

Adventurer's MK

Hiking Expeditions

PERSONAL CLOTHING AND EQUIPMENT (WEATHER AND SEASONAL CONSIDERATIONS)

When you select your personal clothing and equipment for an outdoor activity, the elements of weather and season will have a significant impact on your choices. Air temperature, wind, precipitation, altitude, humidity and the UV index are elements of weather that will need consideration. Your local media will offer weather forecasts that are moderately accurate for your area for short periods of time (2-3 days). You can also research weather averages, highs and lows for the area you plan to travel to for your activity.

Remember that weather is not constant or 100% predictable. When you are in the outdoors keep your eyes open for changes in your environment that could lead to weather changes, and be ready to adapt your clothing and equipment choices. Changes in air temperature, air pressure, wind direction or cloud cover often signal upcoming weather changes. More people die from being improperly prepared for weather changes than any other cause in the outdoors.

CLOTHING

Clothing that you wear for outdoor activity must protect you from sun, wind, rain and snow, variations of temperature and insects. The components of outdoor clothing can be identified as:

- a) **hat** – your hat should be wide brimmed for sun and rain protection, with holes for ventilation;
- b) **shell (jacket)** – your shell is your primary protection from wind and rain or snow and keeps your insulation layer dry. It should be long enough to reach your thighs. It should have a hood as well as wrist, neck and waist closures that you can loosen or tighten to allow ventilation. You need to remember that moisture can also come from inside your clothes as you perspire in warm weather or while you are participating in strenuous activities. You can control the build-up of moisture in your clothes by wearing a shell that is made from a waterproof breathable fabric and has extra ventilation openings under the armpits. The extra vents and the ability of the material to allow moist air out without allowing rain in helps keep you dry. Also look for a shell that has a zippered opening in the front and has no permanent insulation layer attached to it. You may also choose a pair of wind or rain trousers to compliment the protection of your shell;
- c) **insulation** – you will want to have appropriate insulation for the coldest weather expected during your activity outside. The best method of insulating yourself is to have several thin layers of insulative clothing as opposed to one thick layer. The thin layers will allow you to adjust the amount of insulation you have on at one time, and add or subtract as the temperature or your physical activity changes. The air space created between the layers is excellent insulation! Wool, and the more lightweight synthetic fleece materials, make good insulators because they maintain their insulative capacity even when wet. Be sure the insulation layers you choose fit under your shell, and that they insulate your neck, shoulders, torso and lower back. Insulation for your legs should be chosen with the type of activities and the lowest expected temperature in mind;
- d) **shirt** – in warm weather you will need a long sleeve shirt to protect you from the sun and insects. The sleeves should have an elastic or adjustable cuff that can be rolled up if

required. It should have a collar that can protect the back of your neck and it should be made of a material that does not retain moisture;

- e) **undershirt and underwear** – your undershirt can be one of your best methods of moving moisture away from your skin to assist cooling as well as keep you dry. Choose a shirt made with a “wicking” material – a material that draws moisture away from your skin and disperses it into your outer layers for evaporation. Your underwear should be comfortable and protect you from chaffing. It should be made of material that does not retain moisture. Your choice in comfortable and practical undergarments is almost as important as your choice of a shell;
- f) **trousers** – choose trousers with full length legs that have closures at the cuffs and an adjustable waist. Large pockets that close securely and self-drain are added bonuses. Ensure that the waist will not roll or fold over when you carry a pack. The material should be durable and provide protection from sun and insects;
- g) **socks** – wear socks that provide the appropriate amount of insulation required for your activity. Remember that your feet sweat as much as the rest of your body so choose socks of a material that will wick away the moisture as well as remain warm if they get wet. Comfort and practicality can be achieved by wearing a thin liner sock under your heavier protective sock. The two-sock system reduces friction on your skin and allows better ventilation. Avoid materials that retain moisture and choose socks that fit inside your footwear; and
- h) **footwear** – the activities you participate in will have a direct impact on your choice of appropriate footwear. The construction, style and material of your footwear will vary with terrain, temperature, weight carried, and speed of travel. For weekend hiking with a light to moderate pack weight along established trails you will need a light hiking boot, or shoe, made out of material that will dry quickly, with a firm but comfortable sole. Longer backcountry expeditions might require a solid hiking boot with extra arch, ankle and heel support. Trail running, orienteering and day hikes require running shoes, approach shoes or light hikers. Regardless of what footwear is appropriate for the activity you must allow time for break in. Breaking in footwear prior to a hike will go a long way to preventing blisters. Make sure that your boots and socks fit properly, there should be just enough room for your toes to move a little forward (this allows room for your toes when you walk downhill).

In general, your clothing should be comfortable and loose fitting. Try all your individual items on before going out to ensure fit and that there is no damage or missing parts. Check your range of motion with all your layers on and be sure that you can reach and stretch without being bound by your clothes. You can complement your cold weather clothing with mitts and a toque made from a good insulator that sheds moisture. Keep all your clothes as clean as possible, repair and wash when required.

Moisture management is a technique of controlling moisture build-up in your clothes. Along with choosing appropriate outdoor clothing you can manage moisture by:

- ventilating your clothing by opening cuffs, “pit zips” and the front zipper;
- wearing clean layers that are loose that don’t retain moisture;
- removing your hat when participating in strenuous activities – except when in direct sunlight;
- choosing insulation that is appropriate to the temperature and activity, and adding or subtracting layers for changes as they occur; and
- keeping your socks clean and dry. Always carry extra socks, and change your socks regularly.

