



Outdoor Activity Leadership Guide to Adventure Camping

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Let's Go Adventure Camping!

“Tell me and I forget. Teach me and I remember. Involve me and I learn.” – Benjamin Franklin

Adventure camping opens an exciting avenue for adventure and challenge for girls who want to experience the great outdoors first hand, up close and personal. There is nothing quite like adventure camping for girls to gain confidence, learn how to be resourceful and to engage in challenges with courage.

Leaders who have experience taking girls on multi-night camping experiences are ready to expand their skills to a remote setting where amenities do not exist and all food and equipment must be carried with them. In an adventure camping environment it is up to the leaders to provide all the necessities – which go beyond food, water and shelter and includes good judgment and decision making, solid leadership and competence in backcountry or wilderness camping skills.

Safe Guide provides guidance and clarification with regards to leader training, experience and qualifications as well as participant supervision ratios, orientation and age restrictions for adventure camping. This OAL Guide to Adventure Camping is intended to provide some of the background information and techniques that will help to ensure that Adventure Camping Leaders are successful in planning and managing their adventure camps.

The nature of the activities involved with adventure camping requires leaders to have a base level of knowledge and skill. This guide was written to help Guiders understand what is involved in planning an adventure camp. Along with the OAL adventure camping training modules, it will have Guiders well on their way to becoming successful adventure camping trip leaders.

Module 1 – Trip Design and Structure

Any backcountry or wilderness adventure starts with a dream and a picture in someone's head. It can start with a Pathfinder picturing herself at the top of the Chilkoot Trail with views of two countries. It can start with a Guider picturing herself sitting on a rock outcrop at the water's edge watching the sunset with a group of Rangers. It can start with a picture of someone engaged in an exciting adventurous activity. It can start with a word – 'canoe' or 'hike' or 'snowshoe'. It can start with a place name ... 'West Coast Trail' or 'Northern Saskatchewan' or 'Gros Morne National Park'.

But it has to start somewhere...

To be successful at designing adventure trips takes experience, experimentation, assessment and the application of the lessons learned in previous trips. Once you've completed and evaluated a trip, you're ready to start the planning for your next trip. This module covers the basic concepts to which you will add your own 'discoveries-through-experience'.

The purpose of this module is to provide an overview of what is involved in the process of developing an adventure trip plan. The focus of the OAL Adventure Camping Program is the development of leaders' adventure trip planning skills.

Adventure Camping Planning Timeline

Planning a camp takes time. Start your planning in your initial Unit meetings as part of your long-range plan for the year. The following example is a typical planning timeline:

4-9 months prior to adventure camp

- Decision to adventure camp – based upon interest from both girl and leaders
- Set dates for trip – what time of year would you like to go?
- Check destination – see what times of year are appropriate for trip; check for times when the area is less populated
- Set length of trip
- What is your budget?
- Review the OAL Guide to Adventure Camping
- Review Safe Guide for required qualifications; note wilderness first aider requirements
- Choose qualified Guiders/facilitators
- See if the area you will be camping in requires permits, reservations and/or youth group expedition registration and, if necessary, complete the reservation or permit process

12-16 weeks prior to adventure camp

- Prepare a detailed budget
- Assign responsibilities for detailed planning
- Purchase/gather maps and guidebooks for the area and review these resources

- Source and book equipment/gear
- Meet with parents and participants to discuss trip details, budget, prerequisites, expectations (both their and yours), transportation, and fundraising if necessary
- Set up an exercise/fitness plan/schedule in preparation for the trip; get active – the fitter you are the more enjoyable your wilderness adventure will be
- Plan prerequisite trainings and/or skills nights for all participants
- Start work on emergency response plan
- Arrange/plan transportation

4-12 weeks prior to adventure camp

- Research the area in which you want to camp. It is ideal if one of the Guiders/facilitators is familiar with and has experience in the area in which you will be adventure camping
- Create a detailed daily itinerary
- Distribute a personal gear list and include any specific information related to the site (e.g. map with directions, trip start time, etc.)
- Distribute Safe Guide forms to parents/guardians and develop an emergency contact list and a description of participants list

3-4 weeks prior to adventure camp

- Collect Safe Guide parent/guardian permission forms and participant camp fees
- Submit appropriate Safe Guide paperwork at least 3 weeks prior to the trip
- Arrange for someone to be the home contact person (HCP)
- Finalize itinerary
- Create a menu and a shopping list based on numbers attending
- Start dehydrating food
- Review all Health forms with the wilderness first aider, note any food or health concerns

1 week prior to adventure camp

- Provide Home Contact Person with final participant list and emergency contact list
- Assemble adventure camping gear and equipment
- Shop for groceries and other trip needs
- Pack and food preparation
- Go through final preparation checklist, including: checking weather forecasts; tripping area updates including trail updates and if water in the area is potable; road conditions; vehicles; transportation schedules; confirmation of meeting place and time; leader gear and equipment checks; participants' and group gear; mind-map (visualize how the trip plays out)

Go adventure camping!

- Have fun!
- Keep a trip/gear log
- Debriefing/communication during trip
- Follow leave no trace principles

End of adventure camp

- Debriefing/evaluations with participants and co-Guiders
- Do a complete equipment check and final check of adventure campsite
- Send thanks to Guiders/facilitators, girls and parents, Home Contact Person

Post adventure camp

- Review evaluations and trip logs to assist in planning your next adventure camp
- Submit any incident reports
- Ensure all expenses are paid out and complete actual expense record
- Archive forms as outlined in GGC Policies

Researching – The Essentials of Preparation

“In order to know where you’re going, you’re going to need to know where you want to end up.”

Who is going on the trip? What adventure activity will we choose? Where will the trip take place? When will the trip be held? Why are we going on this trip? How do we do everything that needs to be done in order to plan a FUN, safe and challenging backcountry trip that both leaders and participants enjoy? These questions form the basis for trip planning. The following is a series of more specific questions that, when answered, will help establish trip details.

Leadership Team

- Who’s interested? Who’s available?
- Relevant and recent backcountry experience?
- Recent and relevant experience working with the age group of the participants?
- Current qualifications?
- Who has worked (tripped) together before as leaders?
- What are their leadership styles? Communication styles?
- Night Owls vs. Early Birds; Grazers vs. Meal-timers
- Health status (allergies, medical conditions that might be problematic in the backcountry)
- DIY (Do it yourself) vs. TPSP (Third Party Service Provider)
 - Can we do this? Should we do this? What’s my comfort level?

Participants

- Who’s interested? Who’s available?
- Relevant and recent backcountry experience? Current qualifications?
- Are there prerequisites in order to be considered for the trip?
- Do they know each other?
- Have they camped or tripped with each other?
- What are their learning styles? Communication styles?
- Health status (allergies, medical conditions that could be problematic in the backcountry)
- How much training and orientation will they require to be successful on the trip?

Support (Home Contact Person) Team

- Who's interested?
- Who's available?
- Are they always available and what's Plan B?
- Have they been oriented as Support Personnel/HCP?
- How well do I know them?
- How well do they know me and my competencies and experience?
- Communication styles?

The What

- What's the primary means of transport?
- What do we need (gear, knowledge, skills, etc.)
- What is the activity? What are we doing while on the trip?
- What's plan B?
- What documentation is necessary pre-trip (authorization and approval), during the trip and debriefing/report post-trip? GGC and Parks authority (tied closely to trip planning and risk management)

The Where

- Where will the trip start? Where will it finish?
- Where are you going to stay and camp on a day-by-day basis (trip/float plan)?
- Where are they 'emergency exits' along the way?
- Is where we're going a controlled area or Crown Land (Cdn waters vs. intl waters)?
- What kind of climate is it? (marine, tundra, Canadian Shield, alpine)
- Are permits required? If so, what are the permit restrictions (size of group, numbers of tents, cooking methods, etc.)?
- Are there fire restrictions or bans?

The When

- When are we going? For how long?
- What time of year is it?
- When do we need to leave home to be at the trailhead/put in on-time?
- Large group/small group (high vs. low and shoulder seasons by activity type)
- When do we need to acquire our permits?
- When do we need to communicate with our leadership team? With our home support team? With our participants? With GGC? With the relevant parks/police authorities?

The Why

- Why do we want to do this trip (WIIFM – What's In it for Me?)?
- Why does each of the participants want to do this trip?
- What are everyone's trip expectations? (Are they only interested in how many kms. they can log, or do they want to be able and stop and smell the roses along the way?)

Documentation

Now that you've begun the planning/prep process your work gets consolidated and shared with others through documentation. Safe Guide has requirements that you will need to meet. There are, however, other types of documentation you may want or need to consider.

Here are is list of things that you would create and some examples:

- An itinerary
- A trip/float plan with the relevant authorities
- Permit applications for group activities
- Equipment checklists, menu plans and recipes
- An ERP cheat sheet consisting of emergency numbers, access and exit points, etc
- A daily trip log (see sample in Trip Design and Structure)

Keep a copy of all your documentation in a trip file. It will be very useful next-time you want to run a similar trip – even if it turns out to be years later.

Sample Trip Itinerary

Canoe/Kayak to Widgeon Creek Campsite

Day	Plan for the day	Interest Points & Challenges
Day One		
Morning	<p>9:00am - meet at Grant Narrows boat launch</p> <p>9:05am - help unload canoes/kayaks from canoe/kayak trailer</p> <p>9:30am - pack canoes/kayaks</p> <p>10:00am - paddle from Grant Narrows boat launch along the north side of Siwash Island to the entrance to the Widgeon Creek Estuary, opposite the Grant Narrows boat launch at the south end of Pitt Lake</p> <p>Dist: 600 meters Est time: 10 min</p> <p>10:10am - raft up at the entrance to the Widgeon Creek Estuary</p> <p>10:15am - from the entrance to the Widgeon Creek Estuary, we will paddle along the estuary to our destination at the Widgeon Creek campsite</p> <p>Dist: 4.44 km Est time: 1 hr - 1 hr and 50 min</p> <p>12:00pm - arrive at Widgeon Creek campsite</p>	<p>Grant Narrows – part of the PAMWMA (Pitt Addington Marsh Wildlife Management Area)</p> <p>Pitt Lake – one of the world's largest tidal lakes. Widgeon Creek is affected by the tidal changes of Pitt Lake and at low tide; it may be necessary to get out of the canoe/kayak to line it up the creek. Check tide levels to determine departure time, or ensure participants have adequate footwear and are knowledgeable in how to line the canoes/kayaks</p> <p>Geocaches along the way: N 49° 21.332 W 122° 37.675 N 49° 22.160 W 122° 37.651</p>

Afternoon	<p>12:05pm – eat bagged lunches</p> <p>12:30pm - unload canoes/kayaks</p> <p>1:00pm - set up camp</p> <p>2:30pm - hike to Widgeon Falls</p> <p>Distance: 3km Est time: 1 hr</p> <p>3:30pm - arrive at Widgeon Falls; enjoy the scenery</p> <p>4:00pm - return hike from Widgeon Falls to Widgeon Creek campsite</p> <p>Dist: 3km Est: time: 1 hr</p> <p>5:00pm - arrive at campsite; free time</p>	<p>Pinecone Burke Provincial Park</p> <p>Widgeon Lake junction</p> <p>Widgeon Falls</p> <p>Geocaches along the way: N 49° 22.728 W 122° 38.543 N 49° 23.308 W 122° 38.416 N 49° 23.870 W 122° 38.200</p>
Evening	<p>6:00pm - prepare dinner in pre-arranged small groups, eat and clean up</p> <p>7:30pm – free time</p> <p>9:00pm - mug-up</p> <p>9:30pm - singing and sharing</p> <p>11:00pm - quiet time</p>	<p>Geocache at the campsite: N 49° 22.352 W 122° 38.594</p> <p>Local folklore – Slumach’s Lost Gold Mine</p>
Day Two		
Morning	<p>8:00am - wake up</p> <p>8:30am - prepare breakfast in pre-arranged small groups, eat, clean up</p> <p>9:30am - break camp</p> <p>11:00am - pack canoes/kayaks</p>	
Afternoon	<p>11:30pm - paddle from the Widgeon Creek campsite to the entrance to the Widgeon Creek Estuary</p> <p>Distance: 4.44 km Est time: 1 hr to 1 hr and 50 min</p> <p>1:20pm - raft up at the entrance to the Widgeon Creek Estuary</p> <p>1:30pm - paddle from the entrance to the Widgeon Creek Estuary along the north side of Siwash Island to the Grant Narrows boat launch</p> <p>Distance: 600 meters Est time: 10 min</p> <p>1:40pm - unpack canoes/kayaks</p> <p>1:50pm - load canoes/kayaks onto canoe/kayak trailer</p> <p>2:00pm - group trip debrief</p> <p>2:15pm - divide up gear for cleaning/drying</p> <p>2:30pm - parent pick up</p>	<p>Mountain Peaks seen in this area: Mount Judge Howay, Mount Robie Reid, Osprey Mountain, Widgeon Peak, Alouette Mountain, Blanshard Needle, Edge Peak, Golden Ears</p> <p>Widgeon Creek Estuary - the largest freshwater marsh in south western BC.</p>

Sample Daily Trip Log

Daily Trip Log	Trip Location:	Trip Dates:	Start	End
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Date:	
Location (UTM or Lat/Long):	
Landmark(s):	
Plan for the day:	
Description of leg: (geographic features / waypoints)	

Distance:		Time	Estimated:	Actual:
Elevation (Gain and/or Loss):				
Weather conditions	Sun/cloud:	Temperature:		Precipitation:
	Wind:	Thunder/lightning:		
	Weather notes:			
Sleeping Temperature:				

Notes: Brief overview of the day

Notes: Program or noteworthy events/unexpected challenges (physical/emotional)

Notes: Lessons learned; what worked; what should change; gear (breakages, not needed, wish had)

Completed by:	Date completed:
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Module 2 – Risk Assessment and Management

Safe Guide describes an adventurous activity as any activity that requires skilled leadership and detailed pre-activity instruction/training for all participants to limit the potential for injury to those participating. Adventure camping (also described as multi-day, Red level, back country or wilderness or adventure trips) frequently involves a trip or expedition in combination with an adventurous activity. Examples include multi-day canoeing or kayaking trip, backpacking trips, dogsledding trips, etc.

Understanding the theory of risk assessment and management and the ability to apply both is a critical knowledge and skill set for outdoor adventure leaders. In this module participants will explore risk assessment and management principles and learn how to apply these principles in the planning and management of a wilderness/backcountry expedition. The objective of this module is to help the leader establish a basic understanding of risk and accident prevention from a hazard assessment perspective.

Risk & Hazards

Risk in Chinese ... Wei-jan ... means 'opportunity through danger'

It is not because things are difficult that we do not dare, it is because we do not dare that they are difficult ~ Seneca

Risk

Risk can be defined as, “the possibility of loss or injury.”

Risk can have positive and negative outcomes; risk always has the potential for loss but also always has a potential for gain. Without risk, we may never challenge ourselves, learn new skills and grow. This is why we undertake risks; the potential for gain is at the heart of all risk management decision-making. The advantages, however, must outweigh the disadvantages.

Inherent and Residual Risks

Any risk that is related to the activity itself and cannot be eliminated or transferred away is said to be an inherent risk. Once controls have been put into place to mitigate or manage inherent risks, only residual risks remain. Drowning is an inherent risk of water activities like canoe tripping. Getting lost is an inherent risk of backpacking. Both types of activities can be managed or controlled to reduce the risk so that only residual risk remains. A residual risk is the danger of an activity even after all possible safety measures have been applied.

Risk exists simply as a function of being alive! Risks exist even for the most mundane activities. A structured risk assessment and risk management process classifies risks into logical components for which plans can be put in place that manage those risks. If the process is

successful, then the extent of loss or injury is minimized down to acceptable level. Note that what may be acceptable to one person may be unacceptable to another person in the identical situation. This is particularly true when physical activity is involved and the environment offers up its own set of risks.

Risk Perception

Perceived risk is a very personal thing. The American political strategist Lee Atwater first coined the phrase "perception is reality" and there is probably no more relevant quote when discussing risk. Activities always have a perceived level of risk because it's human nature to interpret situations and form conclusions that may or may not be founded on objective criteria (reality). If you perceive the risk of an activity to be relatively low because so many people participate in the same activity, there may be less attention paid to managing hazards.

Perceived risk plays an important role in risk management – particularly among less experienced participants and leaders. For those with less experience, "perception is reality" means that what they perceive to be a hazard will be a hazard and what they don't see as a hazard will not be perceived as a hazard.

Although experience generally leads to a better perception of actual risk and reality of the situation, risk remains relative to one's (subjective) assessment of risk even with the presence of a multitude of (objective) realities. An objective and complete scan of the key risk factors - people, environment and activity (PEA) will guide the risk identification process better. Keep in mind that whenever people are involved, a certain amount of subjectivity will remain in the perception of risk.

Risk Tolerance

Risk tolerance can be defined as "the capacity to accept or absorb risk." Risk tolerance levels exist at an individual, group and organizational level. From an organizational perspective, the willingness to accept various risks, is either stated expressly – as in the Safe Guide – or exist as part of its culture. While Safe Guide lays out the acceptable levels of risk tolerance for activities and event, the Trip Leader and Trip Assist must also be aware of, and accept, their own levels of risk tolerance as well as those of their participants.

Accident vs. Incident

From risk management and Safe Guide perspectives, all accidents are incidents, but not all incidents are accidents. An accident is something that happens without apparent cause and has negative outcomes, such as loss of life and/or limb and/or property for an individual, group or organization. An incident is something that happens that could have negative outcomes (loss of property, reputation, or value) but not necessarily so. In Girl Guides of Canada, we complete incident report forms for things that happened that could risk, or negatively impact its members and/or its reputation.

Many experts in the outdoor adventure industry argue that there is no such thing as an accident because an accident is the result or outcome of a series of bad decisions that, by themselves,

may not have negative consequences but when strung together and seen as a whole, clearly show a higher likelihood for negative consequences (loss of life and/or limb and/or property). The CBC documentary (see resources) analyzing the December 2006 tall ship accident in which Laura Gainey was swept off of the deck by a “rogue wave” demonstrates a situation that occurred due to a series of bad decisions.

Situational Awareness

Situational awareness is the ability to pay attention to what’s going on around you and being able to react to changing conditions. This can be as simple as noting that the temperature is dropping (and recognizing that you are getting colder) so you put on another layer to keep warm. It can be as complex as knowing how to evaluate weather signs, calculating how long you have before bad weather arrives, determining how far your group can travel within that window of opportunity given their mental and physical condition and the traveling conditions (headwind, rugged terrain, etc.), determining where other campsite options and what additional hazards (like pushing your group too hard) need to be considered in formulating a plan quickly.

