### 4.2.6 Insects

**OBJECTIVE:** All searchers must be aware of insect species in Ontario that can cause them harm and what protections exists. Searchers must be able to recognize the symptoms of disease that insects can carry. Searchers must also know what to do if they are faced with a severe allergic reaction.

#### 4.2.6.1 Insects and their Effects on SAR

*Role of team leader* - ensure team members are aware of these risks and have insect repellent. Instruct all members about the potential for disease and how to recognize symptoms that may not develop until long after an operation or training exercise has taken place. Know which team members have severe allergic reactions to insects and that they know how to administer their own medication. Be aware of members when they are distracted due to the annoyance of insects and stop and refocus the team when needed.

*Actions of searcher* - know the health risks of insects in Ontario. Dress appropriately and use insect repellent. Avoid contact with poisonous spiders. Follow instructions given. Be prepared to carry out first aid to the level trained. Know what to do if you find a leech or tick attached to a body part or are stung by a bee.

*What could affect said actions?*

- *Searcher* - lack of ability to recognize specific species of poisonous insect. Distraction due to the annoyance of insects. Lack of knowledge of prevention or treatment of bites.
- *Team leader* - same as searcher.
- *Team* - lack of preparation or protocols to deal with the discovery of poisonous insects while conducting search operations (whether training or operational).
- *Command post* - same as team.
- *Environment* - unfamiliar terrain and vegetation could lead to searchers being poisoned by unfamiliar insect species. Train in as many different types of terrain within your area of operations. Get to know the natural landscape you operate in.

*What protocols are in place to address any problems?*

- In Ontario there are many biting insects and a few carry diseases or are poisonous. All team members need to be able to take action to protect themselves.
- All members should use and carry insect repellent. All members should wear closed footwear, pants and long sleeved shirts. Pants and sleeve cuffs should be secured to prevent insects from entering. Hats and neck scarf should also be worn in areas of heavy insect populations. Head nets and gloves might also be a necessity while searching in some areas.
- If a member has a severe allergy to an insect bite, they must ensure that their chain of command is aware of the situation. These members must carry medication and alert bracelets while in the field and need to alert their team members to where their medications are kept.
- Render first aid appropriate to your level of training.

#### 4.2.6.2 Mosquitoes (West Nile Disease)

Mosquitoes are abundant, beginning in mid to late May and last longer than blackflies (usually into July). Mosquitoes are most often a problem in cooler, shady parts of the forest, as well as in the evening and into the first couple of hours of darkness. They become less of a problem through the night (although they do not disappear entirely). When outdoors, wear long sleeves and pants, especially during dawn and dusk, and use insect repellent with up to 35% *DEET*.

##### 4.2.6.2.1 West Nile Virus

Since 2001 *West Nile Virus* has been established in Ontario. The disease is transmitted to humans by mosquitoes. Mosquitoes become infected when they bite an infected bird. In 2011 there were 41 cases in Ontario of humans infected with West Nile Virus. There is no way to predict how serious West Nile Virus will be in any given year.

Approximately four out of five people who are bitten by an infected mosquito do not show any symptoms. Of those that show symptoms, most will experience mild illness including:

- Fever.
- Headache.
- Body ache.
- Nausea.
- Vomiting.
- Rash on chest, stomach or back.

Only about 1 in 150 people infected will experience serious symptoms including:

- High fever.
- Severe headache.
- Muscle weakness.
- Stiff neck.
- Confusion.
- Tremors.
- Numbness.
- Sudden sensitivity to light.

Symptoms usually develop between two and 15 days after being bitten by an infected mosquito. Extreme swelling or infection at the site of the mosquito bite is another reason to seek medical attention. This may or may not indicate West Nile Virus infection.

#### 4.2.6.3 Ticks (Lime Disease)

In Ontario, populations can be found in Long Point, Point Pelee National Park, Rondeau Provincial Park, Turkey Point, Prince Edward Point National Wildlife Area and St. Lawrence Islands National Park in the Thousand Islands region of eastern Ontario.

Though closely related to insects, ticks are actually a type of mite. Ticks vary in size and colour; black-legged ticks often referred to as a deer tick, are very small.

When walking in tick-infested areas, wear clothing that will keep ticks from getting to bare skin. Wear closed shoes, long-sleeved shirts that fit tightly around the wrist and tuck them into pants. Protect your legs by tucking pants into socks or boots. Ticks show up better on light-colored clothing.