Remember “COLD” if you don’t want to be cold:

- C – clean clothes breathe and insulate better;
- O – avoid overheating by ventilating;

- L – dress in loose layers; and
- D – stay dry.

PERSONAL EQUIPMENT

Your personal equipment is divided into two categories: objects that you carry in your pockets, and objects that find a place in your load carrying device.

Items you would ordinarily carry in your pockets are:

- a. whistle (plastic);
- b. folding pocketknife;
- c. personal first aid kit;
- d. map and compass;
- e. flint and steel;
- f. survival kit;
- g. lip balm;
- h. notepad and pencil; and
- i. small flashlight.

Keep your knife blades sharp and remove or reverse flashlight batteries when storing your flashlight.

SLEEPING BAGS

Your choice of a sleeping bag has a lot in common with your choice of outdoor clothing. It must be the right size (length and width), have the appropriate amount of insulation for the coldest expected temperature, be made of a material that breathes and doesn't retain moisture, and have a good quality fastener (zipper).

Sleeping bag construction – the parts of a sleeping bag are:

- **outer shell** – constructed from a light weight fabric, often nylon or polyester, it should be of sufficient weight and quality to protect the insulation layer;
- **insulation** – sleeping bag insulation is divided into two categories: natural and synthetic. Natural insulation is usually waterfowl down – the short feathers closest to a duck's, or goose's, body that insulate the animal when in cold water. There is a variance in quality of down and the methods used to secure it in place inside the bag's inner and outer shell. Look for a bag with good quality down with the insulation held in place by "baffles" – dividers sewn between the two shells that keep the down in place. Down is the warmest and lightest insulation that can be found in a sleeping bag; however it loses almost all of its insulative value when it gets wet – and it is very difficult to dry in the field. synthetic insulation comes in sheets and is secured between the shells in layers. Check how many layers of insulation are used and how they are attached. Some bags offer more insulation on the top than on the bottom. Avoid bags where the insulation is secured by sewing the two shells together creating seams where there is no insulation. Most synthetic insulation retains its insulative value when wet. Some synthetics are very light and warm – they make a better all-round choice than down for a general purpose sleeping bag;
- **inner shell** – constructed from a light weight fabric. Look for an inner shell that doesn't retain moisture. Many inexpensive bags use cotton/flannel inner shells, which are comfortable, but not suitable for a trekking or expedition bag as cotton takes too long to dry;
- **hood** – a part of the main bag that you can pull around your head in cold weather. This keeps your head warm without a build-up of moisture from your breath in the bag;
- **liner** – a thin bag you place inside your main bag to help keep the main bag clean and to offer a little more insulation;
- **overbag** – a durable bag placed over your main bag to protect the outer shell, and to offer more insulation. Overbags made from waterproof and waterproof-breathable material can

be used as mini-shelters – there are several good designs of these “bivi-bags” that have screened openings to protect your face from bugs and to allow some ventilation in warm weather; and vapour barrier – a non-permeable membrane designed to keep warm moist air created by your body inside the sleeping bag components. It is used only in temperatures below 0°.

Choosing a sleeping bag – check your bag size by getting in and moving around. You need some space for a liner and extra clothes in cold weather. Be sure you have enough room to move your arms to zip up from the inside, and enough room around your feet so that they can rest in a comfortable position. Bags come in three basic styles, each one offering their own advantages:

- **rectangular bag** – the most common economical bag. The zipper often opens fully to create a double sized blanket. This style is roomy and can be useful for warm weather camping or indoor accommodation. The disadvantages as a bag for trekking or expeditions are numerous. The extra air space around your torso, legs and feet means that it takes more heat energy to heat up and keep the space warm. The extra material means the bag is bigger and heavier. There is no protection for your head in cold weather, and the liner materials used tend to retain moisture and odours;
- **mummy bag** – named this because you resemble an ancient Egyptian mummy when you’re in it! The bag tapers from the opening following the contours of your body closely. There is very little extra air space once you are in the bag. The zipper may only reach halfway down the side of the bag and it is protected by an insulated flap (called a “draft tube”). The opening of the bag will have an insulated hood with a draw cord to pull the hood snug around your face to keep warm air in. Mummy bags for extreme cold will come with two separate bags, an inner and outer that is used together. The mummy bag is certainly the warmest of the bag styles. The amount and type of the insulation will determine the overall bag weight; and
- **barrel bag** – this is a compromise between the efficiency of the mummy design and the economy of the rectangular bags. The shape tapers from the opening towards the foot, but is still considerably roomier than a mummy. Quite often there will be a hood with a draw cord, or at least an extension of one side of the opening that offers some head insulation. Depending on the insulation, this design is a good choice for spring, summer and fall camping.

Care of your sleeping bag – keep your bag clean! Do not eat while in or sitting on your sleeping bag. Repair rips and damage as soon as it happens. Protect your bag from moisture, water from outside and moisture created by your own body. Air out your bag after each night’s use and do not sleep with your head tucked into your bag. When you pack your bag use a “stuff sack” and do just that – stuff the bag in, do not roll or fold it.