All adventurous activities and events are dynamic situations, changing constantly. The Trip Leader and the Trip Assist must constantly be aware and adapt to the three factors that drive the presence and nature of hazards – people, environment and activity.

Hazards

Hazards are specific risks or threats that can result in an accident or incident. Understanding risk and accident prevention from a hazard assessment perspective is important in creating a risk management plan. Management of a hazard involves first identifying the hazard and then minimizing or eliminating any interaction with the hazard. Hazards can be thought of in two categories: human and environmental.

Human Hazards (People)

Human hazards consist of all the aspects of human behaviour that we bring to the environment when we venture out into the backcountry. They include: stress, fatigue, health, preconceptions, ego, overconfidence, fear, motivation, expectations, training and experience, leadership skills and abilities, communication styles and methods, and decision-making ability. Keep in mind that the recognition of these hazards is subjective.

The following is a list of common risk factors that contribute to and create human hazards on adventurous backcountry trips:

- Participants
 - No awareness of potential hazards
 - No awareness of their own limits
 - Lack of skills and or knowledge of the activity and/or environment
 - Non-compliance with instructions from leaders
 - Irresponsible/careless attitude towards self, others and/or equipment
 - A need to prove oneself; ego
 - Poor physical strength, stamina, fear, anxiety

- Leaders
 - Insufficient knowledge of environmental hazards
 - Inadequate skills to safely remove group and self from hazards
 - Poor safety judgment
 - Inability to adequately teach necessary skills
 - No teaching plan in place
 - Unclear instructions
 - Poor supervisory skills; does not resolve problems
 - Ineffectual under stress
 - A need to prove oneself; ego
 - Poor communicator
 - Lack of empathy
 - Inadequate understanding of leadership dynamics

- Group
 - Inability to work cooperatively as a group
 - Unresolved interpersonal frictions
 - Poor communication patterns
 - Excessive competition
 - Excessive pressure or stress to perform; ego
 - No practice working together in stressful situations
 - No defined leadership or a lack of leadership within group
 - Splintered into sub-groups or cliques

- Other people you encounter who may affect your group
 - Poorly outfitted/equipped
 - Overestimation of one's own abilities
 - No awareness of hazards
 - Higher risk tolerance levels
 - Lack of leadership
 - Differing objectives (partying)
 - Different behavioural standards
 - Lack of skills and/or knowledge of the activity
 - Non-compliance with instructions
 - Irresponsible/careless attitude towards self, others and/or equipment
 - Need to prove oneself; ego
 - Pose higher potential risk to YOUR group who may feel 'obligated' to help

Environmental Hazards

Environmental hazards consist of all aspects of the environment. These objective or measurable factors include temperature, lightning, animals, plants, rocks, elevation, fire, water, visibility, wind and more. Environmental hazards include the activity itself, the location of the activity, the season and the climate. The key difference between human and environmental factors is that we can change and control the human factors but we cannot, once we've ventured into the

backcountry, change or control the environmental factors. We can manage the environmental factors but we can't change the weather!

When assessing potential environmental hazards, you need to consider:

LOCATION – In backcountry or remote locations, additional precautions need to be taken. For example:

- Taking actions to avoid encounters with predatory animals, especially animals with their young, etc.
- If running rapids in a remote setting, increase the rating of a rapid by one class (e.g. a class two rapids would be considered as a class 3). Use this to help take into account the increase in the potential for an incident and the impact it would have on the trip.

SEASON/CLIMATE – Weather and the possibility of changes in the weather also have a significant impact on accident potential. Think of the potential outcomes for the situations below that would be compounded by bad weather.

- Equipment
 - Broken equipment
 - Boots not broken in
 - Improper clothing for the activity and the climate
 - Inoperative equipment and lack of knowledge to do field repairs
 - Lack of field repair kits for stoves, water pumps, tents, packs, canoes/kayaks, zippers, etc.
- Driving/Transportation
 - Poor road conditions (gravel, logging, slick, muddy, icy, snowy)
 - Darkness
 - Unfamiliar roads
 - Inadequate maps
 - Other drivers
 - Pedestrians/cyclists/wildlife on the road

ACTIVITY – Any activity needs to be considered in relation to the following questions:

- Is the activity (e.g. hiking with a loaded pack or paddling for hours and portaging heavy packs and canoes over uneven terrain) technically demanding and does it require specialized instruction and/or training?
- Do the participants have the necessary technical skills to efficiently and effectively do the activity?
- Do the participants have the physical stamina necessary to participate in the activity?

Hazard Analysis Model

Subjective Hazards

Subjective (internal) hazards are hazards over which we have control because they exist as a result of our own behaviour such as lack of preparation, lack of experience, and carelessness. Subjective hazards cannot be quantified nor can they be verified by our senses. But in many ways, subjective hazards are just as important – if not more so – than objective hazards because they can occur in spite of the absence of objective hazards. Hypothermia, for example, is not just a condition (and life-threatening hazard) of cold environments. Choosing inappropriate clothing, not keeping your hydration levels up and dismissing hypothermia as a hazard on a mid-summer canoe-trip can all come together to result in a negative outcome and crisis situation (you become hypothermic).

Objective Hazards

Objective (external) hazards are specific risks that are beyond human control because they exist as a result of environmental conditions like weather, water conditions and terrain. Objective hazards can be measured or quantified and they can be verified by our senses. For example, wind speeds of X km can be felt and the results of a high wind can be seen and heard. A water temperature of Y° can be felt (and seen in the presence or absence of ice). A slope with a gradient of X% can be seen and can be felt when you climb or descend it.

Dynamics of Accidents Theory: A hazard-based approach

There are several models of accident causation. Alan Hale of the National Safety Network developed the Dynamics of Accidents Theory to explain why accidents occur. Hale's theory is a hazard-based approach stating that the combination of environmental and human hazards results in an accident potential. The greater the overlap between the two hazard groups, the higher the accident potential. Figure one illustrates Hale's model. Figure two applies the model to a canoe trip.

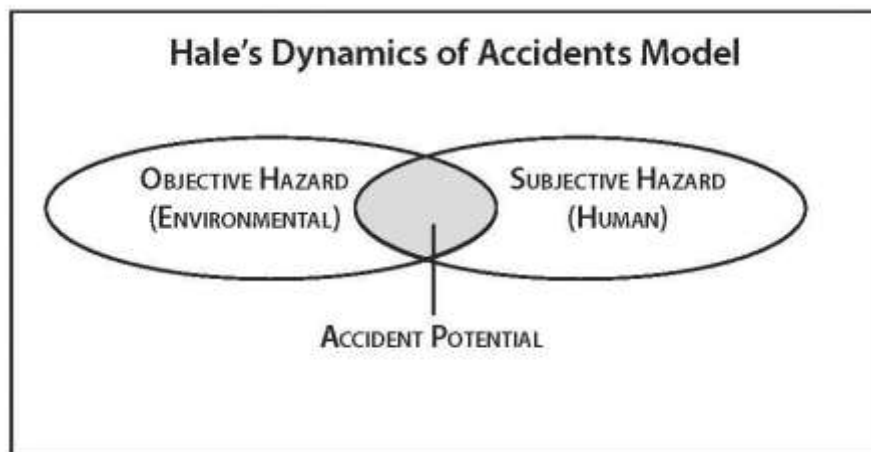


Figure 1

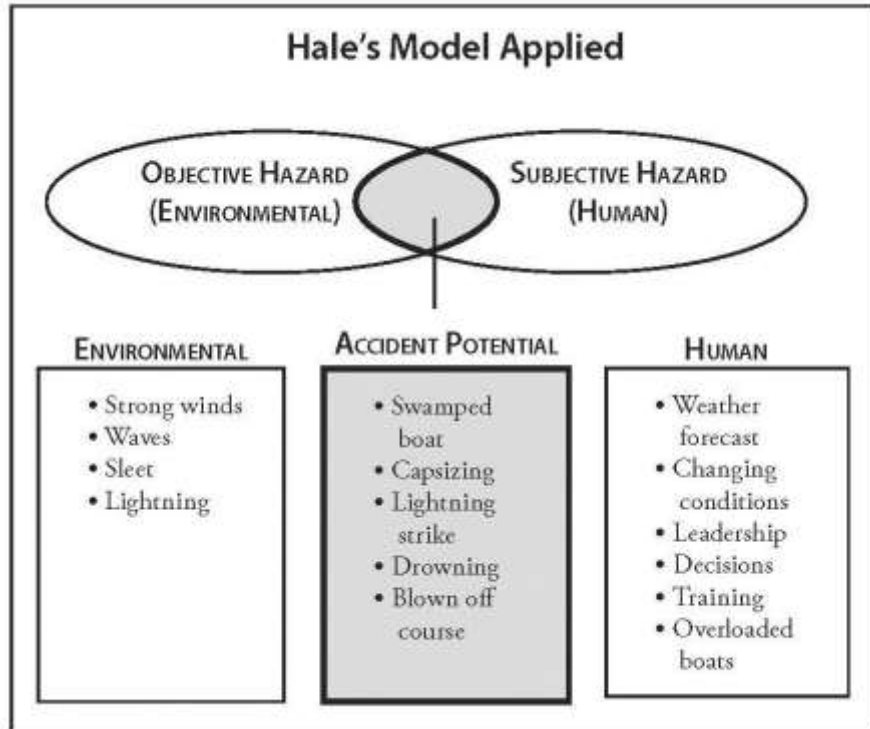


Figure 2
(From *Trip Tips*, Second Edition, Peter Cruchet and Matt Cruchet, 2007, Direct Bearing Inc.)

Accident Potential Increase

The effect of combining environmental hazards and human hazards multiplies the accident potential rather than simply being additive. This means that the greater the number of hazards, the more quickly the accident potential can rise. For example:

2 Environmental Hazards + 2 Human Factor Hazards = 4 times higher Accident Potential

3 Environmental Hazards + 3 Human Factor Hazards = 9 times higher Accident Potential

Human and Environmental Hazard Interaction

Since it's both our intent and desire to undertake activities in the backcountry, and since risks are inherent to those environments, we cannot completely avoid risk. We can however, develop the ability to identify and recognize where risk can occur, so that we can manage it to the best of our ability.

Where human and environmental hazards overlap is where we need to concentrate our energy and attention as Trip Leaders and Trips Assists in order to prevent incidents, accidents, injuries and illnesses.

Teaching the Formula = Reducing the Accident Potential

It is important to think about the Dynamics of Accidents Formula at the very beginning of any trip (or as part of pre-trip planning and preparation) so that all participants are aware of how their

behaviour is directly related to reducing the possibility of accidents. Participants then can take some responsibility for their own safety. The formula gives you five basic things:

- A technique for evaluating risk potential in the field
- A tool for analyzing how accident potential can be reduced
- A decision-making tool
- A rationale for why we teach particular rules and policies
- A rationale for why you make particular decisions

Dealing with Hazards - Three Step Program

Anticipate and Identify

By anticipating potential consequences of circumstances and situations, you can learn to recognize and avoid potentially harmful situations. Prior to a multi-day adventure trip, the Trip Leadership Team should brainstorm various hazards – both objective (environmental) and subjective (human) – that could be encountered during the trip. They also need to anticipate the consequences of each of the hazards. The trip leadership team must agree upon a risk management plan in advance and decide how the team will respond to emergencies. The key to this exercise is to involve the group in decisions regarding their safety from the beginning in ways that are consistent with their knowledge and skill levels.

Evaluate

Once you've identified hazards, you need to evaluate these hazards in terms of their impact on an individual's physical and psychological well-being, the group's physical and psychological well-being, and that of the leadership team. Keep in mind that psychological well-being will have an impact on physical well-being and the ability of the group to travel/continue the trip.

Evaluating hazards is usually done by assessing two elements: likelihood and severity. For each hazard, determine what the chances are of a hazard's occurrence and what the consequence or severity of the hazard would be. Hazards that are high in both likelihood and severity are most threatening and require specific attention to manage them. Hazards that are low in likelihood and severity generally don't require specific management strategies but can be dealt with in the normal course of running a well-planned and led trip. Hazards that have a moderate level of likelihood and severity require judgment and experience to determine if specific precautions are required – when in doubt, plan them out.

Take Action

- Determine what you would do if you or your co-leader (or both of you) were hurt
- Develop a plan to share with the participants outlining detailed steps to be taken if you are hurt
- Research and complete a comprehensive emergency response plan that outlines roles and responsibilities, including those of the participants

Putting It All Together: SOAP

In this section, we've discussed two broad categories of hazards - **S**ubjective (human) and **O**bjective (environmental). Different **A**ssessment approaches have also been covered. What has not been covered yet is the **P**lan in response to the consequences that result when the Human hazards intersect with the environmental hazards. As part of the OAL Adventure Camping Training (course), you will be developing several different response plans, from common, specific situations that one typically can encounter in backcountry trips to complex, multi-phase Emergency Response Plans.

A useful way to map the hazards and their consequences is by using a Hazard Identification Worksheet.

Emergency Response Formula =

Risk management formula + Situational awareness + Being prepared +
Continued learning and updating of knowledge/skills +
Personal debrief / Debrief with other leaders/group

Hazard Identification Worksheet

Identified Hazard	Response
Objective/Environmental Hazards	
Weather	
Terrain	
Equipment	
Other	
Subjective/Human Hazards	
Individual	
Group	
Other	

(From *Trip Tips*, Second Edition, Peter Cruchet and Matt Cruchet, 2007, Direct Bearing Inc.)

Applied Risk Management Worksheet

Instructions: After completing the Hazard Identification Worksheet, note on this sheet the risks that will potentially intersect and have both environmental and human aspects. List the potential consequences and your response plan.

Identified Objective/Environmental Hazards	Identified Subjective/Human Hazards	Potential Consequences (of the intersection of the two)	Response Plan

Information in this section is used with permission and drawn from:

The Outdoor Action Guide to Outdoor Safety Management by Rick Curtis Director, Outdoor Action Program at Princeton University. It is available at

<http://www.princeton.edu/~oa/safety/safeman.html> Copyright © 1995 Rick Curtis, Outdoor Action Program, Princeton University.

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Module 3 – Leadership Styles and Group Dynamics and Management

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

Creating a collaborative, supportive team approach is one of the most important things you can do for a safe and successful adventure camping trip. Effective leadership creates a strong and healthy group dynamic where participants feel safe physically and emotionally while carrying out their responsibilities for the trip.

Your abilities as a leader play a major role in the degree of success experienced on your trips. As a good leader, you will always be developing and improving your leadership skills.

The purpose of this module is to learn: situational leadership styles; positive communication; team-building skills and the ability to adjust to the different needs of the group; effective handling of difficult situations; and other critical outdoor leadership skills. Before reading this section, it is suggested that you review the Leadership Module in the OAL Guide to Camping as some of the concepts presented below build on that previous module.

Leadership Styles

After reviewing the *OAL Guide to Camping Leadership* Module, you will be familiar with the various styles of leadership. The purpose of this discussion is to briefly review the styles and then consider how they can be applied in the Adventure Camping context.

Leadership Styles - Situational Leadership

No one particular leadership style is most appropriate when leading outdoor experiences. The participants, the location, the skills to be learned, safety considerations, environmental values to be learned, the group's objective, and your equipment and resources all need to be considered. A Guider needs to understand the issues that affect a participant's behaviour, such as learning styles, communication styles, resources, equipment and knowledge. Manage participants' reactions and assess how they are doing. The situational leader changes their leadership style depending on the situation.

Autocratic Leadership Style

An autocratic or authoritarian leadership style (a leader who makes all of the decisions all of the time) is important when monitoring safety and adhering to Safe Guide rules. This is similar to a directing style, which is useful for a group of enthusiastic beginners as this style provides more structure, control and supervision.

Democratic/Coaching Leadership Style

A democratic leadership style (a leader who shares the decision-making process with the girls and other leaders and is prepared to change her mind based on what others have to say) is

important to encourage girls to participate in the activity and to express their beliefs. This is similar to a coaching style which uses participatory problem-solving and active listening skills. Good coaches have strong verbal and non-verbal communication skills and build relationships by listening. This style identifies obstacles and explores alternatives. A good coach recognizes when coaching may be necessary, never lets good actions go unnoticed, challenges the girls to take ownership of their actions, helps set the girls up for success and models the behaviour she would like to see. Closely related to the coaching style is the supporting style which is useful for participants who have competence but lack confidence and need to kick start their motivation.

“Everyone is a potential Peak Performer... some people just need a little help along the way.”

Laissez Faire/Delegating Leadership Style

The Laissez Faire leadership style is a delegating leadership style that allows participants to take an active role in decision-making. The leader gives guidance to participants by providing the tools and resources needed, but takes a more peripheral role, allowing participants to determine goals, make decisions, resolve problems and accomplish tasks on their own. This style works well when participants are highly capable and motivated.

All of these styles are effective leadership styles, depending on the situation.

Situational leadership provides the flexibility and adaptability that can best meet the Guider’s goals and objectives. Leadership emerges based on the situation. Be sure to:

- Ensure goals are clear and relevant
- Identify positive behaviours that produce desirable outcomes
- Find ways to reinforce positive behaviours and to discourage negative behaviours
- Be ready to change leadership styles when the situation changes

A combination of leadership styles could all be used during each outdoor experience. Using varied leadership styles will optimize the group experience and ensure its safety.

(Reference: “Outdoor Leadership” PER Thoughts, Middle Schoolers, and Resources for Educators and Leaders by Dr. Larry K. Belknap, Re.D., CPRP, and Dr. John Ferguson, DA)

Qualities of an Effective Leader

“Keep in mind that being in front does not always make a leader. Some of the best leaders have led from behind.”

A good adventure camping leader needs not only to have appropriate skills and previous experience and knowledge (including risks) of an area, but also needs good judgement, common sense and decisiveness. A leader needs to have the confidence and willingness to make tough/unpopular decisions (e.g. we don’t need to summit at all costs), which is especially important for managing safety. General qualities that make a strong trip leader are:

- Well organized and able to delegate

- Approachable and empathetic
- Ability to adapt to the expectations or needs of a group and its individual participants
- Ability to inspire and motivate, especially when people are tired or the going is tough
- Ability to encourage and facilitate team building and teamwork and be a team player
- Flexibility and humility – the willingness to say “oops, I goofed; how do we fix this now?”

Things don't always go according to plan. Leaders will always need to navigate through challenges and one's previous experiences will be invaluable. When challenges arise, it's your ability to deal with these challenges that has an impact on your adventure.