Insect repellents containing *DEET* are safe and can effectively repel ticks. Check for ticks on clothing and skin after being in tick-infested areas. A daily total-body inspection and prompt removal of attached ticks (within 18 to 24 hours) can reduce the risk of infection. Black-legged ticks are very small, particularly the younger stages, so look carefully. Do not forget to check children and pets as well.

**Figure 4-1 Tick**

#### 4.2.6.3.1 Tick Removal

Ticks are most effectively removed with a fine pair of tweezers (forceps). Grasp the tick with tweezers as close to skin as possible. The tweezers should be held at a right angle to the main axis of the tick's body. Gently pull the tick away from the host's skin. Avoid twisting or turning the tick during removal as this can cause the tick's mouthparts to break off. When this occurs, it is more difficult to identify the tick to the species level and could cause infection at the feeding site. When appropriate, disinfect the feeding site after the tick is removed. Once removed, immediately transfer the tick to a collection vial. Avoid handling ticks with bare hands. Use disposable gloves, paper toweling or tweezers when transferring ticks to the collection vials. After handling ticks, discard gloves and paper toweling and wash hands and tweezers thoroughly. Have tick tested for Lyme Disease if in doubt.

#### 4.2.6.3.2 Lyme Disease

While it is possible to be bitten by an infected tick almost anywhere in Canada, the chances of this happening in places where tick populations are not established are very low.

The symptoms of Lyme disease usually happen in three stages, although not all patients have every symptom. The first sign of infection is usually a circular rash called erythema migraine (EM). This rash occurs in about 70-80% of infected people. It begins at the site of the tick bite after a delay of 3 days to 1 month. Other common symptoms include:

- Fatigue.
- Chills.
- Fever.
- Headache.
- Muscle and joint pain.
- Swollen lymph nodes.

If untreated, the second stage of the disease can last up to several months and include:

- Central and peripheral nervous system disorders.
- Multiple skin rashes.
- Arthritis and arthritic symptoms.
- Heart palpitations.
- Extreme fatigue and general weakness.

If the disease remains untreated, the third stage can last months to years with symptoms that can include recurring arthritis and neurological problems.

**NOTE**

Fatalities from Lyme disease are rare.

Contact a doctor immediately if you develop symptoms of Lyme disease, especially when you have been in an area where black-legged ticks are found. If you have saved the tick, take it with you to the doctor's office.

#### 4.2.6.4 Bees (Anaphylaxis)

Bees usually are looking for food, not trouble. But cross their paths, or their nests and you could feel their sting. About 40 people in the United States die from allergic reactions to insect venom each year. After you have been stung once, you can become allergic to that insect's venom. The insects that are most likely to provoke dangerous allergy reactions are classified in the order Hymenoptera (bees, wasps, hornets, yellow jackets). Biting flies, ticks, mosquitoes and spiders also can cause allergic reactions, though they tend to be milder.

##### 4.2.6.4.1 Honeybees

Honeybees, the most common of these stinging insects, aren't aggressive unless provoked. You can recognize them easily by their hairy bodies and bright yellow or black markings. They typically are found around flowers or clover. Once they sting, they die. They often leave their stinger behind.

**Figure 4-2 Bee**

#### 4.2.6.4.2 Yellow Jackets

Yellow jackets are the most aggressive of the stinging insects. Less chunky than bees and bright yellow with black markings, they hover around garbage and wherever there are exposed foods, particularly those containing sugar. They may sting repeatedly. They nest in the ground.

**Figure 4-3 Yellow Jacket**

#### 4.2.6.4.3 Hornets

Hornets have short black bodies with yellow or white markings. They nest in trees or bushes and may sting repeatedly.


**Figure 4-4 Hornet**

#### 4.2.6.4.4 Wasp

Wasps are hairless with narrow "*waists*" that separate their chests from their long, slim, lower bodies. They can be black, brown or red. Wasps build nests under the eaves of buildings and under rafters. They sting repeatedly.

**Figure 4-5 Wasp**

#### 4.2.6.4.5 Prevention

Of course, the best way to avoid an allergic reaction to insect venom is to avoid getting stung. Keep your distance. If you encounter the insects, slowly back away. Don't swat at them, flail your arms or make sudden movements that could trigger an attack.
Dress for success. Bees, hornets and other flying insects are attracted to bright colors and floral patterns. During picnic season, dress in white, khaki and other light solids, covering as much of your body as possible during late summer and early fall when insect numbers are at their peak. And avoid loose-fitting clothing, as insects can become trapped in it.