SLEEPING PAD

You need a layer of insulation between you and the ground when you sleep, especially in cold weather. As with the sleeping bag, choose a pad that is appropriate for the activity you are participating in and the weather you expect. The colder the ground temperature, the more insulation you’ll need. Pads come in several length and designs:

- **closed cell foam pad** – the foam is lightweight and doesn’t absorb water. You can get foam pads in variety of thickness, depending on your desired amount of insulation and comfort. Most foam pads are low priced and usually durable;
- **air mattress** – rubber, vinyl or a combination of materials in a variety of thickness. Usually they’re heavier than a foam pad, but offer good insulation when fully inflated. Disadvantages are that they are easily damaged, and they take a long time to inflate for use and deflate to pack. In cold weather, if you inflate your air mattress by mouth, ice crystals

will form inside from the moisture in your breath (later, in the warmth, the moisture will cause your mattress to rot); and

- **self-inflating foam-air combination pads** – these pads use foam as well as an adjustable valve to create a quick-to-inflate pad that has the insulative values of an air mattress with the convenience and light weight of a foam pad.

TENTS AND PRE-MADE SHELTERS

Tents and pre-made shelters come in many styles, sizes, shapes and materials. Most will use poles (aluminium, carbon fibre or fibreglass) and “guy” lines for support, and will be constructed from a lightweight water-resistant material. Tents and shelters are traditionally made from nylon, polyester, canvas or cotton. Some require pegs driven into the ground for support. No tent or shelter is fire proof, so use extreme caution with open flame.

Modern tent styles include dome, tunnel and ridge (or a-frame) designs. Each tent is rated by the manufacturer for 3-season (spring, summer and fall), or 4-season use. A 4-season tent has stronger materials and is designed to withstand strong winds and use in cold environments.

For backpacking expeditions, choose a tent or shelter that offers sufficient protection for you and your kit. Sometimes you can divide the parts of the tent to carry among the other members of your “tent group” – the group of people sleeping in one tent. Each tent will be rated for the number of people that are supposed to fit in the tent to sleep. Often, you will need to choose a tent rated for at least one more person than you plan to have in your tent group to allow for room for your kit. Some tents have a small sheltered area at the door, called a vestibule, to allow a storage area for kit.

Some tents use a separate “fly” (a waterproof tarp that fits over the tent) to keep you dry, while some have just a single wall and roof with waterproof qualities. All tents must be dried completely before long-term storage.

PERSONAL ACCESSORIES

Some small pieces of kit you should always carry in your pack:

- stainless steel cup, knife/fork/spoon (KFS);
- insect repellent and sunscreen;
- a small tarp (at least 2m x 2m);
- small trowel for digging;
- sewing kit
- a first aid kit; and
- hygiene products (as required).

PACK AND CARRY INDIVIDUAL CLOTHING AND EQUIPMENT LOAD CARRYING DEVICES

There are many devices made to assist you in carrying loads on your trek or expedition. Some of these devices are:

- backpack (also known as a “rucksack”);
- “load bearing vest” or “webbing” – used primarily by military forces, webbing (small compartments attached to a common harness) and the vest allow soldiers to carry the essential pieces of their equipment with them at all times. Enough kit can be carried to support a person for 24 hours;
- canoe pack and “dry bags” – used by canoeists to carry all their equipment in their canoe. The special features of a canoe pack are large volume and soft sides – to avoid damage to the canoe. Dry bags are specially constructed to be waterproof, even in the case of being capsized;
- barrel – while voyageurs used to pack wooden hardwood barrels for trade and food supplies, modern plastic barrels for expeditions offer animal-proof and water tight

storage for food and fragile equipment. Often, these are used in canoeing and expeditions in bear country; and

- pack board and tumpline – are two traditional load carrying devices for carrying heavy loads. The pack board is carried balanced on your shoulders and upper back, a tumpline (a band from the top of the load around your forehead) assists in keeping the balance of the load high and resting on your bone structure. The combination pack board with tumpline is still common with traditional porters and canoeists (for portaging heavy loads).

BACKPACKS

The common parts of backpacks are:

- harness – includes backplate, shoulder straps and sternum strap;
- hip belt;
- frame – internal or external; and
- bag.

The two common backpack designs are: external frame; and internal frame.

EXTERNAL FRAME BACKPACK

External frame backpacks are constructed with a bag attached to a visible metal or resin frame. Some external frame packs offer a frame that adjusts in length, however most are not adjustable. It is important to choose a frame that is the correct size. Try the pack on and ensure the hip pads and hip belt rest snugly on your hips – the shoulder straps should connect to the harness at the same level as your shoulders.

External frame packs have the advantages of:

- adaptability of components – bags can interchange and you can add objects from one person's pack onto another's (great if one of your teammates is having trouble and you want to help carry some of their kit);
- you can carry large and awkwardly shaped objects; the bag and cargo does not press against your back, offering ventilation and a comfortable carry;
- frames can be used to make an emergency stretcher; and heavy objects are easily attached close to the shoulders. The disadvantage of this frame is that the pack is very rigid and the load is held higher up your back, raising your centre of gravity. These characteristics make an external frame pack great for novice trekkers, and for carrying heavy loads over worn trails and fairly level terrain.

INTERNAL FRAME BACKPACK

Internal frame packs are constructed with a resin or aluminum frame sewn into pockets in the harness of the bag. Often the frame consists of two "stays" running vertically along the backplate. Aluminum stays are meant to be moulded to the shape of your back. The bag is designed to carry all your gear internally with only pockets and accessories attached to the outside. Some smaller packs may offer the option of attaching a sleeping bag stuff sack to the top or bottom. Like the external frame packs, it is important to correctly size your internal frame pack. Some models offer a range of pack sizes and some offer adjustable or replaceable stays. The opening to the bag is an important feature. A small opening aids in weatherproofing but makes packing and unpacking more difficult. A wide opening is handy but the longer zippers or extra fasteners are often more prone to trouble. Be sure that the zipper or fastener for the opening(s) is not at a place that will receive a lot of stress when the bag is packed and carried. If the zipper breaks you might not be able to close the bag! Most larger bags will offer two or more compartments inside the pack. This will assist you in placing heavier items in the proper place, and keeping all your kit organized.