Leadership Communication Tips

Communication is an especially important leadership skill. The following communication tips will help you to manage your relationships with other leaders and participants:

- When working with someone new, share your skill levels and background in this area – how would each of you handle various situations? Explain what you would do in various situations.
- Get an idea about your co-leader's communication style.
- Schedule regular debriefings throughout the trip.
- These debriefings should be interactive, involving all participants. There should also be regular separate debriefings for the leaders too. Work as a team.
- Provide positive reinforcement and equal opportunities.

Youth Leadership

Specific leadership considerations for working with youth:

- The ability to empower girls to work towards a positive experience that makes the outdoors accessible and meaningful.
- Empower the girls by giving them as much opportunity to plan, prepare, and lead as possible, but also keep in mind that for many of them, this may be their first adventure experience or may be their first leadership experience, and they're still learning.
- Be there to help direct them if they're not making good decisions. If, for example, they make a decision to begin a long adventure tripping day in the afternoon, rather than have them learn by experiencing and having to turn around because they don't have time to reach their destination before dark, in the planning stages, you can help them to think and plan. Ask questions such as, what time does the sun set? When would be a good time to leave so that we have a few extra hours of daylight?
- Direct the girls through constructive feedback.
- Help to create positive outcomes and experiences and help them to gain self-confidence, leadership and decision-making skills, problem-solving skills and a sense of responsibility for themselves, others and the environment. Help empower them to make good decisions without actually deciding for them.
- Promote inclusivity and a sense of reasonable and rational expectations. Not everyone should have to have the ability to speed hike to be able to participate on a hiking trip. If you have to leave earlier with your group because it will take them longer, then leave earlier. Everyone who wants to participate in outdoor adventures should be given the

opportunity. Help them to learn to appreciate their abilities and feel a sense of accomplishment. The quality of the experience you help to create directly influences every girl and can have a lifelong positive impact.

“Kids don’t need baseball players and movie stars to be role models. They need adults who are consistent, reliable and dependable. Kids respond because of the men and women providing leadership in their lives.” ~ Peter Dalglish, Founder, Street Kids International

Leader Responsibilities

Guiding has many guidelines in place to provide the best experience possible for the girls in our care. This section lists some of the specific considerations that responsible leaders always need to be thinking about. The primary responsibilities of a leader in an outdoor environment are to:

- Minimize risk
- Minimize environmental impact
- Maximize learning
- Maximize fun

A good leader keeps these primary responsibilities in the back of her mind and uses them to guide her actions in planning, organizing and executing a successful camp.

Safety

Safety considerations include:

- Provide clear direction and instruction.
- Simplify instructions; repeat them. For example, “I need to get everyone’s attention. Can everyone please stop what they’re doing and make eye contact with me.” Then make your safety announcement. “You need to stand back five feet away from the edge; I don’t want anyone going closer than this. Safety is our most important thing here. We really want to have fun and have a good time, but if anyone is doing anything in an unsafe way, we’re going to have to stop the trip.”
- Never expose yourself to unacceptable risk, even for one step.
- Do your homework; research.
- Check ability level, confidence level, equipment and be prepared through training.
- Position yourself where you can see all the participants, assess how everyone is doing. Ask yourself, “Are we on track?” It’s okay to say, this isn’t working; we need to stop and think about things before we proceed any further – determine what will work and what won’t work. Discuss this as a group, involve the girls and let them know that it’s not a failure to turn back. Do we summit at all costs?
- Route plan – be specific – make a copy of the map of the area you’re going to so you can mark up the route map. Mark planned campsites, alternates, and escape routes. Have alternate (shorter) routes or exits, easier/more challenging objectives and bad weather activities.
- Mind map – have you thought through how it will all work? Think about and work through various possible scenarios prior to the trip.

- Situational leadership; situational risk. Ask yourself: how much risk is an acceptable amount of risk to me as a leader on this particular trip?
- Be aware of your own situation. As a leader, you need to think about yourself first and foremost because you cannot be an effective leader if you don't take care of yourself. You need to keep yourself safe and hydrated. You cannot take any risks that are going to affect you because that will affect the group.

"There are old mountaineers and bold mountaineers, but there are no old bold mountaineers." ~ Ed Viesturs (one of the world's premier mountaineers)

Comfort and Enjoyment

Considerations to think about related to the group's comfort and enjoyment include:

- Move occasionally to the side of the trail. Watch people and look at their energy level. There's nothing wrong with delaying a trip ½ a day or a day or re-routing a trip if necessary.
- If a planned trip is more than a few days long, add a couple of weather/rest/easy days in. That will provide some flexibility. Sometimes nature has a plan that's bigger than our plans, and sometimes we forget that.
- Use positive thinking: we're well equipped; we're in good shape!
- Encourage the girls to make micro goals. It doesn't matter how long it takes us just that we try. So, on a challenging slope, have them use trail markers as their micro goals: "Once you pass the fourth trail marker, you can take a break".
- Teach strategies as you travel along. Monitor participants' welfare on an ongoing basis.
- Estimate the group's speed throughout the day, realizing larger groups take longer.
- Consider group needs, including, regular rest breaks, toilet stops and reminders to participants to hydrate well, use sunscreen and pace.
- Learning doesn't stop in the training or prior to the trip. Learning happens during the trip too. It's useful to prepare participants for more learning while on the trip.
- Role model good adventure camping behaviour as the girls learn a lot from observation.

Care and Control of Group

Considerations related to care and control of the group include:

- Determine the maximum number of participants including adults allowed for adventure camping. Check Safe Guide for group size and ratios. Larger parties can be split into smaller groups.
- Engage in "what if" planning. Anticipate – what would we do if...?
- Verify that everyone has the equipment they need.
- Select an activity appropriate to the abilities of all the participants. Don't go beyond your level of skills and abilities of the group's level of skills and abilities. Stop and think: what decision would I make given my skills and experience?
- Never ignore weather warnings
- Be alert at all times
- Be aware of your own situation

Participant Responsibilities

A strong and effective trip team is made up of participants who are supportive and caring of each other; where all work together as a team. If cliques start to form, facilitate better integration through team-building activities. This can make the difference between an average trip experience and an unforgettable one. Participants have clear responsibilities to themselves, each other, and their leaders including:

- Self-awareness: managing your personal health which includes climate needs, energy needs, personal hygiene, and simple personal first aid needs
- Communication
- Showing initiative and concern for others
- Working effectively as a team player
- Cooperation
- Taking responsibility and learning new skills
- Setting and attaining personal goals
- Tolerance and acceptance
- Positive attitude

There is no place for trivial complaints on trips, as this behaviour can be contagious and make the trip less enjoyable and harder for everyone else. Participants do need to communicate if they are hurt or not feeling well. Leaders need to distinguish the difference between trivial complaints and genuine concerns and try to turn behaviours around. Statements such as “this is a really steep hill; it’s so hard!” can be redirected into, “look how far we’ve come already; we’re really conquering this mountain!”

Group Dynamics and Management

A strong and effective team is made up of participants who exhibit good expedition behaviour. Good expedition behaviour can make the difference between an average trip experience and an exceptional trip experience. A leader’s behaviour has a significant impact on the group behaviour. It’s important that leaders:

- Model the type of team building and supportive behaviour you expect of participants
- Ensure group members’ basic nutrition needs are being met as not having these needs met can affect participants’ behaviour
- Encourage and facilitate group cooperation
- Provide a supportive and safe environment
- Reinforce positive “expedition behaviour”
- Work to facilitate good communication and active listening between group members
- Encourage respect and tolerance for others
- Facilitate debriefings

Tips for Managing Specific Participant Behaviours

Typical behavioural characteristics tend to emerge in group situations. Below are some examples behaviours that could adversely affect the trip as well as suggestions for managing these behaviours:

Managing a Non-participator

- Assess the situation by engaging in a discussion with the participant.
- Perhaps that person feels that they're more informed and/or experienced than the rest of the group and is bored. Or perhaps they are shy, don't know many members of the group, or are less experienced and are afraid of trying.
- Invite response by saying: "Do you have anything to add to this point?" "Have I missed anything?"
- Use the experienced person as a resource; give her a task to do or assign her a role to get her involved and contributing (see section on roles further in this module).

Managing a Monopoliser

- Listen respectfully.
- Perhaps she is an enthusiastic learner, uses talking as a nervous response or seeks positive reinforcement for self-esteem.
- Watch for opportunities to redirect the focus of the discussion/group: "What do others think?"
- Assign this person an important task or role, and vary her roles often so that she isn't in a leadership or "take charge" role for too much of the activity.

Managing a Challenger

- Keep calm.
- Perhaps the challenger feels the need to demonstrate knowledge by aggressive debating and needs to feel validated.
- Invite the group to deal with the challenger's question: "Does anyone want to respond to that?" or "Has anyone else faced this situation and how have you dealt with it?"
- Affirm the person, but move on: "We need to move on, but I'd be happy to discuss the matter with you later."
- Assign this person an important task or role.

Managing a Quiet Participator

- Check the actual knowledge levels and needs of the group and adjust the activity to fit their needs.
- Perhaps the quiet participator feels intimidated by the experience level of other group members.
- Pause longer when waiting for a response.
- Rephrase questions or statements.
- Switch to small group activities with smaller, well-defined tasks.
- Switch up the groups more frequently.
- Observe dynamics within the group and be prepared to "balance."
- Assign this person an important task or role, one that encourages the development of leadership skills.

Group Roles

Assigning roles and responsibilities to participants encourages positive group dynamics and interaction, greater participation, builds self-esteem and helps empower girls. The number and type of roles will vary based on the group needs for each trip. For example, a pace setter role is useful when the objective of the day is to make a specific number of kilometers before a particular time. Assign roles to get all participants involved and contributing. Different people have different talents, qualities, abilities and strengths to offer the group. Have stronger participants carry more gear. Encourage girls to try new roles by telling them, “you’re so good at this, so you can be the...”

Lead

- Have a leader of the day or a team of two co-leads for the day.
- Have this leader or team of leaders give an orientation to the group about what the plan for the day is at the start of the day (or the night before), including route, terrain, what to expect along the way, etc. For example, “We’re hoping to travel 6 km today with 400 m elevation. We’re expecting it to take us 4 hours to get there. We’ll be in the forest for the first two km, so the trail could be muddy with lots of roots. We’ll be taking an hour for lunch at the viewpoint.”
- Then, have the lead person or team debrief the group at the end of the day to get feedback and discuss what worked, what didn’t, what the group would do the same, what things the group would do differently next time.
- Site orientation.
- Route verification.

Navigators

- As a minimum, have two navigators or have navigators work in a team of two.
- Have each person decide where they are and where they are going independently and encourage them to think, “these are the reasons I think we are here.” Each navigator can have their own reasons and then share with the group.

Pace Setter

- Assign someone as a front person/pacer and no one is permitted to go ahead of this person.
- Pace setting is extremely important to ensure a more positive experience and for endurance over a long distance. “Jackrabbits” generally start out too fast and wear themselves out by the afternoon.
- If participants are dropping way back, move that person into the front or “Pacer” role.
- Often, you can get somewhere faster by keeping a slow and steady pace rather than a pace that is too fast forcing the group to break more frequently and/or take longer breaks.
- A Guider should follow right behind the pacer or a few people behind.

- Occasionally remind the pacer to remember to pace and advise her to look back once in a while to see how the group is doing. The pace setter should always be within speaking distance of the person behind her.
- Use positive reinforcement; such as, “great job, pacing!”

Sweep

- Have someone be the sweep for the group.
- Everyone in the group needs to stay between the Pacer and the Sweep.
- If someone has to go to the washroom, have them leave their pack in the middle of the trail and that way the sweep person can wait for them.
- The sweep should be paired up with a Guider or have the Guider be right in front of them.

Philosopher

- Give this person a quote book and have her share quotes throughout the day.

Motivator/Cheerleader

- This role should come up with creative ways to keep the team (group) motivated and moving whether it’s singing, telling stories or jokes or some other way.
- This role requires a lot of energy, so change the person in this role frequently.

Timekeeper

- Give one person a watch with a timer and have them record start time, stop time, breaks. This is really helpful in keeping track of how long it is taking your group to cover a particular distance.
- Have a turnaround time and have the timekeeper inform you when you are at the turnaround time.

Weatherperson

- Give this person an idea of what to look for in potential weather hazards and have them observe the weather. Watch for quick moving clouds, sudden temperature change or winds. If your group has a altimeter or barometer the weather person should carry it. A dropping barometer indicates the approach of bad weather.

Cook(s)/Snack Person

- This person is in charge of snacks during the activity and ensures everyone is fuelling their bodies enough. If people are not fuelling enough, it’s easier to get worn down and exhausted and more difficult to get energy back.
- “Afternoon Happy/Appy Hour” – cooks can get an afternoon snack ready (cheese and crackers, instant soup, hot chocolate) while everyone else is setting up camp.

First Aider

- A girl participant first aider who can help with blisters, minor cuts, etc. with adult supervision.

Other Roles

- Wellness (water) person
- Guider in Training
- Photographer/Trip logger
- Clean-up and Sanitation

Tip/Idea: Present small tokens/awards at the end of a trip, such as the “spirit award” to someone who always had a good attitude and contributed to positive group dynamics, or a “leadership award” to someone who took a lot of initiative and demonstrated good leadership skills.

Final Debriefing

In order to increase the impact of your group’s adventure, it’s important to have a final debriefing process. The final trip debriefing should be held at the end of the trip, preferable before returning home. (Once back home, it is difficult to recapture the mood of the wilderness and to get everyone together again). Debriefings should be an analysis of what has happened and what lessons have been learned for next time; they should be positive and include what each person liked about each participant, what each person brought to the adventure and how each participant felt they personally succeeded. Make the participants aware that there are no right answers. They should say whatever they feel. Leaders should acknowledge all responses with a nod or yes or some other sign of acceptance. Be conscious of your body language and attitude as you ask a question; often the attitude you take can influence the willingness of the group to respond.

Module 4 –Navigation

Navigation is an extensive subject. This module provides basic information on the many tools and skills used in navigation such as, maps, marine charts/tide tables, compass, GPS and altimeter. Also provided, are navigating tips and benchmarks for activity specific travel times. Other Guiders, an orienteering club, or a local search and rescue team can provide classroom instruction and field experience that will help you develop your navigation skills. There are also many books and websites that provide detailed information for learning to navigate.

Practice often with navigation tools. When hiking on familiar trails carry a topographic map and link the terrain around you with its representation on the map. When day paddling, bring a marine chart and pinpoint your exact location on the chart. Take your compass with you when out walking and orient the compass to north. Try geocaching to learn about your GPS. Practice in the field is necessary and will help you develop confidence and ability in your skills.

Experiment... play...have fun with it!

Maps and Nautical Charts

Maps and nautical charts are the basis for all navigation and paint a picture of where you are, where you plan to be, and how you can get there. The most important aspect of navigation is the understanding of how your map represents the terrain or body of water you are exploring. Practice orienting the map or chart with the terrain and other features, and learn to read what the map shows you and identify this on the land. Be sure your maps and charts are up to date!

Types of Maps

There are many types of maps including trail maps, paddling route maps, topographic maps and marine or hydrographic charts. As with all navigation tools, they have different uses, pros and cons. It is a good idea to have a variety of map types, and use them together. For example, when hiking, it is recommended to have both a trail map and a topographic map, or when paddling, you can use a paddle route map with a topographic map or a hydrographic map/marine chart.

Trail Maps & Paddling Route Maps

Recreational maps designed for trails and paddling routes are often very accurate in showing the man made features in a park or area and incorporate topographical information. In the information section of a recreational map there will often be trail/route lengths (distances), elevation changes, and notes about campsites or other stopping points. All of this is useful information for trip planning. Some disadvantages are that recreational maps do not show detailed terrain features, and may not be in a scale suitable for compass navigation.

Topographic Maps

In Canada, topographic maps (sometimes referred to as “tops” or “topos”) are commonly printed in 1:250,000 scale and 1:50,000 scale, and in the USA topographic maps are likely to be in

1:24,000 scale (called a 7 ½ minute). Other map scales are also available, such as 1:16,000, which cover only a small area on the ground in great detail and may not show enough distance to identify landmark features for navigation purposes. If the area where you will be tripping requires 2 or more topographic maps, tape the maps together, cut out the section that you will need and laminate it.

Hydrographic Maps/Marine Charts

Hydrographic maps or marine charts (sometimes called nautical charts) are an essential tool for navigating on water. Marine charts are a topographic representation of what is under the water and should always be used in conjunction with a compass, a current tide chart when travelling in a tidal area, and a marine VHF or WB radio. A marine chart will show:

- Distance, current and depth information
- Landmarks, natural, cultural and man-made features
- The nature of the seabed to help you to avoid water hazards such as rocks, wrecks, obstructions, drop-offs, shoals and reefs
- Ports, commercial shipping lanes, public wharfs, beaches, harbours, marinas, locks, dams and bridges
- Location of navigational aids such as beacons, buoys, lighthouses, and fog signals

Before going out on the water, learn:

- How to use a compass along with a marine chart
- The meanings of the symbols, abbreviations and terms on a marine chart
- How to chart a course
- Positioning methods
- About using the Maritime Buoyage System to gain valuable information for safe water navigation
- How to use a marine VHF radio or WB radio to obtain marine weather forecasts including wind conditions and for emergency communication

Topographic Map Overview

Map Datum

Map datum is a reference (usually found in the lower left corner of a map) that indicates which datum was used in making the map. In Canada, most maps use either North American Datum (NAD) 27 or NAD 83. When using a map with a GPS, the map datum and the GPS datum must match, otherwise your position will not be accurate.

Map Scales

Map scale is the ratio of the distance between two points on a map and the same two points on the ground. For example, on a 1:50,000-scale map, one centimetre on the map represents 50,000 centimetres (0.5km) on the ground.

A small-scale map such as a 1:250,000, shows a small amount of detail and covers a large area on the ground. A large-scale map such as a 1:16,000 shows a large detail for a small area.

Common Map Features (contour lines, colours and legends)

Contour Lines

Contour lines join points on a map that are equal elevation. They allow three-dimensional topography to be represented on a flat surface. Hydrographic maps use contour lines to show the depth of the land beneath the water surface.