Insects also are attracted to smells, so avoid wearing perfume, colognes or other fragrances, including suntan lotion, cosmetics, hair spray and scented deodorant. Outside, wear closed-toe shoes rather than sandals.
Advertise if you're allergic. If you know you are allergic to insect venom, wear a Medic-Alert or other type of medical identification. Many people with insect-venom or food allergies carry a small kit containing a syringe of epinephrine (adrenaline) to inject if they begin to develop signs of an anaphylactic reaction.

Once you've had a severe reaction to a stinging insect, you have about a 60% chance of having another anaphylactic reaction if stung again. Skin tests are used to identify or confirm the insect type that triggered the allergy.

#### 4.2.6.4.6 Symptoms

A sting is never pleasant. Without allergy, a typical reaction is:

- Burning pain.
- Redness.
- Swelling.
- Itching on the skin in the area of the sting.

In an allergic reaction, symptoms are not limited to the area that is local to your sting. A mild allergic reaction may cause symptoms that mimic hay fever, or may produce a rash of puffy pink *hives* or *welts* on parts of the skin that are not near to the sting. Symptoms of a mild allergic reaction could include:

- Runny nose.
- Tearing or itching of the eyes.
- Sneezing.
- A metallic taste in your mouth.

Technically, every allergic reaction that occurs within minutes of exposure is a form of anaphylaxis, but doctors commonly reserve this term to refer to severe allergic reactions. A severe allergic reaction can cause any of the symptoms of mild allergy in addition, it can result in:

- Rapid swelling of your lips or throat.
- Swelling around the eyes.
- Throat tightness.
- Wheezing.
- Difficulty breathing.
- Hoarseness.
- Nausea.
- Vomiting.
- Diarrhea.
- Abdominal pain.
- Light-headedness, or passing out due to low blood pressure.

**NOTE**

Anaphylaxis is a serious allergic reaction that can be life threatening.

#### 4.2.6.4.7 Treatment

If you get stung by a honeybee, scrape out the stinger with a credit card or a long fingernail. If you try to pull it out, you'll squeeze the venom sac and accidentally release more venom. Scraping it out leaves the venom sac undisturbed.

To ease the pain of a sting, take a pain reliever such as acetaminophen, ibuprofen or aspirin. Children should never be given aspirin because of the risk of *Reye's syndrome*, a rare, but life-threatening illness.

Epinephrine (adrenaline) is the primary treatment for anaphylaxis with no absolute contraindication to its use.

#### 4.2.6.5 Black Widow spider (Poisonous)

The black widow spider's venom is 15 times more poisonous than that of a rattlesnake. But the amount of venom a spider injects with one bite is usually not fatal for humans. The black widow spider is found in warmer regions of the world, up to southern Ontario.

Juvenile spiders are orange, brown and white and acquire their signature charcoal color as they age and molt. Adult females average 8-10mm in length and have a red hourglass mark on their abdomen and one or two red spots over the spinnerets and along the middle of the back. Males are usually about half the body size of the females, but have longer legs. Their joints are orange-brown in the center and black on the ends and they usually have four pairs of red and white stripes on the sides of their abdomen.

**Figure 4-6 Black Widow Spider**

##### 4.2.6.5.1 Treatment

If a person is bitten by a black widow, seek medical assistance as soon as possible. While waiting for medical assistance wash the bite area with soap and water and elevate the area to prevent spread of the venom. If possible, retrieve the spider and bring it with you to the health care practitioner so that it can be definitively identified. Always seek immediate emergency medical care.

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#### 4.2.6.6 Leeches

Leeches are dark brownish black *worms* with suckers on the end. They are sometimes referred to as *bloodsuckers*. Leeches are slimy parasites that can thrive wherever there is dampness. They can live on land or in water. They are often located in wet forest areas under rocks and logs, swamps, and marshes.

Leeches are attracted to warmth and movement. When a ripple occurs in the water, a leech may make its way toward it attaching to a person's body. You may not even know that a leech has bitten and attached to your body because they release an anesthetic when they bite. Some leeches also release a blood thinner called hiridin to make sucking a person's blood easier.

**Figure 4-7 Leech**

##### 4.2.6.6.1 Prevention

There are several ways in which you can prevent leeches from attaching to your body. Wear waterproof closed toed footwear with your pant legs tucked into long thick socks when walking through the forest or damp area. You may want to apply petroleum jelly to your legs if you are going to wade in water known to have leeches. Leeches will have a difficult time attaching to and feeding on your legs.