The benefits of an internal frame pack are:

- comfortable harness that can be adjusted and moulded to you;
- a bag that holds its load close to your back and close to your centre of gravity;
- easy to pack bag; and
- the lack of projections and protrusions from pack make trekking in forests and through tight spaces easier.

The disadvantages of this design are:

- hard to move equipment from one person to another;
- hard to carry large or awkward objects;
- with the backplate pressed against your back, care must be taken while packing to pad sharp or hard objects; and
- ventilation is restricted across your back.

These characteristics make internal frame packs a good choice for treks with light to medium weight packs through forest or hilly terrain. Internal frame packs are excellent for climbing and mountaineering where range of motion and a lower centre of gravity are important.

HOW TO WEAR YOUR RUCKSACK

You must take the time to adjust all the features of your pack before heading out into the wilderness. Get a teammate to assist you when putting on your pack – it will be easier to adjust properly with a helping hand.

Shoulder straps:

- check shoulder straps for length – padding should cover across shoulder and down front of chest;
- some shoulder straps offer a tensioning strap at the top of the shoulder that is used once the pack is on to draw the top of the frame closer to the shoulders;
- some straps offer a quick release feature on one or both shoulder straps (hip belts as well). These are especially handy if you have fallen into water, or you are in an emergency and you need to get the pack off immediately. Quick releases are not for routinely taking off your pack;
- only tighten the shoulder straps enough to hold the pack to your back. They are designed to work cooperatively with the hip belt to support your pack; and
- a sternum strap connects the two shoulder straps together. Because the hip belt takes most of the weight, your shoulder straps may wander towards the outsides of your shoulders. The sternum strap holds the shoulder straps in place.

Hip belt:

- wear the hip belt snugly around your hips, not your waist;
- when putting on your pack, tighten your hip belt first, then your shoulder straps – this ensures that the weight is resting on your hips; and
- you can attach a water bottle holster to your hip belt.

PACKING

General rules:

- fasten all pocket covers and do not let anything hang or dangle from the outside of your pack;
- place a plastic garbage bag inside the main compartment to keep your items dry;
- place heavy objects close to the back of the frame, centred and higher on the load. This will balance your pack;
- carry long items vertically. The width of your load should not exceed 60cm;
- the shape of the load should be kept as flat as possible;
- snug up all compression straps to keep your load compact;

- place all toiletries in a protective bag inside your pack to avoid toothpaste flavoured clothes;
- carry all fuels in an approved sealed container;
- pack all the things you will need in an emergency in pockets or in the top of your pack;
- you want to pack things in the order you are likely to use them for example, pack your shelter and cooking kit at the top of your bag so that it is the first thing you pull out. If it is raining when you arrive at your biv site, you will not have to pull all your clothes and sleeping bag out looking for your shelter;
- pack your days meals and snacks in an outside pocket – so you do not have to open the main bag at lunch or snack time;
- get a hydration bag (a soft plastic water bottle with a long flexible drinking tube) or position water bottles in convenient pockets or pouches;
- avoid carrying more than 16kg (35lbs) – heavier weights in any kind of pack may injure or damage the nerves in your shoulders. If you notice your hands becoming numb when carrying a pack, try loosening your shoulder straps, lightening your load or padding your shoulders. Experienced and stronger trekkers may find they are comfortable with heavier loads, but they should still be watchful for signs of injury;
- Some external frame packs may require extra padding at the small of your back to hold the frame away from you. Try your pack on before your trek and ensure that you do not get any chaffing on your back or hips; and
- Always protect and pad sharp edges of equipment and tools.

TRAIL ETIQUETTE

Wear shoes and boots with shallow treads so you don't rip up the ground – in the wilderness, the most widespread type of damage caused by recreational use is caused by people trampling the flora. When following an established trail, avoid taking short cuts or walking around wet or muddy sections. These deviations from the trail widen it or unnecessarily damage the land around it. When walking in pristine areas, spread out and take a slightly different route than the person in front of you – you can still follow your leader, but you will not make a permanent trail.

Travel in small groups (4-12 people) whenever possible, and be respectful to others you might meet along the way. Check your clothes regularly and remove hitchhiking noxious weed seedlings and burrs. When you leave a bivouac site it should look exactly as when you arrived – if not better.

OBSERVE HIKING TECHNIQUES

Walking with a pack is different than just walking. There are techniques that will make you more comfortable and efficient. Always stretch and warm up before starting a trek.

FOOT CARE

Use a comfortable insole and ensure that you change your socks regularly on a long trek. Keep your feet dry – use foot powder to keep your sweat from soaking your socks. By wearing two pair of socks, friction is reduced on your skin, and moisture can be drawn away from your foot into the outer sock. Check your feet every hour and reapply powder or change socks as required. Treat all “hot spots” and blisters immediately. Always carry some adhesive bandages and blister treatment (like moleskin) for foot care. Avoid popping blisters unless you can be sure that the area and implements are sterilized. Do not be afraid to stop your team if you, or a teammate, is having foot problems or needs to dry out feet after a dunk. Time taken in prevention is always less than being slowed down by injuries or emergencies later on.

Keep your boots dry! Avoid wade into water unnecessarily, and air them out at rest stops and overnight. Do not tuck wet socks into them at night.