Terrain Interpretation using contour lines:

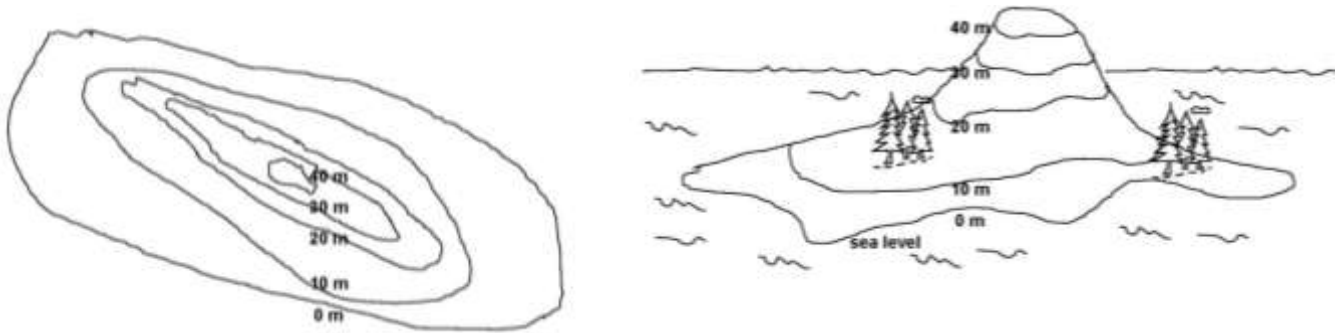
- Summit/high point/peak - Contour “circles” progressively becoming smaller towards a point indicates a summit, a high point or a peak. The point may be marked with a number indicating elevation.
- Saddle/col/pass – An hourglass shape in the contour lines illustrates a low spot between two peaks. Many routes will traverse through these passes.
- Ridgelines & valleys – Ridgelines are illustrated by U or V-shaped contour lines that point away from high points toward lower elevation. Valleys are represented by U or V-shaped contour lines that point away from lower elevation toward a higher point. Since valleys are areas of water drainage, sometimes a stream will be shown at the bottom of the V.
- Flat terrain – Areas showing no contour lines indicate flat terrain.
- Gently sloping terrain – Widely spaced contour lines indicate gentle slopes.
- Steep terrain – Closely spaced contour lines represent steeper terrain. Keep in mind though, that if the contour lines were at 40m (or 100 ft.) intervals, the map would not show a 39.99m impassable cliff that would be an obstacle in the field.

Scan your map to find some of the features listed above, as it will help you to familiarize yourself with a topographic map.

Features can change in the field since the date that the map was originally printed. Roads may have been put in, old trails may have overgrown or new trails may have been created. For example, don't take the first trail on the right indicated on the map because it is possible that since the map was made, additional trails were created. Rather, navigate by using landmarks or terrain features and take the first trail after the drainage channel between the two peaks.

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The illustration on the left shows how the terrain features on a topographic map are represented. The illustration on the right shows terrain features as a three-dimensional figure.



Map Legend

All maps have a legend, located in the margin or on the back of the map, to explain the map's symbols. If you have a black and white copy of a map, colour the map with pencil crayons to distinguish map features. In addition to contour lines, topographic maps use colours and symbols to provide information.

Common Colours used on Topographic Maps:

- Red - indicates major roads
- Orange – indicates gravel/dirt roads
- Black – indicates man-made features including minor roads, trails, buildings, railroads, hydro-dams, etc. Man-made features may be inaccurate on maps since features can change before a map is updated
- Green – indicates forested areas
- Blue – indicates UTM gridlines and other water features including oceans, lakes, rivers, springs, creeks and waterfalls. You can identify which way a river/creek is flowing from the contour lines (downhill - toward lower elevation - is downstream), and whether the river/creek is going into or out of a lake
- Brown – indicates rocky areas, moraines, cliff faces, scree, contour lines, elevation and occasionally UTM gridlines
- White with brown contour lines – indicates areas with little or no vegetation. This can include flood plains, dry grasslands, wet meadows, high alpine (above tree line), rockslides or a gully filled with small shrubs
- White with blue contour lines indicates permanent snowfields. These are also shown as white-blue with normal brown contour lines.

Grid Systems

A grid is an imaginary overlay of the earth with lines running North-South and East-West. In North America, two grid systems are most common: UTM and Latitude/Longitude.

Be familiar with both systems. At some point in time you may need to describe your location to someone else (e.g. search and rescue). Your location and whom you are contacting will

determine which system to use. For example, land search and rescue uses UTM while the Canadian Coast Guard uses Lat/Long.

Universal Transverse Mercator (UTM)

In Canada, 1:50,000 topographic maps are gridded with the UTM system. The UTM system is a grid of north-south and east-west lines at intervals of 1000 metres (1 km).

A sample UTM coordinate looks like this: 11U E. 5467213 N. 0346502 and the next three steps explain how it is determined:

1. To determine the sample UTM coordinate, first, identify the UTM zone number from the lower left-hand corner of the map (i.e. 11U).
2. The numbers 5467213 represent a measurement of east-west position within the zone, in meters. It's called an easting.
3. The numbers 0346502 represent a measurement of north-south position within the zone, in metres. It's called a northing.

The important numbers when working with a 1:50,000 map are the “middle” three digits as underlined in the example above.

- 54 and (0)3 will be indicated only in the corner of the map – be aware that sometimes the zero is left off of the 3, but is part of the coordinate and would show up on a GPS.
- The 13 and 02 at the ends take the coordinates down to meters, and are too detailed to be of use on a 1:50,000, but may be used on maps with a scale of 1:25,000 or 1:16,000, and would be part of a GPS coordinate.
- The blue (or sometimes brown) gridlines on 1:50,000 maps will have numbers that correspond to the first two of the middle three underlined numbers 67 and 46. The third underlined digit, 2 and 5, are the decimal division (by 10) of the grid square. A compass will often have a roamer in the base plate for 1:50,000 maps to help you determine measurements with more precision. See:
www.maptools.com/UsingUTM/UTMgridoverlay.html

To determine UTM coordinates, find the “easting” first by going “in the door” (along the bottom of the map, left to right, from west to east), and then the “northing” by going “up the stairs” (along the side of the map, bottom to top, from south to north).

Latitude and Longitude

Lat/Long coordinates can be expressed in three formats:

- degrees, minutes and seconds (49 degrees 25' 30”),
- degrees and decimal minutes (49 degrees 25.500'), or
- decimal degrees (49.4250 degrees).

As degrees, minutes and seconds is the format most commonly used to mark maps, this format will be described. Degrees and minutes are written on most 1:50,000 maps with one-minute

segments marked along the edge in alternating black and white bars. A degree has 60 minutes in it, and a minute has 60 seconds in it.

- Latitude is read from the equator and is read northward in the Northern hemisphere resulting in a number such as 49 degrees, 25 minutes, 30 seconds North. Latitude lines are parallel and the “size” is always the same.
- Longitude on the map is read starting at the prime meridian in Europe – that means in North America the numbers increase as you move west. An example would be 119 degrees, 20 minutes, 15 seconds West. A longitude segment is like a wedge of orange – narrow at the top and bottom and widest in the middle of the earth at the equator – so the “size” can be different.

When working out a point on a map, begin with Latitude (south to north) and then Longitude (east to west). Note this is opposite to UTM.

Using a GPS receiver, you can convert latitude and longitude coordinates to another format by adjusting the format display on your GPS.

Tide Tables

For water navigation, it is important to use a tide table in conjunction with a marine map. A prominent above water landmark may be hidden completely during high tide or a storm surge, and may become a concealed hazard just below the surface. Freshwater levels are often affected by the season, with the exception of storm surges, dam releases or weather causing river flooding. Tides are predictable and cyclic with 2 high tides and 2 low tides daily, and a tide chart can be viewed months in advance.

Tide tables and water levels can also have applications with trail maps. During spring run-off, some trails end up below the flood stage level of a creek or lake. High rainfall, the release of water from an upstream dam, or a hot day in the mountains causing extreme snowmelt from a river’s watershed might also affect some trails; so keep this in mind when hiking near bodies of water. High tides can make trails along beaches impassable, while low tides may allow for a day of beach exploration. When hiking along beach trails, tide tables need to be used together with a topographic map of the area. Check the map for impassable headlands or for the height that tides need to be below in order to safely hike through an area. Check the tide table for time of low tide. (You may need to add an hour to the listed time for daylight savings time). When determining your start time, allow hiking time prior to low tide in addition to after low tide in order to avoid being trapped or cut-off by the incoming tide.

Fisheries and Oceans Canada – link to tides, currents and water levels:

<http://www.lau.chs-shc.gc.ca/english/Canada.shtml>

The Compass

A compass is an important navigational tool to be used in conjunction with your map or chart. It is primarily used to determine direction but also doubles as protractor and ruler. This section provides information about the parts of a compass, declination, how to use a compass and take a back bearing, how to use a map and compass together, and how to determine and follow a

bearing and the importance of triangulation.

Parts of a compass

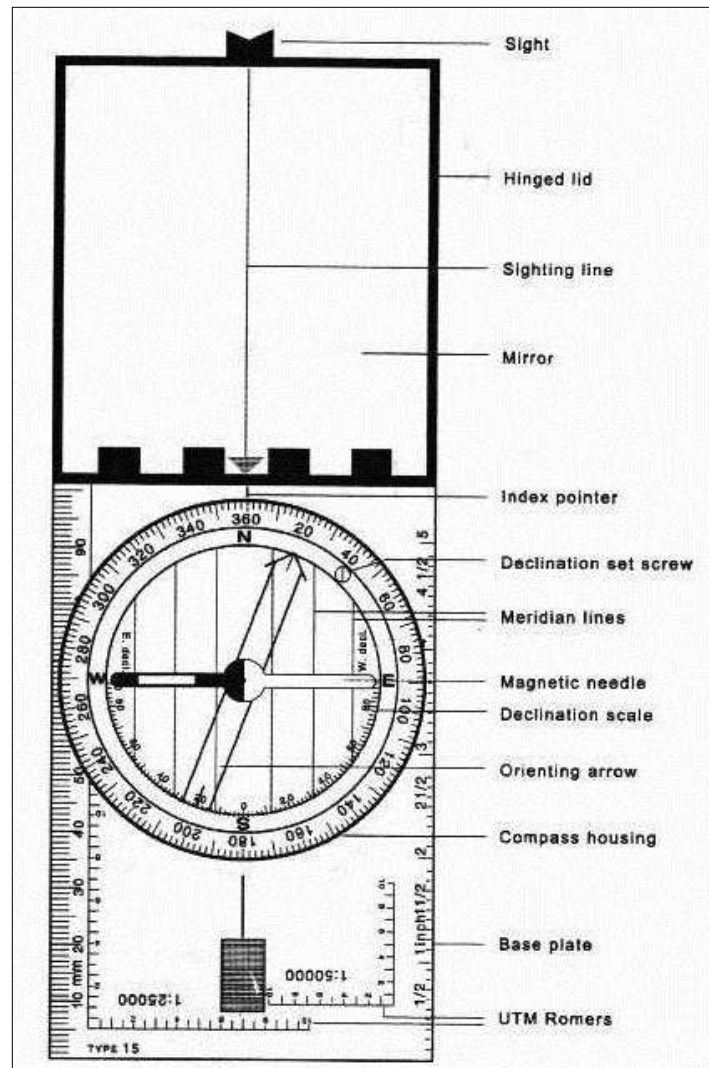
North, East, South, West are the four main compass points and can be further broken down by name (i.e. northeast, west southwest). We navigate by breaking the compass into 360 degrees (like a circle).

- North is 0 (or 360) degrees
- East is 90 degrees
- South is 180 degrees
- West is 270 degrees

The compass housing will list the degree increments around the outside.

A good compass will have

- a clear base plate: on the plate there may be a direction of travel arrow, rulers, a magnifier and a UTM romer.
- a rotating compass housing with degrees indicated around the outside (0 to 360 going clockwise)
- inside the housing are the following features:
 - a magnetic needle (which always points to magnetic north)
 - an orienting arrow highlighted in the base.
 - parallel meridian (or orienting) lines located below the needle.
- some compasses will have a sighting mirror in place of a direction of travel arrow (the figure to right shows this type)
- some compasses have a magnetic declination adjustment.



From: PEP BC Ground Search and Rescue Manual

Aspects to consider before purchasing a compass:

- Who will be using it - an inexperienced camper or a trip leader?
- Can you use it to take a back bearing?

Magnetic North – True North – Grid North

Magnetic north is the direction your compass needle will always point toward. True north (TN) is the actual geographic North Pole. Grid north is the north associated with the human-imposed UTM grid; it is close to true north, but since a grid is a square, a flat grid does not fit well on a round surface (the earth), therefore, grid north readings are often slightly off.

Declination

Magnetic declination is the difference between true north and magnetic north. This difference can vary across Canada from 16 degrees west on the southeast coast to zero degrees in the western great lakes to 21 degrees east on the southwest coast. Since the magnetic pole is situated in northern Canada, the further north you travel, the greater the offset between poles, and the harder it becomes to use your compass with a map. Having a compass that allows you to adjust for local declination is a nice option when you are navigating in areas with any significant declination amount. An alternative is to use a thin piece of red tape to create the adjusted orienting arrow, sometimes nicknamed the “cheater pizza pie.” If your compass is set for the correct declination, then there are no other adjustments to make and you use it as described below.

Declination information is provided on the map margin, and will include the difference from True north to Grid north, and the difference from Grid north to Magnetic north. When using a map with a compass, the declination between grid north and magnetic north is the one to use.

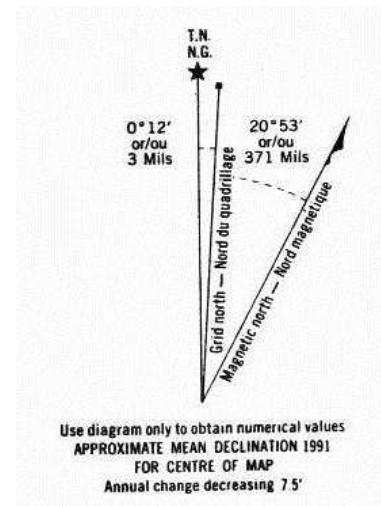
Magnetic declination changes annually, so determine the current declination for your particular area. A map will indicate the annual change in declination, so the approximate declination from the year since the map was printed can be calculated.

Magnetic declination calculator: <http://geomag.nrcan.gc.ca/apps/mdcal-eng.php>

Using a Compass

Orientation and Direction

- Hold the compass flat in front of you with the “direction of travel arrow” level and facing away from you (lined up with your feet; pointing in the same direction your feet will be travelling).
- To face magnetic north, turn the compass housing until north is in line with the direction of travel arrow or site notch/line.
- Turn your whole body with the compass until the magnetic “red” arrow lines up inside the “shed,” also known as the orienting arrow in the base plate of the compass. This is called putting “red in the shed.”
- Be aware that other metal around you can affect the magnetic needle.



Bearing & Back Bearing

A bearing is the direction from one point to another point using degrees. To take a bearing on a landmark, hold your compass flat and level with the direction of travel arrow, or the sighting notch pointing in the same direction as your feet. Face toward the landmark with your feet and body and aim the sight or direction of travel arrow at the point. Rotate the compass housing until the red magnetic arrow lines up with the orienting arrow in the base plate (red in the shed). Read the number (in degrees) that lines up with the direction of travel arrow at the sighting end of the compass.

In order to know where you're going you have to know where you've been. A back bearing is the direction from an object/landmark/location back to you using degrees. It will be 180 degrees (half a circle of 360 degrees) apart from your bearing. If your bearing is less than 180°, then you can find the back bearing by adding 180° to your original bearing. For example, if the bearing to a mountain peak is 10 degrees, the back bearing from the mountain to you is $(10^{\circ}+180^{\circ})$ 190 degrees. If your bearing is greater than 180°, then you can determine the back bearing by subtracting 180° from the original bearing. For example, if your bearing on the end of a prominent island is 260 degrees, then the back bearing from the end of the island to you is $(260^{\circ}-180^{\circ})$ 80 degrees.

Following a Bearing

To follow a bearing, sight on the objective to obtain the bearing you want, ensure that the bearing is set with the direction of travel line (or index pointer) of your compass and put away your compass as you move toward the visible objective. If the objective will not always be visible, then identify an intermediate object along the same bearing. Again, put the compass down, and move toward the object chosen as an intermediate marker. Sight from this marker to another visible marker and continue to move toward your objective in stages. If you become lost, return to the point where you last knew your location. If you do not have an object/landmark, send a person out ahead and tell them to move left or right. Use this person as your landmark/object to take your bearing.

It can be challenging to follow a bearing around an obstacle. When you can see an easily identifiable object on the bearing and on the other side of the obstacle, memorize this object, walk around the obstacle until you find the object, then start there with the next bearing sighting. When you cannot find a landmark/object to use, you have to "grid" around the obstacle. Turn 90 degrees to the bearing and pace (track your distance) far enough to be past the obstacle, turn the 90 back on to the original bearing and move far enough to be past the obstacle. Turn 90 degrees to the other side of the bearing (or 180 degrees from the first grid leg) and repeat the exact distance of the first leg by pacing again. One more turn of 90 degrees will be back on the original bearing line. Proper sighting technique should be used for each leg, and the distance of the outbound and return legs of the grid must be equal.

Map & Compass – Using Them Together

Practice orienting a map with the terrain by using the compass, then cross-checking that the terrain represented on the topographic map matches the environment. Spin your compass housing to make North (0 degrees) the direction of travel, line this up with the top of your map. The meridian/orienting lines should be parallel with the UTM grid lines on the map. This is the only time that the magnetic red needle is used while working on a map. Any other time you navigate with a map and compass, the meridian lines are important, but not the magnetic red arrow. It is important to be clear about bearings (from a person to an object) and back bearings (from object to person) as well as to ensure that the compass is oriented correctly for north-south in relation to the map - with the direction of travel/orienting arrow always pointing northward on the map. A mistake with the bearing or compass orientation could result in navigation being off by 180 degrees: heading east instead of west. Always orient your map when you know where you are such as, at the trailhead.

When using a map, a compass and the environment together for advanced navigation, adjusting the magnetic declination on your compass is very important. The map lines are set for grid north, and the compass meridian lines will only match this if the compass has been set with the correct magnetic declination. In areas where the declination is minimal or at times where navigation is not required to be exact, the magnetic declination can be ignored. Be very conscious of the choice not to use declination when navigating.

Determining a Bearing on a Map

You would like to determine a bearing to hike from your lakeside campsite (point A) to the top of the hill behind the camp (point B). Using the long side of the compass, line up the direction of travel end with point B and the other end of the side with point A. The magnetic arrow is not relevant in this case because you are measuring an angle that is fixed. Ensure that north inside the compass housing is roughly toward the north end of the map, then turn the compass housing until the meridian lines are parallel with the map grid lines. Adjust the compass housing for declination (add degrees if the declination is to the west; subtract if the declination is to the east). The bearing you would need to take is then read from the direction of travel line. To get back to camp from the hilltop (point B) you will need to use the back bearing of the bearing you hiked out on.