##### 4.2.6.6.2 Removal of Leeches

When removing a leech, it is not recommended that you pull them off as a bigger sore may develop and the area may continue to bleed. Leeches tend to fall off once they are full.

Do not use a lighter or a match to remove a leech as there is a risk of burning the skin. Do not use vinegar, lemon juice, salt, or insect repellent on the leech to remove it. Leeches carry bacteria that can be regurgitated into the host if heat or chemicals are applied.

The optimum way to remove the leech is as follows:

- First use a fingernail to push the head end of the leech off of the skin. It is important to note that the head end is the smaller, skinnier part of the leech, not the larger end. After the head is released, use a fingernail to push the larger end off. Once the leech is removed there will be some bleeding due to the anticoagulant produced by the leech. Cleanse the wound and apply a dressing if required.
- Apply pressure to the area if it continues to bleed. Wash the area with soap and water to prevent infection. Monitor the area for signs of infection such as increased redness, swelling, tenderness or pus-like discharge.

### 4.2.7 Animals

**Objective:** All searchers must be aware of the animal species in Ontario that can cause them harm and how to avoid them. Searchers must be able to recognize the symptoms of disease that animals can cause if bitten. They must also know what to do if they are confronted with an animal.

#### 4.2.7.1 Animals and their Effects on SAR

*Role of team leader* - ensure team members are aware of these risks in the area of animals. Instruct all members about the potential for disease and how to recognize symptoms that may not develop till long after an operation or training has taken place. Be aware of team members, react quickly to an animal encounter and refocus the team once the animal has moved away.

*Actions of searcher* - know the risks of encountering animals in Ontario. Dress appropriately and carry bear repellent when in bear country. Avoid contact with animals. Follow instructions given and be prepared to carry out first aid to the level trained.

*What could affect said actions?*

- *Searcher* - lack of ability to recognize specific signs of animals in the area; distractions due to the sighting of animals; member's lack of knowledge of prevention of animal attacks.
- *Team leader* - same as searcher.
- *Team* - lack of preparation or protocols to deal with the discovery of animals while conducting search operations (whether training or operational).
- *Command post* - same as team.
- *Environment* - unfamiliar terrain and vegetation could lead to searchers missing signs of unfamiliar animals. Train in as many different types of terrain within your area of operations. Get to know the natural landscape you operate in.

*What protocols are in place to address any problems?*

- In Ontario there are many wild animals which can attack, transmit disease or are poisonous. All team members need to be able to take action to protect themselves.

- All members should use and carry bear repellent in bear country. Searchers should wear closed footwear, pants and long sleeved shirts. Leather gloves should be worn to protect against animal bites.
- Render first aid appropriate to your level of training.

#### 4.2.7.1.1 Moose (alces alces)

Males average 1.5 to 2.3 m in height at the shoulders and weigh 400 to 540 kg. There antlers can have a spread of 1.7 m. Despite their massive size, most of the year moose are quiet, solitary and docile herbivores. Starting in late August until early October during mating season, males become aggressive, unpredictable and even crazed.

**Figure 4-8 Moose**

#### 4.2.7.1.2 Black Bear (ursus americanus)

Bears are smart, curious, powerful and potentially dangerous. They do not like surprises. Bears usually avoid humans and generally you won't see a bear even if one is close by. Remember, you are a visitor in the bear's home range, so do all you can to avoid encounters. Always remember that a bear is faster that you. Bears can run at a top speed of 56 km/h, can climb trees and swim. Bears can smell carrion (meat, flesh, tissue) more than a mile away. They can also hear twice as well as humans. There is an estimated 75,000 to 100,000 in Ontario. Bears roam all over northern and central Ontario, south to Gray, Bruce and Simcoe counties.

Bears emerge between mid-April and early May groggy. It takes two weeks to shake off the hibernation before they start to feed. Eating goes into overdrive from August to October. Depending on the weather, bears will start to bed down in mid-October (northern Ontario) early November (central Ontario). Bears easily wake during hibernation.

**Figure 4-9 Bear**

*Avoid Encounters*

- Make noise as you move through wooded areas – especially in areas where background noise is high, such as near streams and waterfalls. Singing, whistling or talking will alert bears to your presence, giving them a chance to avoid you.
- Travel with others if possible.
- Be aware of your surroundings by keeping your eyes and ears open.