ENERGY CONSERVATION TECHNIQUES

When you are on a trek, you want to conserve your energy so that you will have spare energy to deal with a changed plan or an emergency. Prepare yourself by being well fed, well rested and physically fit before you start a trek. Stretch and warm up well before you start. Being overly tired increases your chances of accidents, injuries and making poor decisions.

A good indicator of efficient walking is your rate of breathing. Heavy, laboured breathing is a sign you may be working too hard. Your muscles need sufficient oxygen to work well, and breathing normally and rhythmically allows enough oxygen to transfer into your bloodstream. On level ground, carrying a pack, an average person will take one full breath in and out per 3 paces. On difficult terrain your rate of breathing should increase, but do not let yourself get to a point when you are struggling to breath evenly (gasping or wheezing).

Work with your teammates to create a suitable pace that everyone can manage. Pace is adjusted by two means; changing the length of each stride, or changing the speed of each stride. It is like changing gears on your bike. Difficult terrain can be crossed with short fast paces; easy terrain may be better suited for long relaxed paces. The best judge of pace is whether the team has to stop often and the pace slows gradually during the day, or whether the team can maintain the pace throughout the day with only the regular rest stops. Do not treat trekking like a race – the fastest team doesn't win.

Each step you take should feel relaxed. Place each foot on the ground in front as flat as possible, not heel first. Use your thigh muscles to swing your leg forward. To increase your pace, place your foot further in front, rather than just trying to push harder with each stride. When going up steep slopes use a "rest step" – pause between each stride on a straight leg.

TEAMWORK

Each team member is required to buddy up with another team member. They should talk when they can (being able to talk is a good sign that no one is being pushed too hard), and check each other for signs of injury. Remember to set the pace to the slowest member of your team. Using up the energy reserves of a teammate is dangerous! It creates an environment where injury is more likely, as well as lowering team morale. Put slower hikers up front or in the middle with a strong "buddy."

REST STOPS

Establish a routine of rest stops during the trek. Always stop briefly 10 minutes into the trek for people to check their equipment (boot laces, loose straps, etc.) then stop for 10 minutes every hour – or if you are on tough terrain, 5 minutes every half-hour. The time taken for a break may vary due to circumstances. Use the opportunity to check feet and to ensure everyone is drinking water. In hot weather, check for sunburn and signs of heat exhaustion. In cold weather, check for frostbite and hypothermia. Ensure your team doesn't block the trail during a break – move at least 10m from the trail where possible. Watch out for rapid cooling while resting – put on an extra layer to keep warm, especially in cool, wet or windy weather.

TREKKING TECHNIQUES

When walking on an established trail avoid increasing your pace because the going is easier. Keep team members well-spaced (2-3m day time, 1-2m night), and don't allow shortcuts or unnecessary detours around puddles /obstacles. On roads, keep well to the side facing oncoming traffic and ensure vehicles can see you. Carry reflective safety vests when you plan to walk on roads. If you meet another group, move to the side to allow them to pass. Be cautious around horses or other pack animals on the trail – move well off the trail and do not make sudden movements or noises.

Small footpaths and game trails in the woods make great trekking trails, just remember that the animals or people who made these trails may not have been going where you want to go. Always keep track of your position on a map. Do not follow trails blindly.

Walking off-trail is both exhilarating and challenging. Navigating, obstacle crossing, and safety concerns make “bushwhacking” all the more interesting! Ensure your teammates keep their spacing to avoid branches swinging back, and to be able to see upcoming danger. Beware of pushing rocks or snow down on teammates, always check up and down a steep loose slope before crossing.

When walking up a steep hill, keep your body straight. It will be easier to regain your balance, and if you fall at least you will fall forward. Take small steps and try to always keep going up – rather than cross an obstacle that would require you to climb up and then down the other side, find a route around that lets you stay at the same height, or increase slowly. If you can't easily step over it, go around. Reduce the angle of the slope by walking across rather than straight up – this is called “traversing.” Keep the angle less than 45°.

Walking down a steep hill is as difficult and dangerous as walking up. Keep control of your speed and watch out for loose soil, snow, ice or loose/wet rock. Keep your knees slightly bent and place each step gently to reduce the impact and friction on your feet. Try to step on the uphill side of obstacles and rocks.

CROSSING OBSTACLES

When crossing boulders and land obstacles, plan your route before starting to cross. Always choose safety over convenience. If you wear your pack across, keep all your straps tight to keep the pack close to your body. You can always take your pack off for difficult obstacles and hand it over to a teammate – on long obstacles make a chain of people to ferry packs. On difficult obstacles one person can act as a spotter for the next. Keep your hands free for balance – do not try to carry something while crossing. Ensure that the obstacle doesn't become too crowded; keep extra distance between each person.

Crossing Water

- If possible find a dry crossing (preferably a bridge)
 - If using logs, do not cross over anything you couldn't wade
 - Do not use a log that is more than chest high
 - Do not use a log with loose bark, unstable or slippery
- Where crossing is absolutely necessary, select tail-out area where water is shallow (streams may not be crossable where fast flowing water is more than knee deep)
- When crossing use a walking stick or link arms with other party members to help stabilize yourself, (keep two point contact at all times)
- Dry out wet clothing after crossing
- Use a floatation device when working around rivers which includes any crossings other than bridges

Do not try to wade through a water obstacle where the water is above your knee, or if the water is fast flowing. Always be sure you can see the bottom clearly. If the water is murky and you cannot see the bottom, find another way across. Examine the consequences of falling in before considering crossing a makeshift or suspicious bridge. Do not risk falling into deep, cold or dangerous water because you are too lazy to look for another route. With the appropriate safety equipment, your officer may choose to cross or make a bridge. Only cross a deep or unknown water obstacle with the direct supervision of the Troop Leader.