Triangulation

Triangulation is using two bearings in conjunction with the map to determine your location. To use triangulation, you must be able to identify 2 precise points (landmarks/objects) both in the environment and on the map. A sharp peak, a bridge, the mouth of a river and the end of a small island are examples of points you can use. The two landmarks should be between 30 and 150 degrees apart to use triangulation accurately. Take a bearing on each of the 2 objects. On the map, mark the 2 points, and then work on one point at a time. Set one bearing on the compass at the direction of travel, put the edge of the compass on the known point with the direction of travel arrow at the same end, and slowly move the whole compass (not the compass housing this time) until the meridian lines are parallel to the grid lines. Draw a line from

the point along the bearing (using the compass edge). Repeat this with the other point. Where the two lines cross should be your location. Effective triangulation in the field can be a lifesaver if you are lost!

The REI website has several exceptional video teaching clips for using a compass and a compass with a map. <http://www.rei.com/expertadvice/articles/navigation+basics.html>. This link has both written information and video clips, and is a great resource for navigation.

GPS (Global Positioning System)

A Global Positioning System (GPS) receiver is a great tool, but you must first know how to navigate with a map and compass. As with all electronic devices, GPS receivers rely on batteries and an internal computer and memory. Batteries can die, receivers can be damaged by water or by an impact and a GPS receiver will not pick up satellite signals deep in the forest, which is usually where one would get lost. People have been known to follow their GPS on the “shortest route” even if this route is inappropriate at the time (perhaps because of weather conditions). A GPS electronic brain is not a substitute for navigational skills and common sense. As with all the navigation tools, a GPS is a learned device – it takes practice!

Features of different GPS receivers vary, but they all function by locking on a minimum of three or four satellites and triangulating to give you an elevation and location. GPS receivers can give position in latitude/longitude, UTM, or one of the many other grid systems that are used throughout the world. When using a GPS together with a topographic/hydrographic map, ensure the correct map datum is set in the GPS to correspond with the map you are using. For example, geocaching is done in WGS 84, which is similar to NAD 83, but NAD 27 can be off by a couple 100 meters.

Elevation can also be displayed on a GPS, but this can have variations in accuracy. If the elevation is being determined from the satellites, recognize that satellites are above you reading down, and it can be difficult to determine an elevation from above even if you have locked on several satellites. If a GPS determines an elevation by comparing a point on the ground with a map in its memory, this should be more accurate. If a cell phone acts like a GPS, be aware that it will no longer work when out of range of cell towers. A true GPS receiver uses satellites.

Some GPS receivers include maps in their programming, or maps and routes can be downloaded into the device. A GPS can mark a route as it has travels the route, leaving a trail of electronic crumbs on the screen. This route can then be followed out. It is also possible to program the coordinates of a destination; for example, a campsite. The GPS will then show the distance and direction to reach your destination. Bear in mind that this will be a straight line route from the GPS to the destination point; it will not take into account that the trail meanders to ascend the shoulder of a mountain, or the tides/currents you will have to negotiate during a paddling crossing.

Altimeter

An altimeter is an advanced navigational tool that has the greatest application when traveling in the mountains. It can be used to find your point on a trail without any other landmarks being visible. If you have an accurate map and altimeter, you will know where you are on a long uphill or downhill trail based on elevation.

The biggest challenge with altimeters is that their accuracy can be affected by barometric (weather) changes. Overnight while sleeping, a change in barometric pressure can cause the elevation reading to change on your altimeter even though you've remained in the same place. To ensure better precision, reset your altimeter often when at a known height; for example, your campsite, a predominate pass, or the top of a mountain.

Navigating Tips

Put all your navigation skills together to create a route for a group activity/adventure. Using variables such as the group's goals, needs and abilities, you can research and explore options for your activity. Acquire relevant maps (recreational/topographic), read about the route in a guidebook, and find some recent route descriptions from an online source. Select the best path to achieve your objective. Mind map: think about the route to take, the conditions that may affect your day (temperature, winds, second day of a trip) and how far you want to travel. Look at options; are there other routes or campsites available to use as a contingency plan? If you plan for the unexpected, and find yourself having to adapt during your day, you will have another route to follow and succeed.

Your home contact person (HCP) is your lifeline and back-up plan. The HCP should have a good understanding of what you are planning to do and how you plan to do it, including alternative plans. If you are using a SPOT locator beacon (see Adventure Camping Gear) to check in, the HCP should have an understanding of what the SPOT can tell them – your position, and a SPOT's limitations – it is only a one-way communication device. If you have UTM co-ordinates listed as part of your route plan, your home contact must know what the coordinates are. Ensure your HCP has the information and training she needs to assist you.

Landmarks

Landmarks are distinctive features that you can find in your area as well as on the map. Examples include peaks, lakes while on land, the end of a small island or the mouth of a creek. Matching your map with landmarks is one of the foundations to all map reading.

Handrails

Handrails are linear features leading you in the direction you wish to go. Identify a handrail on the map and in the field and then follow it towards your objective. Trails and roads are the most obvious handrails but you can follow fences, streams, edges of fields and other long narrow features just as easily as long as they are both on the map and in the field.

A good example would be a creek: a good way to get to your destination is to first get to the

creek then follow the creek to your to help you find your destination. Following a handrail takes much less concentration than following a compass bearing. Also since a handrail is illustrated on a map and a compass bearing isn't following a handrail makes it much easier to keep track of where you are. Using the water's edge as a handrail while navigating on water can be more difficult as every bay can look similar, and some portages can be hard to locate.

Aiming Off

Aiming off is a technique to ensure you find your final destination, once you have hit your handrail. If you walk out onto a road, which way do you turn to find the parking lot on this road? When you cross a lake, is your campsite to the left or right along the shoreline? When trying to hit a handrail, plan to intentionally veer a few degrees to one side of your objective, so that when you hit the handrail (the road or opposite shoreline), you will be confident in which direction you need to turn. If you aim off to the right slightly, when you hit your handrail, you would turn left to reach your destination.

Estimating Distance

Estimating the distance between two points can be done using the following methods:

- Measure the straight-line distance with the ruler on your compass, and compare with the scale chart on the bottom of the map.
- Use the string on your compass to measure the direct line, or curve it along a known trail: Start fingers at one spot, lay the string on the map/trail, mark the end point by pinching with your fingers. Pull the string straight and measure against the scale chart.
- A quick way to estimate distance is to count the UTM 1 km gridlines, although this will only be approximate. Always count both the gridline across and the gridline up as one each; never count a gridline diagonally as one. This can work very well for cross-country travel without trails (alpine or grassland), and when on the water. Meandering trails with numerous switchbacks will be more difficult to estimate distance for using this method. Although it may be easy to estimate distance over water, factors such as tides, currents, waves and wind will greatly affect your travel time.

Benchmarks for Travel Times (Activity Specific)

Hiking

For hiking with multi-day packs, a benchmark when planning your hike is 2– 3 km of travel per hour. Add an hour for each 300m of elevation gain or loss. With daypacks a group might hike at 3-4 km per hour, with the same elevation adjustment. A very strong fit group may be up to 5 km per hour. The group and the weather can affect travel times.

Paddling

For canoeing or kayaking with beginner groups plan on 1-2 km per hour. Intermediate groups can move at 3-5 km per hour. Portaging with an intermediate group takes about 1 km per hour on easy terrain with each person doing two trips.

Biking

For bike touring on paved roads estimate 5-10 km per hour for beginners and 10-15 km per hour for intermediate groups. When biking on softer gravel and dirt paths you may travel less than 10 km per hour. With daypacks/panniers, 50 km in a day is a reasonable distance; this distance will be lower when riding with bikes fully loaded for camping.

Cross Country Skiing

On day trips with a light daypack, beginner groups can travel 5-10 km per day over rolling terrain with good skiing conditions. Intermediate groups can travel in the 10-20 km per day range. If you are breaking trail, snow depth is a major factor in estimating distance.

Evacuation

In an evacuation scenario, estimate that it takes six healthy people an hour to travel 500-metres carrying one person.

Module 5 – Adventure Camping Gear

Good equipment is essential for the safety and success of an adventure trip. In preparing for a trip, an important skill is being able to recognize the difference between good quality gear and unsuitable equipment. An important responsibility of a leader is ensuring that your group is using appropriate equipment in good repair.

Adventure camping is a perfect example of when less is more. This means bringing key equipment for rain, cold, or heat no matter the season, while keeping your pack small and light. Adventure camping is not about buying the most expensive gear; it's about choosing affordable gear that meets your needs. Being dry and comfortable are number one priorities. Keeping a log of how well your gear worked and notes on repairs required should be part of your daily trip log. See sample in Trip Design and Structure.

Take what you need and need what you take!

The purpose of this module is to provide an overview of adventure camping gear. It includes emergency signalling, auditory communication and safety devices. These are an important part of both gear and risk management. Personal and group gear lists in this module are also found on the Camping and Outdoors section on Member Zone.

Personal Emergency Gear – The 10 Essentials

Each person should carry their own ten essentials whenever they are on an adventurous day-trip or multi-day expedition. These prepare them for an unexpected emergency or to spend an unexpected night or more alone in the wilderness.

1. Navigation (map and compass)
2. Signalling device (whistle and mirror/small air horn)
3. Sun protection (sunglasses, sunscreen and lip balm)
4. Illumination (headlamp or flashlight with extra batteries and bulb)
5. Fire making kit (matches in waterproof container including strike paper from box, fire starter/fuel stick, lighter, candle)
6. Knife (or multi-tool)
7. Nutrition and hydration (extra food gels/power bars or similar, extra water and a way of treating water)
8. Insulation (extra clothing)
9. Personal first aid kit (including a blister kit)
10. Emergency shelter (orange garbage bag or emergency blanket or similar)

Personal Gear (Clothing, Boots, Backpacks, Sleeping Bags and Sleeping Pads)

Clothing

When selecting gear for adventure camping, your clothing should provide you with functions of breathability, wicking, rapid drying, insulation, durability, wind proofing and waterproofing. Comfort depends upon the appropriate balance between these functions. Keep in mind that what works for you to keep you warm and dry may not work for someone else.

Never wear jeans or other cotton pants while adventure camping. Cotton quickly gets soaked and takes too long to dry; it absorbs and retains water. Cotton loses 100 percent of its insulation when wet either from rain or sweat. Wet clothes wick heat away from the skin; you are better off going with no clothing in cold rain than wearing cotton. Cotton will not keep you warm if it gets wet and can be a major contributing factor in hypothermia. Even in the summer, weather can be chilling and it is essential that you have appropriate clothing.

Layering

Recommended materials for base layers include lightweight polyester, polypropylene or similar synthetics, and traditional materials such as silk and wool. The best adventure camping clothing is made from lightweight, synthetic, wicking fabric. There are also some excellent merino wool fabrics as an alternative to synthetics that don't absorb body odors. Clothing should consist of layers of several different types of fabrics. The purpose of layering is to be able to produce a "personal climate" that keeps you comfortable, able to maintain a comfortable body temperature without excessive sweating, and be able to remove or add layers to match your activity level and the weather conditions.

Base Layer (wicking)

A base layer is in direct contact with your skin; its primary role is to keep you dry and comfortable, and help you maintain a constant body temperature. You can choose long or short underwear sets, or, for cold climates, thermal underwear. Choose the appropriate types of underwear to match your activity and temperature.

Clothing Tips

- Don't let yourself overheat when outdoors. Peel off layers as needed to regulate your temperature when active, and add layers when not generating enough heat.
- Err on the side of having too many layers. It's better to be prepared and flexible, than to be underdressed and exposed to cold-related risks.
- If you're active and then plan to be stationary for a long time, consider bringing an extra inner layer and changing into this new layer after the activity. It's tough to change in cold temperatures but the dry clothes will increase your comfort level.
- Don't forget to stay hydrated when outdoors. The effects of dehydration will counteract the effectiveness of your layering system and your body's ability to keep you warm.
- Some people might find snow pants too hot to run around in, while others need the warmth of thick snow pants in the winter; ultimately, everyone is different, so adjust your gear list based on your personal needs and preferences, but be prepared. Polar fleece and wool can be your best friends!

Mid Layer (insulating)

The mid layer should be a looser fit than the inner layer, but not baggy. A middle layer provides additional insulation and continues to transport moisture away from the base layer. Mid layer materials range significantly, but some common ones are fleece, polyester, down, and wool.

- **Outer Layer (wind shell)**

The outer layer of your outdoor clothing seals out weather and protects you from wet, windy, and extreme elements. A looser fit to go easily over the other layers will compliment heat retention by contributing addition air space that will trap warm air. Your outer layer will depend on where you are and what you are doing.

It is not always necessary to wear three layers. Generally, one should start with a non-cotton base layer, especially when canoeing, kayaking or hiking in the mountains where wind, weather and water can rob you of body heat. Sometimes this layer may be all you need in highly active situations and/or hot weather. Mid layers provide the most flexibility, letting you adapt to most temperatures and activity levels. If there's no wind or rain, you might not need an outer layer at that particular moment. Keep in mind that the weather can change rapidly and frequently, so it's best to have an outer shell you can put on when needed. This is especially true on multi-day trips.

Head, Hands and Feet

You may have the best layering system in the world however, if you don't keep your extremities protected, you will be uncomfortable, and you could still be cold. It is important to match hats/toques, gloves/mitts, socks and footwear to the climate and activity level, but also to your own personal comfort zone. It is also important for hats and gloves/mitts to be able to block the wind, so choose materials that are effective wind blocks.

Care of breathable water resistant fabrics

Always read the label for care instructions for DWR (durable water resistant) fabrics such as GORE-TEX®, Entrant® and eVENT®. Generally, the care of these fabrics involves:

- Cleaning with a special detergent
- Using a renewal sprays such as, ReviveX® Spray-On Water Repellent because the DWR coating wears out with washing

Tips for Staying Warm

- Dress in layers – when you get hot, take something off; when you get cold, put something on
- Stay as dry as possible – remove wet clothing and change into dry clothing as soon as possible
- Change clothes completely for sleeping
- Bring practical clothing

If you're cold, you can:

- Visit the outhouse (you use up valuable body heat to warm a full bladder even at night)
- Put on a toque and gloves
- Change your socks
- Eat something
- Have a warm drink
- Walk/jump around – get your large muscle groups moving
- Get in your sleeping bag

- Washing on the gentle cycle in a washing machine, spraying with a renewal spray and drying in the dryer
- Ironing (but not on a hot setting) is recommended, as this will revive the DWR coating.

Boots and Blisters

The most important piece of equipment for hiking is boots. When choosing a pair of boots, ensure the boots fit well and look at the durability of the materials with which the boots are made. The most important factor when choosing a pair of boots is how well they fit.

- Pull out the insole of the boot and stand on it; the insole should give slightly under the arch without flattening out
- Try boots on a slope/ramp; climb up on the ramp, jump around and walk up and down the ramp several times. Ensure the boots aren't lifting up and your toes aren't jamming.
- Look at how the boots have been constructed:
 - The fewer the seams the better
 - Glue is better than stitching because water can seep in at the stitches
 - Boot sturdiness is determined by the upper and how many layers are in the midsole
 - Vibram soles are very good quality soles
 - Look at boot depth tread and how far apart the treads are (if treads are narrow and close together, they won't work well in mud; wider, deeper treads have better grip)
- Different types of leather have different waterproofing requirements. Boots should be clean and dry before waterproofing. Use generous amounts of waterproofing and apply more than one coat. Work the waterproofing into the leather. Heat your boots with a hair dryer; do not use a stove as this can cause excessive drying and ruin the boots.
- Break boots in; the heavier the boots, the more mileage it will take to break them in. Walking with a weighted pack will help break your boots in.
- One pound on your feet is equivalent to five pounds on your back, so if you don't need additional gear, don't take it!

Life cycle of a blister

Encourage participants to stop occasionally and check feet for blisters; put moleskin on hot spots or use Glide (anti-chaffing balm) before blisters occur

- Put tincture of benzoin around edges of blister(s) before you put on moleskin. Compeed® (a blister care gel-like substance) works extremely well. The only drawback is if it's extremely hot (as in desert-like climates), the Compeed® adhesive will get into your sock and it is very difficult to remove.
- If you have a blister, make a donut with a piece of moleskin, and then put another piece of moleskin on top of that.

An open blister is an open wound, and with all open wounds, there is a risk of infection. Wash open blisters with soap and water. Spenco® 2nd Skin® Blister Pads and Compeed® can be used on broken blisters.

Backpacks

The size of your backpack is important for your adventure trip. For a one-week trip, a 65-90 L pack is recommended; for an overnight or weekend trip, a 45-60 L pack should be adequate. An

internal frame backpack has metal stays and the center of gravity is lower. The pack rests right up against your body so it will be hotter than an external frame backpack that has a metal frame between your body and the pack.

- Ensure your backpack has a hip belt and hip stabilization straps, shoulder stabilization straps as well as regular shoulder straps and a sternum (chest) strap.
- Deep, outside pockets where you can put fuel or water bottles are very useful.

Sizing a backpack

A pack has to be the right size to begin with and then needs to be adjusted to your specific body. Here are the basic steps:

- To get the right size, measure your torso from the pointy vertebra at the back of your neck to the small of your back. This determines whether you need a small, medium or long pack.
- Centre the waist belt right over the middle of the iliac crest (the pointy part of the hips)
- Adjust the shoulder strap so they are at a 45-degree angle.

Customizing your internal frame backpack

The metal stays in an internal frame backpack can be molded to fit your body:

- Remove the metal stays from your internal frame backpack and form one of the stays to follow the curve of your back.
- Do not form the top of the metal stay against the curve of your neck, as it should stay straight at the top end.
- Mould the second metal stay from the first one so they will be symmetrical

Putting your backpack on:

- Lift your pack to one thigh, legs apart, one knee bent
- From your thigh, lift pack to your back
- Attach waist belt first and ensure it's snug
- Tighten shoulder straps
- Then tighten the sternum strap
- Tighten hip stabilization and shoulder stabilization straps last. These two straps can be readjusted during the day; they pull the pack into the body
- To remove your backpack, loosen the shoulder straps, then undo the sternum strap and the waist belt
- If you need to be balanced, pull the pack in tight.
- If you're crossing a slippery log or fording a stream, for safety, undo the waist belt and sternum strap for easy emergency removal. This is an industry standard.