- Keep an eye out for signs of bears, such as tracks, claw marks on trees, flipped-over rocks or fresh bear droppings. Immediately report to command post.
- Carry and have readily accessible a whistle or an air horn and bear pepper spray. Know how to use this spray – practice on a stationery object to get the feel for how the canister sprays and to know its limitations.
- Consider carrying a long-handled axe, particularly if you are in "*back country*".
- Avoid strong fragrances that may cause a bear to be curious; put any food you are carrying in sealed containers in your pack.
- While searching the ground, occasionally scan your surroundings to check for bears. If crouching, rise slowly from this position so you don't startle any nearby bears. They may not recognize you as a human when you are in a crouched position.

*Whenever you spot or encounter a black bear*

- Stop. Do not panic. Remain calm.
- Do not try to get closer to the bear for a better look or picture. Never feed a bear.
- Do not run, climb a tree or swim.
- Quickly assess the situation and try to determine which type of an encounter this might be – chance sighting, surprise or close encounter.
- Always watch the bear but avoid eye contact. While watching the bear, slowly back away until the bear is out of sight.
- If you are near a building or vehicle, get inside as a precaution.
- Stop the search and inform command post.

*Types of encounters*

- Chance sighting - black bear may:
    - Stand on its hind legs to get a better look at you.
    - Salivate excessively, exhale loudly and make huffing, moaning, clacking and popping sounds with its mouth, teeth and jaws.
    - Lower its head with its ears drawn back while facing you.
    - Charge forward, and/or swat the ground with its paws. This is also known as a bluff charge.
    - Generally, the noisier the bear is, the less dangerous it is provided you don't approach the bear. These are all warning signals bears give to let you know you are too close. When bears are caught off guard, they are stressed, and usually just want to flee.
- Surprise and close encounters:
    - Remain calm. Do not run. Stand still and talk to the bear in a calm voice.
    - Arm your pepper spray.
    - Do not try to get closer to the bear.
    - If the bear does not get closer to you, slowly back away, talking to the bear in a quiet, monotone voice. Do not scream, turn your back on the bear, run, kneel down or make direct eye contact.
    - Watch the bear and wait for it to leave.

- If the bear does not leave or approaches you, yell and wave your arms to make yourself look bigger. Throw objects; blow a whistle or an air horn. The idea is to persuade the bear to leave.
- If you are with others, stay together and act as a group. Make sure the bear has a clear escape route.
- If the bear keeps advancing and is getting close, stand your ground. Use your bear pepper spray (if the bear is within seven meters) or anything else you can find or use to threaten or distract the bear.
- Do not run or climb a tree.

*About attacks* - Black bear attacks are extremely rare. A black bear may attack if:

- It perceives you to be a threat to it, its cubs or it may be defending food. This is a defensive bear that wants more space between you and it. Such attacks are exceedingly rare although a bear's aggressive display may seem to suggest otherwise.
- It is a predatory bear. These bears are also very rare. Predatory attacks usually occur in rural or in remote areas. Predatory bears approach silently and may continue to approach regardless of your attempts to deter them by yelling or throwing rocks.

What to do if an encounter results in an attack:

- Use your pepper spray.
- Fight back with everything you have.
- Do not play dead except in the rare instance when you are sure a mother bear is attacking you in defense of cubs.
- If you have bear spray:
    - It should be oil based not water based.
    - Have it handy.
    - Do not use as repellent. Use as if it is mace. Do not spray into the wind.
        - Use as a last resort.

#### 4.2.7.2 Wolf (canis lupus), Coyote (canis latrans), Wild Dogs (canis familiaris)

Coyotes are becoming more commonly seen in urban areas as a result of loss of habitat. Encounters between coyote and humans are becoming more common as is the case with wild dogs, and coy dogs. Wolves on the other hand, continue to decline in numbers. As a result they have been put on the species at risk list in Canada, in particular the *Eastern Wolf*, a sub-species of the *Grey Wolf* of which only 2000 are estimated to remain in the wild. Wolf-human interaction is rare and wolf attacks have not been documented in North America.

**Figure 4-10 Coyote**

**Figure 4-11 Wolf**

*If you encounter a coyote take these immediate steps:*

- Respond to its presence aggressively by making yourself appear large; wave your arms overhead, or shove long objects like a walking stick toward the coyote.
- Throw rocks, sticks or other objects to scare it away.
- Carry a whistle and blow it to startle the animal.
- Carry dog spray in areas highly frequented by coyotes.
- Shout in a deep voice and maintain eye contact.
- Do not turn away or run. This may trigger a natural predator/prey instinct and might encourage the coyote to chase after you.
- If the coyote continues to approach, back away slowly and move toward buildings or other human activity.

