than 10 feet from those actively cutting.

To clear trees, we use crosscut saws and bow saws. To clear brush and small trees we use pruning shears.

Crosscut saw: A crosscut saw is designed for use by two people—one on each side of the tree—taking turns pulling the saw through the log. One side of the saw offers no protection over the hands. You must be very careful not to pull the saw too far and accidentally pull the other person's hand into the log. When using a crosscut saw, you must always be careful and mindful of the other person's hands and feet. Both people should have good grounding and balance, and a quick and safe exit.

Bow saws and pruning shears: These are used by one person. Always have good grounding and balance. Do not reach too far to make a cut—you may lose your balance and injure yourself by falling on the ground or on the tool.



Top: one- or two-person crosscut saw
Middle: bow saw
Bottom: nippers or pruning shears

Trail Clearing Standards

The trail tread, or foot path, is usually about 12 to 18 inches wide and 8 feet high. We maintain the trail corridor at a total four foot clearance width. This is a wilderness trail and we clear it so that it keeps its wilderness appearance.

Avoiding tree curbs

We place cut wood perpendicular to the trail so that we don't inadvertently create "tree curbs" or "log edging." We also take care not to accidentally, or purposefully, reroute the trail, even around wet areas or overhead tree falls.

Use your imagination

Because we clear in the spring, the grass and ferns may not yet be fully grown. When they are fully grown, they may be 4 to 5 feet tall, completely covering and hiding the trail. You want to imagine what the trail will look like once the vegetation is grown. If you are at a spot on the trail which may become overgrown, consult with your crew leader and crew members to decide the best way of compensating for vegetation growth.

Likewise, there may be parts of the trail which are rock outcroppings or tops of beaver dams. Hikers may easily lose sight of the trail at these spots during the hiking season. Again, consult with your crew leaders and members to decide the best way of clearing the trail on either side of these trail sections.

Dragging

About 20 percent of downed trees and branches can be dragged out of the way and need not be cut. About 30 percent can be cleared by making one cut and moving the cut piece off the trail.

Cutting

We cut trees that are downed on the ground of the trail and leave the trees that remain overhead. Hikers can always walk underneath the overhead trees; also, they are dangerous to cut.

We cut sections no shorter than 4 feet in length by cutting the ends squarely; squared-off ends are less noticeable than diagonal or slanted ends. After cutting the 4-foot or longer section, carry it a few feet into the woods or lay it perpendicular to the trail so that it is less noticeable and does not create a trail border.

Be careful

When cutting big trees, it is a good idea to alternate cutters in order to reduce muscle strain on each. After cutting a large tree, rest for a few minutes. Also, be sure to rest every half hour or hour when clearing.

Pruning

Prune brush and small trees at ground level, making sure to cut close enough to the ground so that you don't leave spikes sticking up in the trail or spikes sticking out from the side of the trail. Although it is more difficult to cut at ground level, brush that is not cut off completely is a safety hazard for hikers and is aesthetically displeasing.

Dangerous Cuts

Several types of treefalls pose dangers for sawing. Setting up and carrying out the cut demands great care. Examples are trees under tension, uprooted trees, or trees that might roll or twist.

Trees that are uprooted, with large balls of roots and dirt attached to them, can be dangerous to cut because as you cut the tree, the tree becomes lighter. As the tree becomes lighter, the ball of roots and dirt no longer have a

Trail Clearing Examples



Sometimes you work alone. Sometimes you work in pairs. Here a volunteer uses a bow saw. Below, two volunteers use a crosscut saw.



counterbalance. It may be so heavy, then, as to cause the remaining uncut part of the tree to spring up. You should always assume that the tree will spring up. Be ready to jump out of the way.

When cutting any tree, listen very carefully to the sounds which the tree is making, trying to anticipate what the tree will do when cut, and where you can safely jump to get out of the way. Sounds may warn when a tree will roll, spring, or fall over.

Trees which are lying on a slope may be dangerous as well. Once you cut a section, the cut section may roll down the hill. Or, if you cut a section off that has branches, the branches may be what was keeping the tree from rolling, and now the remaining part of the tree will roll. Keep your eyes on the tree, listen carefully, and be ready to jump out of the way. When there are big trees next to the trail, you may need to cut off the lower branches. Do so by cutting at the base of the branch next to the tree trunk.

Trail Break

Be careful. Ask your trip leader any and all questions you have about tools, camping, safety, and anything else. Don't do anything that makes you feel unsafe.