Packing a Backpack

Pack heavier stuff higher in your pack and closer to your body, so that it doesn't pull you back or off balance while hiking. Place lighter items like your sleeping bag at the bottom of your pack.

- Essential gear such as the 10 essentials, snacks, lunch, rain gear, toilet paper, camera, trowel and binoculars, should be easily accessible or placed in outside pockets.

- Have as few gear items as possible hanging on the outside of your pack as these items can become caught on branches or fall off.
- Gear that you will not need to access during travel time between campsites should be placed in the black hole (not easily accessible) area of the pack - food, tent, stove, etc.
- Use compression sacks for clothing, sleeping bags and tents to increase space in pack.
- Distribute heavier gear between group members. For example, one participant can carry the tent, while another carries the fly and the tent poles. One participant can carry the stove, while another carries a pot set and another carries the fuel. Group food should be distributed to all participants.
- At your pre-trip planning meeting, pack gear together with the girls. Demonstrate how to pack and emphasize the value of packing gear in the same place every time
- Prior to your trip, be sure to do several practice hikes with your fully loaded backpack. This will help you check for any pressure points, determine needed padding and gauge if you will be comfortable on your longer trek with that much weight.

Large, heavy duty garbage bags are handy for multiple uses including night pack storage, as pack-liners, emergency shelters, pack over-bags in a rain, emergency rain-coats, ground-sheets, or sit-upons.

Sleeping Bags

Consider whether your existing sleeping bag might be too large or bulky for adventure camping. There are smaller sleeping bags that are shorter and have hoods that are specifically designed for girls and women. Check the weather conditions you are likely to encounter on your trip and check the temperature rating on your bag. It is a good idea to ensure that the rating is lower than the expected weather. While it is not necessary to purchase a sleeping bag for each type of adventure trip, you might want to borrow a suitable sleeping bag if yours won't be adequate for the adventure trip you are planning.

Down vs. Fiber	
<i>Down</i>	<i>Fiber</i>
Good <ul style="list-style-type: none"> • Light • Compressible • Warm • A good quality down is durable and lasting 	Good <ul style="list-style-type: none"> • Warm when wet • Cost
Bad <ul style="list-style-type: none"> • Doesn't work well if wet • Allergies • Cost 	Bad <ul style="list-style-type: none"> • Heavier • Bulkier • Isn't as durable (breaks down after repeated stuffing)

Sleeping Pads

Sleeping pads insulate your body from the cold ground and provide cushioning when sleeping on hard surfaces. There are a few different kinds of sleeping pads, each with pros and cons.

<i>Air Pad</i>	<i>Foam Pad (dense, closed air cells)</i>	<i>Self-inflating Pad</i>
<p>Good</p> <ul style="list-style-type: none"> • Lightweight • Comfortable • More affordable • Insulated models can be used in all seasons 	<p>Good</p> <ul style="list-style-type: none"> • Lightweight • Durable • Inexpensive • Excellent insulator • Will not absorb water 	<p>Good</p> <ul style="list-style-type: none"> • Lightweight • Compact • Comfortable • Firmness is adjustable • Excellent insulator
<p>Bad</p> <ul style="list-style-type: none"> • Can puncture • Heavier than simple foam pads • Non-insulated models provide poor insulation 	<p>Bad</p> <ul style="list-style-type: none"> • Less comfortable • Bulkier 	<p>Bad</p> <ul style="list-style-type: none"> • Can puncture • More expensive • Heavier than simple foam pads

Tents

Lightweight three-season backpacking tents are the most popular choice for adventure activities. Most tents are A-framed or dome-shaped and have a separate fly to keep the moisture off.

- Practice setting up your tent prior to your trip and ensure that the poles and zippers are in good working condition and that you have enough pegs.
- Seam-seal tent seams and waterproof the tent fabric and allow to dry prior to your trip.
- If using two-person tents, have one participant carry the fly and poles and another carry the tent. If using three-person tents, have one participant carry the fly, another carry the poles and another carry the tent.
- Use a compression stuff sack for packing the tent, so that participants can easily and quickly stuff tents, helping breaking camp quicker and creating more space in participants' packs.

Equipment Care and Repair

Equipment care and repair are directly related to equipment performance and consequently to participant safety, so being able to repair gear in the field is an important outdoor leadership skill. Duct tape is good for fixing nearly anything. You can bring a roll of duct tape or wrap a length of duct tape around your water bottle or trekking pole. Carry spare buckles for your backpack or use a non-essential buckle from elsewhere on your pack. Carry extra webbing for a

replacement strap. A *Speedy Stitcher* is a handy tool to sew pack fabric. Fishing line is stronger and has a higher load capacity than thread. Reinforce any stitching with duct tape. A few key items can make all the difference on a trip. Make a habit of always having these items with you. Keep in mind that a repair kit should vary with the type and length of trip, the type of equipment and the remoteness of your adventure trip. See repair kit list for other suggested items to bring.

Gear Logs

Keep a gear log along with your daily trip log. (See sample in Trip Design and Structure). At the end of each adventure trip, make a note of what you did and didn't use, then alter your gear list for next time (you will always need to bring your 10 Essentials, raingear and emergency equipment with you). Record what worked and what didn't work, how much fuel you used and what you wished you had taken with you. Take note of temperatures and how warm/cold you were, especially while sleeping.

If you are using 'communal' gear that belongs to Girl Guides, make note of any issues such as items needing repair or pieces missing so that the next group/Unit that uses it is advised.

Stoves

Choose a stove that is easy to light, ideally one with an auto-ignite. Always bring a backup stove. Bring two stoves for a group size of 6-8 (plus a backup stove). Test your stove at home before leaving for camp. Always follow the directions that come with the stove and only use the fuel that is specified for that stove. All stoves use different amounts of fuel; it's better to bring too much fuel than not enough. Keep a log of how much fuel you used at camp to help plan for your next camp. Never refill fuel bottles in the kitchen area.

There are two types of lightweight camping stove systems: canister and liquid fuel. A canister stove system is the easiest to use. This system involves attaching the stove to a pre-pressurized threaded fuel canister. A liquid fuel stove system performs best in cold temperatures. This system involves a separate burner and a separate refillable fuel reservoir that needs to be manually pressurized. Below is a list of advantages and disadvantages for each type of stove system as well as a few brand examples:

Canister Stove Systems	Liquid Fuel Stove Systems
<p>Advantages:</p> <ul style="list-style-type: none"> ● Easy to light (many models come with an auto ignite button) ● No need to prime ● Requires almost no maintenance ● More compact and lightweight than liquid fuel stoves ● The canister self-seals when the stove is detached, eliminating the possibility of fuel spills ● Better flame control 	<p>Advantages:</p> <ul style="list-style-type: none"> ● Environmentally friendlier (refueling one fuel bottle is better than having to recycle each canister once it's empty) ● Performs better than canister stove in cold weather ● Can be used with an Outback Oven ● Many have the ability to burn more than one type of fuel ● Able to take only the amount of fuel you will need ● Stable base able to hold larger cookware
<p>Disadvantages:</p> <ul style="list-style-type: none"> ● Cold weather performance is not as good as liquid fueled stoves ● Not supposed to be used with an Outback Oven ● Not as environmentally friendly 	<p>Disadvantages:</p> <ul style="list-style-type: none"> ● Requires pumping and priming ● Requires regular cleaning and maintenance ● A little heavier and bulkier than canister stoves ● More expensive than canister stoves ● Possibility of fuel spills
<p>Examples of Canister Stoves:</p> <ul style="list-style-type: none"> ● Jetboil Flash Cooking System ● MSR PocketRocket Stove ● MSR Reactor LPG Stove System ● Primus Classic Trail LPG Stove System ● Snow Peak GigaPower Stainless Steel Stove 	<p>Examples of Liquid Fuel Stoves:</p> <ul style="list-style-type: none"> ● MSR DragonFly Stove ● MSR WhisperLite Stove ● Primus Gravity MF II Stove ● Primus Himalaya OmniFuel Stove

Equipment Lists

Individual Gear – Adventure Camping

This is an example of the gear an individual would need for an adventure camping trip of 2-5 days. It lists the clothing and personal gear each individual participant should bring. The list will need to be adjusted depending on the length of the trip, the season and the variations in weather you are likely to encounter.

Clothing

- Footwear – on the trail (shoes/boots or water shoes)
- Footwear – in camp (sneakers or sport sandals)
- Warm weather wear (2 T-shirts, 2 shorts/zip-off pants)
- Sleepwear
- 2-3 pairs underwear & bra(s)
- 2 pairs of socks
- Rain gear
- Cool wear (long sleeved shirt, long pants, sweater/fleece)
- Swimwear
- Sun hat with brim
- Bandanna
- Sunglasses

For cold weather add:

- Toque
- Gloves/mitts
- Extra fleece
- Wind jacket and pants
- Long underwear

Toiletries

- Towel
- Biodegradable soap
- Toilet paper, wet wipes, bag for used toilet paper, hand sanitizer
- Toiletries: toothbrush, toothpaste, deodorant, brush/comb, hair ties
- Feminine products
- Vitamins/personal medication(s)
- Prescription glasses/contacts
- Eyeglasses cord and case
- Insect repellent
- Ear plugs (optional)
- Body Glide anti-chafe balm

Other

- Personal food/snacks
- Camp dishes in mesh bag with carabineer clip (plate/bowl/cup, cutlery)
- Water bottle(s)/water bladder
- Headlamp/flashlight

Optional:

- Book(s) or magazine(s)
- Flora/fauna books
- Journal/note pad and pen
- Camera with extra batteries and memory card
- Binoculars
- Small games/cards
- Fishing gear and license
- Sit upon/camp chair

Equipment

- Backpack
- Share of group gear such as tent, tarp, kitchen gear etc.
- Rope (bedroll, clothesline, in case needed)
- Emergency – 10 Essentials
- Sleeping Bag,
- Sleeping bag liner or sleep sheet
- Waterproof stuff sack
- Sleeping pad
- Pillow or pillow case/stuff sack
- Large strong garbage bags for storing your packs in at night (optional)

Group Gear - Adventure Camping

This is an example of the list of gear a group would need for adventure camping. The group leader is usually responsible for ensuring the group gear is in place.

Camp Kitchen

- Stove
- Windscreen
- Fuel and funnel
- Waterproof matches/lighter
- Pots with pot grips/handles
- Cooking utensils
- Measuring cup
- Oven mitt (a glove or a mitt will work instead)
- Quick access snacks/drink crystals/tea/hot chocolate/apple cider/coffee, etc.

Optional

- Cutting board
- Frying pan
- Spices
- Outback oven
- Tin foil
- Small compact table

Washing up

- Collapsible washing bin
- Biodegradable soap
- Washcloth/scrubby/sponge
- Large mesh dish bag and carabineer
- Extra ziplocks
- Garbage bag(s)

Group Camping

- Tents
- Tarp(s) and rope
- Rope
- Food caching equipment (food bags, rope, carabineers, pulleys)
- Candle lantern/small lantern
- Toilet trowel
- Hatchet
- Folding saw

Water

- Water container
- Water filter
- Water treatment (back-up to filter)

Navigation

- Topographic/hydrographic map
- Tide & current table (if needed)
- Compass
- Weather forecast
- Watch with alarm
- Guide book
- GPS (optional)
- Altimeter (optional)
- Barometer (optional)

Rescue/emergency

- First aid kit for the group
- Repair kit (duct tape, speedy stitcher, needle and thread, extra buckles, zipper pulls, cord locks, rip-stop nylon, multi-tool, cement/glue, pole cords, tent pole splint, ripstop nylon patches, extra toggles, small roll of mechanical wire, stove maintenance kit, etc.)
- Emergency communication device (Satellite phone/spot/VHF radio/personal locator beacon, SPOT)
- Cell phone
- Extra rope
- Bungee cords (optional)
- Extra flashlight
- Flagging tape (optional)
- Flares
- Glow sticks (optional)
- Extra toque(s) and gloves/mitts
- Log book
- Safe Guide forms

Leader

- Daily trip log

First Aid Equipment List for Adventure Camping

The first aider is responsible for ensuring the first aid kit is complete and up-to-date. Only medications listed on the Medications Consent (H.7) form may be carried for group use. Individuals may want to bring their own medicated blister treatment dressings or medications such as AfterBite for insect bites.

Paperwork

- Emergency Response Plan (SG.4)
- Personal Health Forms for girls and adults (H.1 & H.2)
- Incident Report (INS.01)
- Medication Plan and Administration Record (H.3)
- Medications Consent Form (H.7)
- First Aid Examination Checklist (H.6)
- Pen, pencil, paper

Equipment

- First aid manual
- Medical scissors
- Safety pins
- Tweezers/tick remover forceps
- Disposable thermometers/digital thermometer
- Disposable gloves (non-latex) – minimum two pairs
- CPR face shield or pocket mask
- Hand wipes
- Tongue depressors
- Penlight flashlight
- Irrigation syringe/disposable saline vials
- Eye wash kit including a rigid eye shield and irrigating eye wash
- Hot water bottle
- Ice pack
- Emergency blanket
- SAM (Structural Aluminum Malleable) foam-padded splint
- Duct tape

Wound care and bandages

- Easy care bleeding control instructions
- Easy care fracture and sprain instructions
- Easy care wound instructions
- Adhesive fabric bandages in assorted sizes
- Gauze rolls
- Gauze pads
- Sterile dressing gauze
- Wound closure strips
- Non-adherent sterile dressing
- Trauma pad
- Moleskin
- Elastic bandage with velcro
- Triangular bandage
- Cotton tip applicator
- Adhesive tape
- Sterile cotton balls

Medications

- Rehydration fluid
- Medications as listed on the Medications Consent form (H.7)

Individuals may consider carrying:

- Blister and burn dressings such as Glacier Gel™ or Compeed®
- AfterBite® for relief from insect bites
- After Cuts & Scrapes® for pain and infection prevention

These should be listed on the H.3 form

Activity Specific Gear

See specific adventure activity equipment lists in the Camping and Outdoors section of Member Zone for suggested gear/equipment/items to add to the gear list for each specialized adventure activity including backpacking, canoeing, kayaking, cycling, horse packing and winter camping.

Emergency Signalling, Communication and Safety Devices

There are two ways of communicating in the backcountry:

- Communication between participants in your group
- Communication between your group and the outside world, your home contact person, or emergency medical services (EMS)

Communication and emergency signalling methods

Visual Signalling Devices

- Hand signals
- Flagging tape
- Trail signs
- Mirror
- Orange garbage bag
- Lights – strobe light, emergency light or Morse code using a light
- Flares
- Other signals – SOS, signal fire

Sound Signalling Devices

- Whistle:
 - One blow to get everyone's attention
 - Three blows is the universal signal for help/emergency
- Air horn

Communication Devices

Cell phone

Although a cell phone does not use satellite communication and is instead tied to a network of cellular communication towers, a cell phone should not be dismissed as an emergency communications device. A cell phone can, for example, be used in addition to a SPOT or Personal Locator Beacon provided that there is cell-phone service in the area. Remember to turn off cell phones in between use so that the battery life is preserved as much as possible. Cell phones will roam trying to find a signal and this not only uses up battery life but also may incur expensive roaming charges.

Satellite phone

A satellite phone, or sat phone, is a type of mobile phone that connects to satellites not cell towers. Sat phones provide two-way communication, allowing for both text and voice communication. Satellite phones use rechargeable batteries. You can purchase or rent satellite phones and will need to purchase a service package before the sat phone can be used.

Two-way radios (walkie talkies)

A two-way radio is a handheld portable two-way radio transceiver. Most models will operate efficiently over a distance of a few kilometres; this distance will vary depending on the model. Heavy foliage or mountainous terrain may reduce the range; in flat areas, such as open water, the range can be extended. This makes them ideal for canoeing and kayaking. Walkie-talkies (two ways) are useful in desolate areas and places without cell phone coverage.

Personal Locator Beacon

A Personal Locator Beacon (PLB) also uses satellite signal technology – GPS positioning, a MHz signal and a homing capability – that can quickly and accurately relay your position to a worldwide network of search and rescue satellites. Depending on the type of PLB, the signal relay can be relatively simple (identifying your location) or more complex where a uniquely registered distress signal not only identifies your location, but who you are.

SPOT

A SPOT is a hand-held communication device that can provide information to your home contact person. You can send information but not receive and you can obtain emergency assistance such as search and rescue (SAR) when you need it. A basic service package is available and can be upgraded for an additional cost. The device sends a text communication via satellite (including your GPS coordinates at the time of transmission) to a number of different media (email, Facebook, Twitter, etc.) defined by the user. A SPOT uses commercially available batteries and is easy to use and to set up. There is a tracking option available that can provide real-time GPS tracking. The tracking option is useful if, for example, you are unable to complete your trip as planned and need to exit using your alternate plan. In this case, you don't need emergency assistance; you just need to inform your HCP about your change in plans. Every SPOT in the world is registered with the manufacturer and set-up for the country of residence. Like any communication device that uses satellites, you need to ensure an unobstructed view of the sky for the entire transmission time. The major down-side is that voice communication is not possible.

Marine VHF Radio

A marine VHF radio is a combined transmitter and receiver and only operates on standard, international frequencies known as channels. A VHF radio is used for a variety of purposes, most importantly summoning emergency services. Channel 16 (156.8 MHz) is the international calling and distress channel. Other channels include weather-monitoring channels. Modern marine VHF radios have the ability to alert other boats, ships, and shore stations with a single button press. Antennas have to be vertical in order to maintain good reception. A Restricted Radio Operator's Certificate (Maritime) is required to operate a VHF radio. This would likely be overlooked in the case of an emergency.

Safety Device - AM/FM/WB Windup/Solar Radio

A Weather Band (WB) radio receives news and current marine weather reports; including, warnings or advisories, from Weather radio Canada/NOAA (National Oceanic and Atmospheric Administration) weather bands. Check the current marine weather report daily before venturing

out on the water and adjust your plans for the day accordingly. An advantage of this tool is that as a windup device, this piece of equipment does not rely solely on batteries. A WB windup radio, paired with some form of emergency communication device, is highly recommended equipment for safe waterway travel if you do not have a marine VHF radio and VHF operator's license. Although a WB radio is not an emergency communication device on its own, it is an extremely valuable safety tool for adventure trips involving travel on waterways

Module 6 – Adventure Camping Food

This module provides adventure camping food planning information and considerations, snack recommendations, discussion on lightweight foods (dried and dehydrated), suggestions for cooking at camp and information on camping stoves, water treatment and filtration.