When you cross, either remove your pack and ferry it across (ensure it is waterproofed!), or carry it on your back with the waistbelt and sternum strap undone, and be ready to remove your pack if you fall. Do not cross a water obstacle alone. You can use a walking stick as an aid for balance and cross in pairs or groups. If the bottom is smooth, you may want to remove your boots and wear running shoes or sandals across. If the bottom is rocky, wear your boots – if the water is not too cold you may want to remove your socks to keep them dry. Always give your team time to dry their feet after crossing. In cold weather consider the consequences of a teammate getting soaked before risking a water crossing.

PREPARE FOR AN EXPEDITION

What is an expedition? An expedition is an organized voyage or journey across land or water, with a specific aim in mind. For example; a weekend trek in a local park to give junior cadets leadership practice, a seven day trek through Riding Mountain National Park for Duke of Edinburgh Award qualification, or a canoe trip through Algonquin Park as part of a Regional Expedition. To prepare yourself for an expedition you must be physically and mentally ready to go. To be physically ready, you must be physically fit (at the appropriate fitness level for the expedition, and not have any recent or recurrent injuries), your personal and team equipment must be ready, and you need the expedition plan and map. To be mentally ready you need to be prepared for an emergency, able to communicate, and have a clear understanding of the expedition aim. As a team leader, you will have to assist your teammates with their preparations as well. The golden rule is, “Check, then check again.”

PREPARING EQUIPMENT

The expedition plan will have a list of kit each person is required to bring, as well as equipment that will be issued – personal and team. A few days before the expedition, check the weather forecast for the expedition dates. Note both high and low temperatures, as well as wind speed and precipitation. Few weather forecasts are exactly right, but it will be a good guide for choosing clothing. Go hour by hour, or event by event through the expedition plan, and make a checklist of equipment and clothing you think you’ll need. Some small equipment may be left off the plan list and you have the option of bringing extra stuff – remember that you will have to carry it.

Lay all your kit out and check each piece for serviceability and cleanliness. Wash and fix it as required. Ensure batteries are in your flashlight, and check your survival kit for all the appropriate items.

With experience you will be able to create master kit lists of your own for each season and each different activity – one list for canoe trips in the fall, one for trekking in the winter, etc. Always check your kit before the expedition – once you have started it is too late to remember you have no toilet paper, or that there’s a hole in your rain jacket. When you are issued team equipment, check it as well. Set up the tent to make sure there’s no holes and that all the parts are there. Light the stove and lantern and let them burn for 5-10 minutes to be sure.

Check your copy of the expedition plan and map before leaving. Look for changes in the route, discuss possible problem areas, and make sure you know what the emergency plan is and what to do in an emergency. When you finish an expedition check your kit again and fix and clean right away! If your kit is clean, dry and in good order when it gets put away, it will be quicker and easier to get ready for the next expedition.

PREPARING YOURSELF

You must be ready. Get yourself into good physical condition and stay there. You will not be able to lead or contribute to your team if you cannot keep up. All leaders need to be capable of completing

the physical aspects of an expedition so that can react to emergencies and changes in plans. It is important to build up to an expedition. Start off slow, over easy terrain, then move up to progressive longer distances and more difficult terrain. You do not need to be the fastest or strongest on your team – but you should be at least at the team average. The wilderness treats everybody the same, it will not go easy on you because you were not ready.

Make sure your technical skills are ready. Practice the small skills your teammates will not have confidence in you if you struggle through tying knots, setting up a shelter or navigating. Seek advice from experienced cadets and bring some notes with you if you think you will need something to act as a reference.

During the expedition, take a few moments to assess how things are going and do not let yourself get overconfident or overtired. Allow your teammates to help you if you need it – pass over some smaller responsibilities to competent teammates so that you can concentrate on the important stuff. Be confident enough to respect your personal limits and stop if you need to. Write down your thoughts and reactions, as well as memorable events in your journal.

Ask yourself:

- a. am I ready?
- b. is the team ready?
- c. do I need to practice any skills?
- d. are there new skills required from me or the team?
- e. does the team need practice time?
- f. what is the weather forecast?
- g. do we have food, water, a place to sleep?
- h. do I understand the emergency plan, the route and the timetable?

PREPARE FOR EMERGENCIES

Emergencies can happen any number of different ways. Sudden changes in weather, accidents, natural disasters, poor decisions by one or more people, or even attacks by animals. You can lower the risk to your team by making reasonable and sensible decisions, and by following established safety guidelines. Communicate with your team and ensure they understand your aim and instructions. Establish a team plan for what each member will do in an emergency.

Monitor the members of your team for injuries and exhaustion. Remember that few emergencies in the wilderness are caused by a single event. Most emergencies are the product of a chain of events and decisions. Carry a first aid kit and ensure all team members know where it is and how to use the components.

One of the most stressful wilderness situations is getting lost. Some people panic when they realize they are lost, and by running around they make themselves even more tired, disoriented and confused.

EMPLOY COMMUNICATION PROCEDURES

You would use a variety of different communication methods with all parties concerned with your expedition, Radio communications with Base HQ, hand signals with fellow team mates etc. Field signals are used in situations where it would be difficult to pass on instructions verbally such as blowing wind or spread out over a long distance.