A Few Legalities

We can't even get away from them in the BWCAW. First, there are the BWCAW regulations—which you shouldn't find too difficult to obey since they are common sense rules for respecting the ecosystem of the BWCAW.

Plus, they are punishable with a maximum fine of \$500 and/or six months in jail.

Wilderness Rules and Regulations:

(from the U.S Forest Service)

Travel permits: You must enter the BWCAW at the entry point and on the entry date shown on your permit. You may camp up to 14 consecutive days on a specific site.

Group size: Nine people and four watercraft are the maximum allowed in your party. You may not exceed this limit at any time or anywhere (on water, portages, campsites) in the BWCAW. Smaller groups increase your wilderness experience and decrease the impact.

Containers: Cans and glass bottles are not allowed. Containers of fuel, insect repellent, medicines, personal toilet articles, and other items that are not foods or beverages are the only cans and bottles you may bring with you. Food may be stored in plastic containers, but they must be packed out with you.

Campsites: Camp only at U.S. Forest Service–developed campsites that have steel fire grates and wilderness latrines or within designated Primitive Management Areas as specifically approved on your visitor's permit. Make camp early in the day to ensure finding an available camp site. Keep dogs under control. The use of metal detectors is prohibited. Archeological sites are protected by law.

Campfires: Open campfires are allowed only within the steel firegrates at developed campsites or as specifically approved on your visitor's permit. Bringing a small camp stove may be a better idea as it heats more quickly, has less impact than a fire, and comes in handy during rainy weather.

If you build a fire, burn only dead wood found lying on the ground. Collect firewood away from campsites by paddling down shore and walking into the woods where it is more abundant. Leave your axe at home. Drown your fires with water anytime you leave camp and stir the ashes until they are cold to the touch with a bare hand. Be sure to pick up all debris in the fire grate. Do not burn trash—pack everything out. It is illegal to cut live vegetation for any reason.

Toilet facilities and water quality: Use toilet facilities at existing campsites. If hiking, dig a pit at least 150 feet or more back from the water's edge. Bathe and wash dishes at least 150 feet from lakes and streams. Soaps pollute! Fish entrails should be buried in the top six inches of the soil. State law prohibits putting fish remains into the water.

Participants Agreement:

To attend a KTC trail-clearing trip, you must agree to the Participant's Agreement.

In this agreement, you agree to assume all risks involved in this work trip, release any potential claims which may accrue from this work trip, and agree not to sue the KTC on those matters. If you or anyone on your behalf does sue, you agree to pay any judgment entered against the KTC.

You and your heirs are releasing any claims which may result from this work trip in your injury, death, or other losses or

expenses.

You also agree that you meet all of the prerequisites and qualifications for this trip.

Please carefully read this agreement and, before signing, consult with anyone you desire or deem necessary. It is very important that you fully understand this agreement and voluntarily agree to its terms.

It is also very important that you fully read this volunteer manual, attend the volunteer training, understand and follow all of the safety information, are in good physical shape, and take direction from your crew leader.

If you have any questions whatsoever, it is your responsibility to clarify the answers. We will take every possible precaution for your safety but we simply cannot guarantee it.

A copy of the agreement is on the next page.

Trail Break

For more information on BWCAW rules and regulations, contact the USDA Forest Service by calling: **(218) 626-4300.**

Or write them at:

8901 Grand Avenue Place

Duluth, MN 55808

Or visit their Web site at: **www.fs.fed.us/r9/superior**

Participant's Name (print):

Name of Event:

Location and dates of events: Trip to commence on _____

from _____ to the Superior National Forest, to return on

_____.

In consideration of the conduct of the EVENT, permission to participate therein, and the similar agreement of other participants, the undersigned ASSUMES ALL RISKS of taking part in the EVENT and agrees with the Kekekabic Trail Club and persons participating in any capacity in the EVENT as follows concerning my BODILY INJURY or DEATH and my LOSSES respecting PROPERTY and all EXPENSES to me, if any, if such should result from any occurrences in connection with the EVENT, that is caused or contributed to by the actions of failures to act of the Kekekabic Trail Club and such other persons, including their NEGLIGENCE or BREACH OF STATUTORY OR OTHER DUTY.

I hereby (a) RELEASE, WAIVE, and DISCHARGE ALL CLAIMS I or my heirs may have against the Kekekabic Trail Club or other such persons; (b) COVENANT NOT TO SUE them with respect thereto and agree to WAIVE JURY TRIAL and take any steps necessary to make this agreement effective; and (c) agree to INDEMNIFY and hold them harmless against any judgment, compromise, loss or expense sustained by any of them in any suit or claim brought by me or on my behalf with respect to such an occurrence.