Planning food for adventure camping trips must take into account the group's nutritional needs and energy requirements based on physical activity, preparation time (rehydrating, cooking on lightweight camp stoves, fuel) and having a menu that appeals to the group, all while minimizing the weight and bulk of the food needing to be carried. This can take a surprising amount of planning and preparation time and is an important part of every adventure trip.

Remember....it's all about the food! Meals that are tasty and easy to prepare can be great moral boosters as well as provide an energy boost at just the right time. As always, individual likes and dislikes need to be taken into account as well as allergies and cost. Involving girls in food planning and preparation is not only a great skill builder and group bonder, it ensures their satisfaction with an important aspect of the trip. If the food isn't appealing, it won't get eaten.

Your menu plan should take into consideration the challenges of the day's travel as well the weather trends at that time of year. At the end of a challenging day, a simple meal that just requires adding hot water and stirring is often the best plan. If you have a scheduled day off, use that day to be more experimental with outback ovens or meals that require more complicated preparation. During a trip, sometimes it's sensible to swap an easy to prep meal with a meal that requires longer prep time if you've experienced bad weather or other challenges that have brought you into camp later than expected.

One of the challenges of adventure camping is food spoilage. Some fresh food can be brought for the first day or two of the trip. However, on a multi-day trip, the bulk of your food will need to be dried or dehydrated with a few fresh foods that do not require refrigeration.

Upon arrival at your campsite, boil water for hot drinks or instant soup. Hot liquids will help rehydrate participants (and soup will replace salt) and can be a welcome appetizer and energy boost while camp is being set up and dinner is being prepared.

Basic Food Planning Tips

The following are basic tips for planning and organizing food for an adventure camp:

- Bring electrolyte powder or other juice crystals to add to the water
- Pre-measure portions by meal or per participant
- Bring extra stuff sacks or dry bags for food storage/food caching
- Pack food in multiple stuff sacks/dry bags rather than in one large bag and have each group member carry a portion of the food
- Pack foods by meals or by days, whatever way of organizing works. Be organized and make a list of who in the group is carrying which meals or which day of food

- Ensure snacks can be easily accessed (and not buried) while hiking/biking/canoeing/kayaking, etc.
- Remove food from original packaging when possible to cut down on bulkiness, but keep any necessary cooking instructions. Pack snacks in Ziploc bags for each day
- Choose meals that are easiest and take the least amount of time to prepare
- Always bring an extra meal or two on trips in case of an unexpected delay
- Don't forget to drink lots of water – at the minimum 2 litres per day, and more when exercising and in hot weather. If you are feeling thirsty, you are already dehydrated
- Bring small packages of condiments, peanut butter, honey and jam instead of large jars
- Packaging food in a food saver helps keep it fresher longer.

Sample Trip Menu

TIME	FOOD	INGREDIENTS	COOKING METHOD
Thursday Supper	Food on the road	Bag or buy	None
Friday Breakfast	Muffins Fruit Hard boiled eggs	Muffins Orange Apple Eggs	None
Friday Lunch	PB & banana chip wraps Fruit bars Pumpkin leather Beef jerky Trail mix	Peanut butter Dried banana chips Tortillas Dehydrated leather & jerky Fruit bars Trail mix	None
Friday Supper	Sesame Orange Chicken Grasshopper pie	http://www.trailcooking.com/recipes/sesame-orange-chicken	Camp stove
Saturday Breakfast	Oatmeal Trail mix	Oatmeal Trail mix	Boiled water
Saturday Lunch	No-Cook Chicken Cranberry & Quinoa Salad	Quinoa flakes Dried cranberries Sunflower seeds 7 oz pouch dried chicken breast Shelf stable salad dressing	None
Saturday Supper	Shepherd's Pie Pumpkin Spice Cake	Ground beef, veggies, potatoes	Stove, rehydrate
Sunday Breakfast	Apple Crisp	Oatmeal Dried apples	Boiled Water

Snacks

Ensure you pack enough snacks to provide enough energy for your participants. Keep in mind that youth, especially teens, eat more when active. For example, while having two snacks in between meals was adequate for the leaders while hiking the West Coast Trail, the girls needed at least four snacks in between meals while hiking. So bring 2-6 snacks per participant per day, depending on the activity. Bring a surprise treat to share when least expected as a snack or a dessert after dinner (examples: Licorice, Pop Tarts, Jiffy Pop Popcorn – it works surprisingly well on a camp stove). Snack suggestions:

- Granola bars/cereal bars/energy bars
- Fruit chews/fruit leather/fruit roll-up
- Nuts
- Dried fruit
- Trail mix
- Chocolate
- Chocolate-covered espresso beans
- Electrolyte chews
- Cheese (harder cheeses keep longer unrefrigerated)
- Peanut butter
- Honey
- Crackers
- Jerky (beef, turkey, salmon or tofu)
- Dried wasabi peas
- Oriental mix

Lightweight food

Food can be the bulk of the weight carried on a trip. Cutting back on the weight by using dried foods rather than fresh or canned means that everyone has more energy to spend on their trip. Less weight puts less strain on the joints and benefits those less physically fit. Dehydrating snacks and meals can considerably cut down on weight. Dried pasta, noodles, instant rice, oatmeal, milk, soups and potatoes are commercially available, relatively cheap and easy to prepare with other ingredients. Dried fruits make great snacks or can be rehydrated and combined with other ingredients to make elaborate desserts.

Experiment with different ingredients. Prior to a trip, try adapting some of the recipes you use at home by using dried ingredients instead of fresh. Instant soup or sauce packages can make good starters to any lightweight meal. For example, a tomato vegetable soup mix could be the base for stew with dried ground beef, dried veggies and instant rice. Packages of instant noodles with seasoning (e.g. Ichiban) also make an easy beginning for a meal. Adding extra ingredients gives more flavour and spice to dehydrated meals. When packing your food, ensure you read all preparation directions in case additional ingredients will be required. If you've discarded some of the packaging on these prepared foods, be sure to pack the directions. To add or adjust flavour to dehydrated meals, bring along a spice kit that includes items such as: salt, pepper, bouillon cubes, garlic, basil, dill, paprika, curry powder, olive oil, balsamic vinegar, soy sauce, hot sauce, sun-dried tomatoes, dried mushrooms, chives.

Dehydrating Food

Food can be dried in a low temperature oven with the oven door ajar or using a food dehydrator.

Some people dehydrate food until very dry as there is less chance of spoilage. Regardless of how dry the resultant food is, it will still require short and long term storage systems. This can be as simple as Ziploc bags or using commercially available, airtight containers. Store food in the fridge until it is time to pack for the trip. One disadvantage of dehydrated (one pot) meals is they all have a similar texture, and almost never any crunch. To add texture, consider bringing some raw vegetables for appetizers (celery, carrots, snap peas, cucumber). Raw vegetables are heavier, but make a nice addition to dehydrated meals.

Meats

Ground beef or turkey dehydrates well. Before dehydrating, brown meat, then rinse cooked meat in a strainer under hot water to remove fat. Fat is the first thing to spoil over time, and slows down the re-hydrating process. Use the solid trays of a dehydrator to dehydrate the meat until very dry. Ground meats re-hydrate quickly. Tinned fish dehydrates and rehydrates quickly.

Sauces

Many sauces such as pasta sauce or curry sauce can be dehydrated. Prepare the sauce as you would normally, but boil off as much liquid as you can to reduce dehydrating time. Use a solid dehydrator tray and dehydrate the sauce till there is no more moisture and it can be peeled or chipped off the tray. Store the dehydrated sauce in a Ziploc, which can be used as the container to start the rehydration process.

Vegetables

Frozen vegetable mixes dehydrate well and there are many varieties to choose from. If you want to create your own vegetable mixes, it is recommended that you blanch the vegetables prior to dehydrating. Vegetables can take up to half a day to rehydrate, so plan to start rehydrating at lunch (or even first thing in the morning). Rehydrate vegetables separately from meat. Dried soup or vegetable mixes found in bulk bin stores along with extra dried onion flakes for flavour are another option.

Rehydrating Dried Food

When rehydrating dried food, ensure you use water that is safe for drinking (filter, treated or boiled). Rehydrating can take different amounts of time: Vegetables and strips of meat can take hours; ground meats and canned fish take less than one hour. If you allow food to rehydrate longer, it does not affect the quality of the food. Package dehydrated foods for easy rehydrating using Ziploc freezer bags. Double bag the food, to avoid spillage, if you plan on rehydrating it while carrying it in a backpack for the day. In selecting baggie size, keep in mind that the rehydrated food will double in size.

Knowing how much water to add to a homemade dehydrated meal can be tricky. Adding too much water will require you to boil away the excess water. Not adding enough water will require you to be careful not to burn the food and continue to adding extra pre-heated water to keep

things going. When adding food that you have rehydrated, any extra water in that food will affect how much water you need. When cooking dehydrated food, it is always a good idea to have some extra hot/warm water set aside in case you need to add water.

Cooking at Camp

Cooking at camp can be one of the highlights of a trip. These are tips to facilitate efficiency and safety:

- Never cook inside your tent.
- Ideally your cooking area (kitchen) should be at least 100ft away from your sleeping area
- Always use a pot lid.
- Using a windscreen will increase your stove's efficiency.
- Always ensure the stove is on a firm surface for cooking. Don't allow people to walk back and forth around the stove area – this will minimize the chance of accidents.
- Ensure your pot is filled with water and ready to put on the stove, and all your food is ready before lighting your stove.
- Cooking time takes longer at higher altitudes and so you will use more fuel at higher altitudes – plan accordingly.
- Use a headlamp to be hands free while cooking.
- Cook heavier meals early in the trip to lighten loads for the rest of the trip.
- If the weather is really bad, choose your easiest, quickest meal to cook for dinner.
- An Outback Oven is a nice luxury to have along on an adventure camping trip if you have room. You can make delicious quiches, pizzas, breads, biscuits, brownies, etc.
- If a meal turns out too runny, add some instant mashed potatoes, black bean flakes or something similar to help thicken it.
- Avoid wiping hands on clothing to avoid food scents on clothing.
- Dirty dishes shouldn't be washed directly in water sources; carry water to washing area.
- Sand, pebbles and pine needles work well for helping to scrub out pots and dishes.
- Rinse out your bags of cooked dehydrated food after eating from them.
- Ziploc bags are useful for repacking food, leftovers and trash. Avoid leftover food by carefully planning meals. It's always best to pack out what you don't eat, or offer leftovers to other campers. Food scraps, because they are moist, will not burn adequately unless the fire is extremely hot and given enough time to completely burn.
- A clean kitchen area is very important – always pack away your stove and cookware every night, so that critters, rain, mould and dirt don't get into your equipment, the wind isn't blowing your gear away and you can find everything when you need it. Keep organized and put everything in its place when done using it.
- Bear/critter cache all food, pots, pans, plates, cups, bowls, utensils, toiletries (scented items such as toothpaste, sunscreen, etc.), garbage, including used sanitary napkins.

Water Treatment and Filtration

When thinking about backcountry water supplies, it is important to think about bacteriological contamination. A large percentage of the world's water is contaminated in some way. Contaminated water is caused by a variety of microscopic organisms. These microscopic

organisms can cause potentially serious, even fatal, illnesses among wilderness travelers. The major danger in the backcountry from these infections is fluid loss due to diarrhea and vomiting.

In order to avoid potential illness you should be prepared to treat all water consumed. There are numerous methods of water purification. Remember to wash your hands. Germs and infection can also be spread through poor personal hygiene, something that purifying water will not prevent.

Boiling

Boiling water is the most effective way of eliminating microorganisms. Water temperatures above 160° F (70° C) kills all pathogens within 30 minutes and above 185° F (85° C) within a few minutes. So in the time it takes for the water to reach the boiling point (212° F or 100° C) from 160° F (70° C), all pathogens will be killed, even at high altitude. For additional safety, let the water boil rapidly for one minute, especially at higher altitudes where water boils at a lower temperature.

Chemical Purification

There are two types of chemical purification: iodine and chlorine. There are a variety of brands on the market, so ensure you follow the instructions. Chemicals have expiration dates and become ineffective after that date.

Iodine

Iodine is light sensitive and must be stored in a dark container. It is more effective than chlorine-based treatments and works best in warmer water (21C). Be aware that some people are allergic to iodine and cannot use this method for water purification.

Adding vitamin C to iodinated water will remove the colour and flavour of iodine. After treating water with iodine, wait a full 30 minutes (until the iodine has purified the water) before adding juice crystals because anything with Vitamin C will bind to iodine and deactivate it. Liquid iodine absorbs more quickly than tablets.

Chlorine

Chlorine water treatments can be used for people who have iodine allergies. The chlorine treatments for wilderness camping are similar to the treatment systems used for household water supplies. Follow manufacturing instructions for use.

Filtration

There are a number of filtration devices on the market. A water filter pumps water through a microscopic filter that is rated for a certain sized microorganism. Microorganisms are measured in microns. When selecting a filter, you should know the potential organisms you will need to filter. Depending on the micron filter size, smaller organisms may pass through the filter. A filtration device that will effectively filter a larger organism such as Giardia will not filter out a smaller microorganism such as the Hepatitis A virus.

Common microorganisms and the filter size needed:

Organism	Examples	General Size	Filter Type	Particle Size Rating
Protozoa	Giardia, Cryptosporidium	5 microns or larger	Water filter	1.0–4.0 microns
Bacteria	Cholera, E. coli, Salmonella	0.2–0.5 microns	Micro filter	0.2–1.0 microns
Viruses	Hepatitis A, rotavirus, Norwalk virus	0.004 microns	Water purifier	to 0.004 microns

There is a difference between a water filter and a water purifier. A water filter will not remove bacteria and viruses. Remember:

- Always have a back-up water purification method.
- Filter the cleanest water available.
- Pre-filter dirty water through a bandana.
- If you must filter dirty water have it sit overnight to settle the particles.

SteriPEN

Ultraviolet light is another method of treating water. A SteriPEN is lightweight and easy to use and is effective against 99.9 percent of microorganisms that cause water-borne illnesses. However, water that has floating particles needs to be pre-filtered. One drawback is that some SteriPENS require batteries (some are rechargeable). As with all electronic gear, ensure you have a back-up plan for water filtration.

The information on water treatment is adapted from the OA Guide to Water Purification <http://www.princeton.edu/~oa/manual/water.shtml> Copyright © 1995 Rick Curtis, Outdoor Action Program, Princeton University.

Module 7 – Campsite Management

This module focuses on different site selection criteria, campsite set up and management, personal hygiene, as well as how to make yourself at home in the wilderness while minimizing your impact on the flora, fauna and other campers by adhering to the Leave No Trace principles outlined below.

Leave No Trace

Leave No Trace (www.leavenotrace.ca) is an outdoor ethics program designed to promote and inspire minimizing our recreational impacts on the natural environment. Leave No Trace relies on attitude and awareness more than rules. Techniques to guide us in minimizing our impact on the environment are incorporated in to the Leave No Trace program as seven principles. Leave No Trace principles influence the things we do but are based on developing a way of thinking.

Leave No Trace Principles

1. Plan ahead and prepare
2. Travel and camp on durable surfaces
3. Dispose of waste properly
4. Leave what you find
5. Minimize campfire impacts
6. Respect wildlife
7. Be considerate of other visitors

Campsite Selection

Know the regulations of the area you are camping in and respect them. Regulations may include the number of campers permitted on a site, whether or not you are expected to share a site with another group or the expected distance between groups.

When selecting a site, decide if you are in a high or low impact area and act accordingly. In high impact areas, it is sensible to concentrate your group's impact to the existing area to preserve the surrounding ecosystem. In pristine environments, spreading your group out to minimize the creation of high traffic routes can help to keep the area from being damaged. Keep a clean campsite and never leave food/garbage unattended, as it will attract wildlife.

When considering a potential campsite take a careful look around and evaluate the following:

Safety

Every time you look at a potential campsite, scan the area for hazards:

- **Look up** – for dead trees and branches that could fall if the wind picks up. Ensure you're not in a terrain trap in avalanche territory.
- **Scan the inside circle** – find the approximate centre of the area. Slowly turn around 360 degrees. Assess the site for any dangers, identify appropriate cooking, latrine, water and tenting areas, establish emergency exit routes in case of wildlife encounters and determine locations to shelter in severe weather.

- **Scan the outside circle** – take a walk around the outer perimeter of the campsite area. Look for hidden hazards such as cliffs and drop-offs, water hazards, paths leading into and out of the site. Find an area to build a latrine or a cat hole (this may already be established) and an appropriate bear/critter cache location.

Other considerations include:

- In bear country, don't camp right next to a river, where you won't be able to hear if a bear or other wildlife approaches, or right next to berry bushes. If you think you hear a bear, make noise or sing something loudly.
- Look for an area that is protected from the wind and rain.
- In poor weather, look for higher ground so you're not camping in areas where water is collecting and pooling.
- Look for anthills, wasp's nests and signs of other insects and avoid those areas.
- Plan your day so that your group arrives at the campsite with a few hours to spare before sunset.

In avalanche terrain:

- Consider the angle of slope. The most common angle for a slide to occur is 38 degrees. On slopes that are extremely steep, the snow will not collect enough to avalanche as the snow just sloughs off naturally on its own without a trigger.
- Avalanches in the winter can occur at any time of the day.
- In the springtime, avalanches can be a little more predictable and occur more frequently in the afternoon with the heat of the sun.
- Sun on mountain slopes causes warming that triggers avalanches. Therefore, south-facing slopes can be more dangerous and east facing slopes tend to release avalanches in the morning.
- No trees or only short, stubby trees around indicate a high avalanche area.
- Precautions: take an avalanche course, talk to a Park Ranger and have a Park Ranger approve your trip plan.

Environmental impact

- On the trail – stay on the trail. Hikers coming up the trail have the right of way because it's harder to hike up.
- Don't walk on fragile areas or off-trail.
- Choose a location to camp on durable surfaces such as rocky outcrops, sand, gravel, snow or open dirt (an already impacted campsite), not on forest duff, meadow, heather or tundra or other fragile/sensitive areas.
- The least durable surfaces are mosses, reindeer mosses (yellow-green) and similar.
- Look for previously impacted areas to camp on. If you stay in a wilderness area for 5-6 days, move the campsite around so you don't damage one particular area too much.
- Try to camp a minimum of 100 paces away from the trails (so you're not blocking anyone's path) and from water sources (so you don't risk contaminating them).
- When camping on ocean beaches, ensure you choose a location for your campsite above the high tide line.