PREDICT A CHANGE IN WEATHER

Weather has a massive range throughout the year. Temperatures can change as much as 20°C in one day, winds can develop or drop off, it can rain, snow, hail, or drizzle, and all changes can happen

suddenly. Knowing the weather influences your choice in clothing, routes, plans, etc. One thing to remember is that weather is a combination of systems, and as such, it gives warnings of change in advance of a new system. Your ability to notice and interpret these warnings will give you an advantage in making decisions for your team's safety and well-being.

You do not need to be a meteorologist to make some weather predictions, but you do need to have some knowledge of what is going on up there. As a leader in the outdoors, you need to be aware of upcoming changes in weather in order to make appropriate decisions concerning training. While equipment is available to assist weather forecasting, the average outdoor leader should at least be able to recognize changes based on observation.

WEATHER SYSTEMS

Warm air (tropical) masses usually move north from the Caribbean and cold air (polar) masses move south from the arctic. Air masses can form over both the land and the ocean. Air masses generally move from west to east. Weather associated with a polar air mass is apt to change abruptly as the cool air warms rapidly over land, while weather associated with tropical air masses will likely remain constant for a while as the air is already warm.

Air pressure – is effected by air temperature. Cold air is heavier, and therefore creates areas of high pressure as more air is close to the ground. Warm air creates low pressure because warm air rises and reduces the pressure on the ground. These areas are called pressure systems. Usually, low pressure systems are associated with fair weather, and high pressure with foul weather. Both systems can bring precipitation. High pressure systems create winds that rotate in a clockwise direction, and low pressure systems create winds that rotate anti-clockwise.

As these systems move over, you may notice the wind shift directions. High and low systems cannot occupy the same space, they displace each other. The line where two air masses meet is called a front. There are three types of fronts: warm, cold and occluded.

Warm fronts – are more stable than cold, which makes the weather less severe, but longer lasting. As warm air meets cold, it rises over the cold, and the moisture in the air condenses, both from the rise in elevation and from contact with the cold air, creating clouds and possibly precipitation. Warm fronts move between 15-30km/h, and the air is moist with low ceilings and poor visibility, but there may be no appreciable precipitation. Warm fronts can be forecast up to two days in advance by a consistent sequence of cloud formations – cirrus, cirrostratus, altostratus, and then nimbostratus.

Cold fronts – are more unstable than warm, and consequently very active. As cold air comes in contact with a warm air mass, it forces itself underneath, pushing the warm air up where the moisture condenses into clouds and possibly precipitation. Weather conditions are commonly more severe, although shorter in duration than those associated with a warm front. Cold fronts move between 40-80km/h, and form to the north or west. Cold fronts can arrive with little warning, altostratus clouds usually preceding nimbostratus and cumulonimbus.

Occluded fronts – occurs when one air mass is caught between two others. In most cases, the weather will include precipitation, often heavy – altostratus clouds preceding cumulonimbus.

TYPES OF CLOUD FORMATIONS

Cirrus – are detached clouds in the form of white, delicate filaments or white (or mostly white) patches or narrow bands. These clouds have a fibrous (hair-like) appearance, or a silky sheen, or both. Cirrus clouds leave milky white swirls and curls etched across the sky.

Cirrus Cumulus – Often referred to as heap clouds, cumulus clouds are typified by heaped or fluffy formations.

Cumulus Cirrocumulus – High-level heap clouds. Very often seen combined with cirrus clouds. Cirrocumulus clouds indicate a condition of unstable air and may lead to precipitation before long.

Cirrocumulus Fair-weather cumulus – Low-level cumulus clouds that often form in the late morning or early afternoon. Clouds are not very dense, are white in colour, and are well separated from one another. These clouds

form when the air mass is stable and being warmed. Fair weather cumulus

Cumulus congestus – High-level cumulus cloud formed by massive uplifting of heated air within a very unstable air mass. Its top is still bumpy and forming. If clouds form in the west there is a likelihood of gusty winds and showers in 5 to 10 hr.

Cumulus congestus Altocumulus -medium-level, fleecy or puffy clouds, similar to dense cirrostratus, but without any telltale halo. When viewed in the early morning, altocumulus usually indicates thunderstorms or precipitation within twenty-four hours (often that afternoon).

Altocumulus Cumulonimbus – Often massive cumulus with a broad base ranging from 3,000 feet upward to 16,000 feet, even 65,000 feet is not unusual. Top is fuzzy or anvil shaped. Heavy downpours, coupled with hail, lightning, and thunder, are common.

Cumulonimbus Stratus – means layered, essentially formless with no real defining base or top. Fog is a type of stratus cloud that lies close to the ground and is caused when the earth's surface cools. This cooling effectively lowers the air temperature, resulting in condensation.

StratusCirrostratus – High-level veil-like cloud formations composed of ice crystals and often spreading out over a very large surface area. Halos around the sun are very often observed in cirrostratus clouds, when observed decreasing in size, it indicates a lowering of the cloud ceiling and possible precipitation within forty-eight hours.

Cirrostratus Altostratus – Medium-level clouds that are flat, and dark grey in colour. A darkening of the cloud cover indicates possible precipitation within forty-eight hours.

Altostratus Nimbostratus – Low-level, dark and thick clouds, often without any real defining shape. Their ragged edges, known as scud, produce steady precipitation.