By signing this agreement I certify that I have (a) MET ALL PREREQUISITES and/or REQUIREMENTS for this EVENT, as explained to me by instructors or given to me in separate documentation. I further certify that I have read this agreement and I understand it. It may NOT be modified orally.

(signature)

(date)

Other KTC Opportunities

A lot of activity and planning are behind each year's clearing trips and you are welcome to become a part of it! One important way of making the trips happen is to work with or join a committee: the trail committee, membership committee, publication committee or newsletter committee.

There are also special projects throughout the year such as fundraising, organizing social activities, and maintaining our home page on the Internet.

Our members give educational presentations throughout the year on many different subjects to many different groups. We also staff a booth each year at Midwest Mountaineering's Winterfest.

You can read about our activities in the KTC's *Hungry Beaver* newsletter, mailed to all KTC members. If you care to contribute to the *Hungry Beaver*, we'd be pleased to have you share stories, information, and trail tips with our readers.

KTC meetings are held most months, on the first Tuesday at 7:00 p.m., at Midwest Mountaineering in Minneapolis, Minnesota. Check our Web site to confirm that a meeting will take place when you plan to attend.

KTC Address: 309 Cedar Avenue, South
Minneapolis, MN 55454

KTC Phone: 1-800-818-HIKE

KTC Web Site: www.kek.org/

Camping

John Hart, *Walking Softly in the Wilderness*, Sierra Club Books, 1977

Bob Cary, *The New Wilderness Canoeing and Camping*, ICS Books, 1986

Hiking/Backpacking

John Hart, *Walking Softly in the Wilderness*, Sierra Club Books, 1977

Colin Fletcher, *The Complete Walker III*, Knopf, 1984

Harvey Manning, *Backpacking One Step at a Time*, Random House, 1980

Thomas Winnett, *Backpacking Basics*, Wilderness Press, 1988.

Canoeing

Cliff Jacobson, *The Basic Essentials of Canoeing*, ICS Books, 1988

Bob Cary, *The Big Wilderness Canoe Manual*, Arco Publishing, 1983

First Aid

Buck Tilton, M.S., et al, *Medicine for the Backcountry*, ICS Books, 1994

William Forgey, M.D., *Wilderness Medicine*, ICS Books, 1994.

Eric A. Weiss, M.D. , *A Comprehensive Guide to Wilderness Medicine*, Adventure Medical Kits, 1997

Outward Bound Wilderness First Aid, Wilderness Medical Associates (available at Midwest Mountaineering)

Cooking

Christine Conners: *Lip-Smackin' Backpackin': Lightweight Trail-tested Recipes for Backcountry Trips*, Falcon, 2000.

June Fleming, *The Well-Fed Backpacker*, Vintage Books, 1986.

Gretchen McHugh, *The Hungry Hiker's Book of Good Cooking*, Knopf, 1996.

Teresa Marrone, *The Back-Country Kitchen: Camp Cooking for Canoeists, Hikers, and Anglers*, Northern Trails Press, 1996.

National Outdoor Leadership School, *NOLS Cookbook*

Mood Setting

Sigurd F. Olson, *Reflections on the North Country; The Singing Wilderness; Open Horizons*

The Boundary Waters Journal, published quarterly and available at all outdoor sporting good stores

Robert Beymer, *Superior National Forest*

Further Training and Education

National Outdoor Leadership School

Internet: www.nols.edu

Wilderness Medical Associates

Internet: <http://wildmed.com>

Phone: (207) 665-2707 / 1-888-WILDMED (945-3633 in U.S.)

Fax: (207) 665-2747

Membership Application

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All memberships include a subscription to *The Hungry Beaver* newsletter.

\$20 Individual

\$35 Family

\$50 Sustaining — includes your choice of a three-map set of the Kekekabic Trail or a KTC t-shirt.

Send me a three-map set

OR send me a t-shirt

(Circle size: small medium large x-large)

\$100 (or more) Trail Guardian — includes both a three-map set of the Kekekabic Trail and a KTC t-shirt.

(Circle size: small medium large x-large)

____ Add me to your mailing list to receive KTC trip brochure.

Name: _____

Address: _____

City: _____

State: _____ Zip: _____

Phone: W _____

H _____

Email _____

**KTC c/o Midwest Mountaineering
309 Cedar Avenue, South
Minneapolis, MN 55454**

The KTC is a non-profit charitable organization under 501(c)(3) of the Internal Revenue Tax Code. Contributions are tax deductible.