- Take off heavy hiking boots while at the campsite and put on in-camp shoes.
- It's no longer considered acceptable to chop down trees to make things such as chairs, shelves, tables, etc. for camping because there are too many people going into the backcountry now.
- Be considerate of other campers (sound/noise, don't crowd them or encroach on their privacy).
- Choose durable paths of travel between your kitchen, the tents and the toilet areas or alter the way you travel between parts of your campsite so you don't create additional trails.
- Cook on a rock.

Water

Ensure that water that can be treated for drinking is available nearby, but try to camp at least one hundred paces away from a water source.

Flat, comfortable

- In hot weather, look for shaded areas to camp.
- Identify microenvironments that are more likely to be comfortable. For example, in the mountains halfway up a slope is warmer in the cold and cooler in the heat than either the ridge top or the valley floor. Valleys are frost pockets and ridges have wind. But in hot weather, valleys are more humid and closed (and mosquito ridden) while ridges are less likely to have cooling convective breezes (but there are exceptions). Be aware of the prevailing winds and the directions of storm movement in the season during which you are packing, and locate your camp accordingly. That ridge top with a cooling breeze may turn into a hell of high winds, lashing rain and lightning within a few hours.
- A level tent site will ensure you sleep well.
- If you can't find a level campsite, pick one with a gentle grade and ensure you sleep with your head at the high end.
- Ensure there is enough flat space for all of the tents in your group.
- Ensure there are no boulders or roots.
- Clear any large stones, rocks, sticks etc., before setting up your tent.
- Do not dig trenches around tents to protect them from rain run-off.
- Be aware of your impact on wildlife and other users.

Aesthetics, view

The view from one site may be better than from another site, but this is the last priority in campsite selection criteria, so ensure the other criteria are met before considering the view.

Campsite Management

Kitchen

Considerations for the kitchen area:

- If there is known to be a problem bear in an area, don't even go into that area.
- Select the most durable area available, as this area will be a high traffic area.

- The minimum distance between the tents and the kitchen area should be one hundred paces (this is the bare minimum); 100 m is better, especially in bear country.
- Select a downwind location from tents and keep food downwind from campsite. In a valley, in the late afternoon, wind travels down the valley (downslope). In the morning and early afternoon, wind travels up the valley (upslope).
- Set up a tarp before organizing the kitchen area.
- All scented items go in the kitchen food area (including toothpaste, deodorant, etc.).
- Bring your own personalized cloth napkin for wiping hands and leave it in the food area.
- Dispose of grey water at least 100 ft. minimum from the campsite and water sources. Strain the grey water with a stocking, hairnet or j-cloth. Disperse the grey water by spreading over a large area rather than all in one area.
- Cache at night to keep it from being stolen and eaten by critters such as, raccoons. If you're hanging the food, a good guideline is at least 10ft. up and 10ft. out on a branch.
- If you're camping above the treeline, place your food in odour-restricting containers. Do not bury any food scraps. All garbage should be placed with your food cache and packed out. Carry a bear barrel or a bear bag (Kevlar, bullet proof bags).

Toilet

- Create your toilet area at least a hundred paces away from any water source and from your campsite. Ensure the area is downwind from your campsite.
- Toileting on an adventure trip:
 - Take a spade or lightweight backpacker's trowel with you.
 - Dig down into the forest duff layer, setting aside dirt, moss or grass to cover your waste after you're done.
 - Squat above the hole and do your business.
 - Either drip dry, use a small amount of toilet paper, use a pee rag (hung on the outside of your pack), or use 'natural toilet paper' such as, leaves, grass, rocks, moss, seaweed, snow or similar.
 - Cover your waste and the toilet paper well enough so that you'd be comfortable sitting on that area again. In many areas you must pack out the toilet paper, particularly in dry areas. Use Ziploc bags for carrying out toilet paper. If fires are allowed, you can burn the toilet paper in your campfire. Do not contribute to pieces of toilet paper littering the ground.
 - Clean your trowel off. Always keep your trowel away from your food.
 - In an ocean environment, pee below the tide line.
 - When snow camping, dig down to find dirt or rock or go by a tree.
 - PVC piping and Pringles cans are examples of "poop-tubes" you can use to carry out your waste. When traveling on glaciers or in dry areas, carry out all your feces
 - Above the tree line, rock smearing is the recommended practice.
 - Always pack out tampons/sanitary napkins. Set the tampon/sanitary napkin down on the ground, step on it to remove the fluid. Hang tampons/sanitary napkins in the bear/critter cache at night or when away from camp.

Tent Tips

When tenting on sand that is too soft for tent pegs to be used, place rocks in the corners of the tent or tie strings to the edges of the tent, then tie the end of the string to a rock, log or to stuff sacks filled with sand/snow and bury the bags to act as anchors. Attach tent guy lines to rocks, or roots. When tent pegs will not go in very far, place large rocks on top of the pegs to keep them in place. If there are no large rocks, make a pile of smaller rocks

Carry a tarp so that when setting up or packing up in the rain, four people can hold the tarp up in the air while the other participants pitch or take down the tent

Campfire Management

Be informed if there are fire restrictions or bans in the area and respect the regulations. If fires are permitted, build a campfire in a pre-existing fire ring or in a well-worn site.

- Do not build a campfire near grasses, trees and their roots.
- Avoid building a fire on a windy day.
- For firewood, collect only dead, dry wood found on the ground or driftwood off the beach. Leave living trees and plants alone. If there is no firewood available, save your campfire for another time and place.

If the campsite is littered with fire rings, dismantle the other fire rings, leaving one or two of the safest fire rings. Ensure the fire ring is no larger than 2 feet in diameter. Keep the fire small.

- Invite others to share your campfire so that multiple campfire rings are not built.
- The best way to minimize the impact of a campfire is to build your fire in a portable, metal fire box or fire pan.
- Never leave a fire unattended.
- Burn all wood to ashes.
- Put out campfires completely.
- When the ashes are cool enough to touch, scatter the ashes widely.

Pre-Dark Management

Your campsite should be clean and tidied before it gets dark. Group gear should be put away and food and scented items should be hung or placed in a critter cache. Water should be collected, water bottles filled and water treated for the following day. All participants should have all their gear and clothing organized and under waterproof wrap. Remember to brush teeth before dark so that toothpaste can be stashed with the food.

Night Time Routine

- Empty your bladder before bed, as a full bladder requires energy to keep the fluid warm.
- Ensure there is adequate venting in the tent to minimize the amount of condensation on the tent walls.
- Placing the next day's clothing in your sleeping bag will keep them warm and dry.
- Get warm and change your clothing before getting into your sleeping bag.
- Fill your Nalgene water bottle with hot water and bring it to bed with you to keep you and your sleeping bag warm.

Site Take Down (Breaking Camp)

When you break camp, replace any rocks or branches you've moved. If not camped in an established campsite, break apart your fire ring.

- Separate dirty equipment/gear that you will need to attend to at home
- Sweep out tents
- Wipe off gear as you pack it away
- Conduct a litter chase
- Gather all trash in one trash bag so that you can throw it out right when you get home
- If you're hiking/kayaking/canoeing/cycling out, remember to take a bathroom break before you depart

Take a final walk through your campsite to ensure nothing was left behind. Leave the area as clean as you found it, even cleaner, if possible

Personal Hygiene

- Hand sanitizing antibacterial lotion (Purcell) and use after using the toilet and before cooking.
- Carry unscented baby wipes to help with personal hygiene – you can also remove a lot of dirt from the rest of your body with these wipes. Remember to pack out what you carry in.
- Whenever you can, don't pass up the chance to dip your feet in a creek.
- Carry a small container of foot lotion and use it on your feet at night after cleaning.
- Wash out your socks and hang them out to dry overnight. Make sure you have a dry pair of socks for the morning.
- Sleep in different clothing than what you hiked/kayaked/canoed/biked in, and hang those day clothes to air out overnight when possible. Rinse your clothing out when you can.
- Carry a bandana or a facecloth and a small bottle of biodegradable soap and have an occasional sponge bath. For minimal impact on the environment, carry water away from the source using a collapsible water carrier to take a bath if you are using soap.
- Use glide-on anti-chaffing lotion to prevent chaffing.
- Leave perfumes and scented lotions at home as they will attract bugs and wildlife.
- Bring a camping shower.

OAL Adventure Camping Training Program

This OAL Guide to Adventure Camping is a resource as well as the basis for the OAL Adventure Camping Training Program. The training consists of eight training modules: seven knowledge session modules and an eighth module that focuses on skill development through practical, experiential expeditions:

- The seven knowledge session modules are based on and follow the chapters in this Guide.
- The eighth module involves expeditions that put into practice the skills and knowledge gained in the seven modules. These expeditions provide experience in the planning and execution of wilderness activities such as kayaking, canoeing, hiking/backpacking, cycling, winter camping or other adventurous activities.

The knowledge sessions and expeditions do not have to be done in order. For example, the opportunity to go on an expedition may arise before you've had a chance to complete the knowledge sessions or if you are not available to attend a complete training, you can do some of the modules and others when the training is offered another time.

In the timeframe of this training program, participants are not expected to become an expert in everything! This training provides the basics for adventure camping leadership. Those who complete this training will be eligible to act as a Trip Assist on a Safe Guide Red level trip.

Details on the training requirements are in the Adventure Camping Training Participant's Package found on the Camping and Outdoors page on Members Zone.

OAL Adventure Camping Training Participant Package

The OAL Adventure Camping Training Participant Package provides a framework for tracking progress through the adventure camping training modules and skill development, and includes:

- Adventure Camping Training Tracking Form - tracks the completion of modules
- Participant Skills Checklist - tracks knowledge and skill development
- Trip Experience Log – tracks personal adventure camping experiences

The Participant Skills Checklist list is the key to tracking your progress in this training program. It lists the basic skills and tasks needed for adventure camping leadership. Participants must successfully complete all of the designated skills and tasks on the list.

Module 8 - Expeditions

The Adventure Training Camping program includes two or more expeditions. These trips allow participants to put the knowledge and skills learned in the OAL Adventure Camping Training modules knowledge sessions into practice. The trips are organized and led by the participants under the guidance of an expedition leader.

Depending on the expedition activity, a practical skills training may be necessary. Pre-trip or practice one-day events are also a good idea – even for backpacking, which is demanding, yet does not require a certification level prior to the activity. If the trip involves boating skills such as canoeing, kayaking, sailing etc. then a separate skills training session is also necessary.

Collaboration with Your Expedition Leader

Depending on how the training is set up, you may go through the modules with different adventure facilitators and expedition leaders. Collaboration between you and the adventure facilitators and expedition leaders will be important in order to facilitate the completion of the training program.

At times you may need to share your participant skills checklist with the expedition leader(s) in advance of your trips. This will help them be aware of your knowledge and skill level as well as the leadership roles you need to cover to complete your checklist.

Gaining Experience

Knowledge, skills and competencies for adventure camping require practice. When you complete this training, you will recognize your own areas of strength and weaknesses. Use this information as a focus for getting additional training or experience to expand your competency and enhance your knowledge and skills

The following are some suggestions of ways to build your adventure camping capacity. Some of these activities, for example practicing navigation could be done with your Unit. Others would be done through external organizations:

- Take a wilderness first aid course to supplement this training and complete preparation for leading adventure camping trips
- Take an activity skills course offered by an organization such as Outward Bound, Power Squadron, or Paddle Canada or look for community courses to learn marine navigation, mountaineering, or get a VHF radio operator license, etc.
- Join an outdoor club that offers training opportunities
- Sign up for other GGC expeditions to get out there, explore and develop skills
- Practice your navigation. Always carry a compass and map on any walk or hike
- Take apart your camping equipment at home and learn how to repair it
- Attend a GGC Red Level Safe Guide paperwork sharing session
- Review resources available through GGC

Recognition and Equivalency

Information on recognition and equivalency for the OAL Adventure Camping Training can be found in OAL Program Overview available on the Camping and Outdoors page on Member Zone.

Conclusion

We had a dream – to strengthen our Members knowledge, confidence and skills in facilitating adventure camping experiences for our girls. We talked and consulted about it for seven years and finally....this guide, the expedition module, the participant skills checklist, the web resources and the accompanying training and facilitators guide are the tools that we developed to help build that capacity. Adventure camping is fun and challenging and inspiring. May everyone get the chance to travel a road they've not been down before, to listen to a leaf drop in the forest, to hike up a mountain to gasp at the site of the valley below and to marvel as the sun rises above a deserted beach.

Acknowledgements

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Girl Guides of Canada Training Network

Resources

General planning

These resources include gear selection, route planning, skills, food planning as well as destinations:

Books, Magazines

Trip Tips, Second Edition. Peter Cruchet and Matt Cruchet, 2007, Direct Bearing Inc.
Babes in the Woods: The Woman's Guide to Eating Well, Sleeping Well, and Having Fun in the Backcountry. Bobbie Hoadley, 2003, Falcon
Outdoor Leadership. John Graham, 1997 The Mountaineers Books
Mountaineering: the Freedom of the Hills, editors Steven M. Cox and Kris Fulsaa. 7th Edition. The Mountaineers. 2003
Explore Magazine. <http://explore-mag.com/>
Backpacker Magazine. <http://www.backpacker.com/>

Trip Design and Structure

Organizations

Direct Bearing www.directbearing.ca
Canadian Canoe Routes www.myccr.com

Risk Assessment and Management

Books, Magazines

Managing Risk – Systems planning for Outdoor Adventure Programs. Jeff Jackson and Jon Heshka, 2011
Trip Tips. Second Edition, Peter Cruchet and Matt Cruchet, 2007, Direct Bearing Inc.

Organizations

Direct Bearing www.directbearing.ca
Canada West Mountain School www.canadawestmountainschool.ca
Paddle Canada (with links to Provincial members) www.Paddlecanada.ca
Ontario Recreational Canoe and Kayak Association www.ORCKA.ca
Canadian Canoe Routes www.myccr.com
National Outdoor Leadership School www.nols.edu
Girl Guides of Canada www.girlguides.ca

Web Content

Safe Guide <http://forms.girlguides.ca/SafeGuide/SitePages/Home.aspx>
Outdoor EdSM – the Outdoor Professional's Resource
<http://www.outdoored.com/safety/default.aspx>

Outdoor Education Evaluation & Research Centre www.wilderdom.com/research.php
Fifth Estate documentary of the Laura Gainey accident
www.cbc.ca/fifth/overboard/interview.html

A Dozen More Turns” – a documentary on what happened when 5 qualified, experienced backcountry skiers took one ‘just more run

Part 1: www.lifeonterra.com/episode.php?id=77

Part 2: www.lifeonterra.com/episode.php?id=78

Part 3: www.lifeonterra.com/episode.php?id=79

Navigation

Books, Magazines

Mountaineering: the Freedom of the Hills. Editors Steven M. Cox and Kris Fulsaa. 7th Edition. The Mountaineers. 2003

Wilderness Navigation: Finding your way using map, compass, altimeter and GPS. 2nd Ed. Bob Burns and Mike Burns. The Mountaineers Books. 2004

Mountain Weather: Backcountry Forecasting and weather Safety for Hikers, Campers, Climbers, Skiers and Snowboarders. Jeff Renner. The Mountaineers Books. 2005

Organizations & Web Content

Navigation Resources - instructional and informational resources (websites)

REI - USA based retail store www.rei.com – How to use a GPS video under: Learn – Expert Advice - Information and video clips

Backcountry - website with information on how to have fun in the outdoors without negatively impacting natural resources or others enjoyment www.backcountryattitude.com
www.backcountryattitude.com/navigation_map_compass.html

Natural Resources Canada – Topographic maps <http://www.nrcan.gc.ca/earth-sciences/products-services/mapping-product/topographic-maps/2666>

Compass instruction with a lighter side. www.compassdude.com/default.shtml

Guide to Backcountry Navigation using Map & Compass

by Rick Curtis <http://www.outdoored.com/Articles/Article.aspx?ArticleID=111>

Free online book on use of map and compass www.map-reading.com

Article on compasses, GPS and navigation from UK Scouts

www.scoutbase.org.uk/library/hqdocs/facts/pdfs/fs315074.pdf

Links to resources on navigation. Includes some of the sites listed above.

www.scoutingresources.org.uk/links/links_compass.html

Navigation Resources - Games and activities (websites):

www.science.sjsu.edu/yis/orienteering_for_kids.htm

www.barossalight.sa.scouts.com.au/games/compass-games.pdf

<http://www1.extension.umn.edu/youth/mn4-H/projects/docs/geospatial-compass-course-scorecards.pdf>

www.girlguidingsurreywest.org.uk/Default.asp?page=473

www.reocities.com/Heartland/Hills/5940/compassgames.html

www.inquiry.net/outdoor/games/disabled/4_compass_game.htm

<http://dragon.sleepdeprived.ca/games/compass/compass.htm>
www.janbrett.com/piggybacks/compass.htm

Adventure Camping Gear

Books, Magazines

Trip Tips. Second Edition, Peter Cruchet and Matt Cruchet, 2007, Direct Bearing Inc.

Troop 750 Hiking & Backpacking Guide. Stewart Holt October 1999

<http://www.bsa37.org/Resources/hikingguide.pdf>

Organizations and Web Content

Mountain Equipment Co-op – Canadian retail co-op has articles on outdoor equipment.

http://www.mec.ca/AST/Navigation/MEC_Global/Learn.jsp

Topics include: Cycling, hiking and camping, clothing, footwear, kids, packs, tents, sleeping bags

Bass Pro – retailer for hunting and fishing - article on importance and how to layering clothing

www.basspro.com/webapp/wcs/stores/servlet/CFPage?mode=article&objectID=29900&storeId=10151&catalogId=10001&langId=-1

REI – retail cooperative for outdoor sports

www.rei.com/expertadvice/articles/dress+layers.html

GGC Camping and Outdoors website.

https://memberzone.girlguides.ca/ProgramResources/CampingAndOutdoors/Shared%20Documents/oal_guide_camping.pdf

The Backpackers Field Manual by Rick Curtis www.princeton.edu/~oa/manual/water.shtml

Red Cross article on life jackets and PFDs

www.redcross.ca/article.asp?id=015198&tid=024

Article on choosing a backpack www.nomadicmatt.com/travel-tips/choosing-the-right-backpack/

How to set up a tarp as a tent www.essortment.com/camping-tarp-instead-tent-31392.html

Food Planning

The resources under General Planning include information on food planning, recipes as well as tips for cooking and dehydrating.

Books, Magazines

The Well-Fed Backpacker. June Fleming (ISBN 0-394-73804-7) – available as an e-book as well as in bookstores.

Lipsmackin' Backpacking. Tim and Christine Conners (ISBN 1-56044-881-4) – Includes recipes for dehydrated meals.

Organizations and Web Content

www.trailcooking.com

www.dehydrate2store.com