FORECASTING FROM CLOUDS

When the weather is going to change for the worse you will notice several general cloud activities. Clouds, regardless of their formation, will thicken (darken), increase in number or join together, form layers or stacks, and/or lower in elevation. Clouds that form banks in the west, with winds from the south forecast storms. Other signs of change for the worse are:

- a. clouds that are moving in all directions, or contrary to the ground wind;
- b. altostratus clouds that darken and lower mean precipitation over the next 24 hours;
- c. there is a halo around the moon;
- d. altocumulus clouds moving quickly across the sky, or forming with turrets in the morning are signs of storms within 12 hours; and
- e. cumulus clouds forming in the morning and stacking in the afternoon, or moving from the south or south-west, expect rain or storms that day.

When the weather is going to change for the better you will notice the cloud cover lifting, becoming lighter, and small patches of blue sky developing. If cumulus clouds form in the afternoon, or float alone without stacking, expect fair weather for 24 hours. Stratocumulus clouds drifting with the prevailing wind remaining scattered indicates 24 hours of the current weather.

Other indicators of stable weather:

- a. the condensation trail ('contrail') left by high altitude aircraft disperses quickly; and
- b. morning fog burns off before noon.

FORECASTING FROM WINDS

Changing for the worse:

- a. winds from the east increasing in speed usually indicate a coming storm;
- b. winds from the south increasing in speed; or,
- c. winds shift in a counter-clockwise direction (e.g. north wind shifting to west then south).

Changing for the better:

- a. winds from the north-west usually indicate clearing, or continued clear weather for 24 hours;
- b. winds from the south or north decrease; and
- c. winds change in a clockwise direction (e.g. south to west).

KEEPING TRACK OF WEATHER

Forecasting weather is an imperfect art – even for those equipped with the latest technology. Make notes in your journal in the morning, at noon and at night about the weather. You can use these notes to track changes and to help make forecasts. Do not let this replace researching weather patterns for your area, listening to professional weather forecasts, or common sense.

LIGHTNING AND DANGEROUS TERRAIN

Lightning strikes kill people every year. When you notice a thunderstorm approaching, stop whatever you are doing and take steps to ensure your safety. Get out of the water, do not stay on a hill top or in an open field, stay out from under tall single trees, and stay away from towers and poles. If the storm has caught you off-guard, crouch down as low as you can with your feet close together – this will reduce the surface area of your body exposed to possible ground current from a nearby strike. Place yourself in a cluster of trees, spread out 10m from other members of your team. Avoid depressions where water may gather as it will conduct ground current. If your sleeping pad is dry, place it under your feet for insulation.

You should take extra care when crossing dangerous terrain. Steep slopes and cliffs, wet rocks, obstacles on a trail, and deep flowing water all create risks to your safety when you try to cross them, or pass near them. For difficult obstacles, pass your rucksack over to a teammate first, and then cross. Or use a “spotter” at the obstacle to assist teammates. Do not try to wade through water when you cannot see the bottom.

If you are to travel at night, ensure that you can see and be seen. Stay off roads where visibility is limited, and do not try to pass through dense bush where you can lose your way, become separated from your group or walk off a cliff. Reflective or bright clothing, glowsticks or flashlights are recommended for each team member.

JUDGE A DISTANCE

While electronic range finders and GPS receivers have made the average person better able to measure distance accurately in the field, the ability to judge distances without electronic aids remains an important skill. From assisting navigation, to communicating information about features or people, to the routine of setting up a biv site, the skill of judging distance is of daily value. At short distances it is easy – but longer distances require a great deal of practice. There are several methods to assist you in judging a distance: the unit of measure, appearance, halving, bracketing, and unit average methods.

UNIT OF MEASURE METHOD

This method relies on you observing and remembering a measured distance and then estimating other distances using your “unit of measure.” The most common unit of measure is 100m. Your local soccer pitch or football field is 100m long. Stand at one end and familiarize yourself with the distance. This distance then becomes your imaginary metre stick as you place it between yourself and the object you are judging a distance to. By saying to yourself, “That object is 3 football fields away” – you have judged it to be 300m. This method can only be used when there is nothing obstructing your field of vision.

THE APPEARANCE METHOD

Another way to judge the distance to an object is to study what it looks like compared to its surroundings; this is called the appearance method. It takes a lot of practice to become good at it. One way of practising is to again go back to a place where you have accurately measured 100m. Place people, kit, vehicles, etc. at the 100m mark so you can memorize what they look like at that distance. Do the same with the targets at 200m, 300m, 500m or more. When standing at a distance from such objects as a house, a vehicle or a person, you can learn to judge distance from the appearance of the object, i.e. from its size and the amount of detail you can distinguish.

By comparing the appearance of a person's body at 100 m, 200 m, 300 m, and 500 m you will find as the distance increases the body appears smaller and other features gradually fade out. The following may be used as a guide to judge the distance between you and another person:

- 200 m – all parts of the body are distinct;
- 300 m- outline of the face becomes blurred;
- 400 m – outline of the body remains clear but the face is difficult to distinguish;
and
- 500 m – the body appears to taper from the shoulders and movement of limbs can be observed.

There are several optical distracters that make the appearance method challenging.

An object will appear closer than it is when:

- the object is in bright light or the sun is shining from behind you;
- the colour of the object contrasts sharply with the colour of the background;
- you are looking over water, snow or a uniform surface;
- you are in a clear atmosphere found at high altitudes;
- there is dead ground (dead ground is that terrain between you and the object which you cannot observe because of an obstruction, e.g. ridge, hill, trees, etc.);
and
- it is larger than other things around it.

An object will appear further away than it really is when:

- there is poor light or fog or the sun is in your eyes;
- only a small part of the object can be seen;
- you are looking down a street or tree-lined road;
- the object tends to blend with the background;
- the object is smaller than other things around it; and
- you are lying down.