#### 4.2.7.3 Massasauga Rattler (sistrurus catenatus)

Ontario's only poisonous snake is also on the species at risk list. Adults are not large, ranging from 45 to 75 cm in length but heavy shaped. Its color pattern consists of a grey or tan ground color with a row of large saddle shaped brown black marks down the centre of the back and three smaller rows of alternating spots down each side. Young massasauga rattlers are well-patterned but paler than the adults. This is the only Ontario snake with vertical pupils and cat like eyes. It has heat-sensing pits on each side of its smallish diamond shaped head and its scales are keeled and the tail is stubby with rattle.

Presently, the species remains distributed in sporadic pockets along Georgian Bay and the Bruce Peninsula including Manitoulin Island. In southwestern Ontario, its distribution appears to be restricted to an area near Windsor and the Wainfleet Bog on the northeast shore of Lake Erie.

Massasauga rattlers are active from late April or early May until late October or early November, depending on temperatures. During the remainder of the year they hibernate below the frost line in holes where tree roots penetrate the bedrock; where bedrock is fractured creating rock piles or crevasses; or in rodent burrows. Hibernacula (overwintering sites) are often associated with wetlands or small wet depressions in the terrain.

In the Georgian Bay area, massasauga rattlers use habitats ranging from wetlands to dry upland, mixed coniferous and deciduous forests with bedrock outcrop. They also find these habitats along the shorelines of lakes, streams and rivers and the islands of Georgian Bay.

The massasauga rattler is a sluggish, solitary and passive creature. It prefers to remain motionless hoping not to be noticed. If you come too close, it will rattle a warning. If you see a snake or hear a rattle, stop. Remain still until you know where it is or where the sound is coming from and then move slowly away. The snake may misinterpret a fast motion as a threat. They never pursue people and would rather flee than fight. They do not travel in pairs and cannot jump. They have a short striking distance, about half their body length (approximately 38 cm for a large snake).

**Figure 4-12 Massasauga Rattler**

#### 4.2.7.3.1 Protection

Wear boots, thick socks and long pants or gaiters when walking where rattlers live. You must also ensure:

- Watch ahead where you are going to step.
- Do not place your hands into places you cannot see. Poke around with a stick when searching underbrush. Use care when picking up pieces of wood or rocks.
- Since their prey is mainly small rodents, their fangs are short and with their limited striking distance they are not much of a threat to humans as long as the aforementioned protective clothing is worn.
- The most common strikes above boot top level occur when a person steps over a snake that is situated on a log or boulder or when they place their hand near the elevated snake.

| **NOTE** |
| --- |
| Never pick up a snake until you have positively identified it. |

#### 4.2.7.3.2 If Bitten

If bitten remain calm, immobilize or limit the use of the affected limb, get assistance and seek medical attention immediately. If the patient is within 30 to 40 minutes of a medical facility, they should be transported there as quickly as possible. The injured part should

be loosely immobilized in a functional position just below heart level and all rings, watches and constrictive clothing removed.

If the patient will not receive medical attention for some hours, he/she should be placed at rest and treated for shock. The major risk is from the venom being introduced to the heart in a massive dose. Therefore, the slower the heart beats and the less the affected area is exercised, the better. The use of a tourniquet is ***not*** recommended, although some authorities do recommend a restrictive bandage just above the bite to prevent the spread of venom - tight enough to compress the soft tissue, but not tight enough to stop blood circulation.

You should not cut into the bitten area unless you have been specially trained for this - it can cause more damage than the bite itself.

#### 4.2.7.4 Striped Skunks (mephitis mephitis)

Skunk will start with lifting its trail and stamping its feet, arching its back and growling. Skunks if startled or threatened will spray as a last resort. A skunk can shoot 3 to 4m with accuracy. Skunks will attempt to spray in an enemy's eyes. A skunk can spray up to 4 or 5 times. Direct contact with eyes can cause a stinging sensation and even temporary blindness, but this is rare. Skunk spray has no lasting effects and is not poisonous.

**Figure 4-13 Skunk**

#### 4.2.7.5 Porcupine (erithizon dorsatum)

Porcupines will attempt to flee if threatened but will also resort to the use of their quills. A swat from their tail will embed hundreds of quills. Quills will cause swelling, burn and work their way into the flesh. The most common attack from porcupine is on family pets. Porcupines are nocturnal.

**Figure 4-14 Porcupine**

#### 4.2.7.6 Rabies

Rabies is a viral disease that affects the central nervous system of warm-blooded animals, including humans. Rabies is transmitted through saliva, primarily via bite wounds. It can also be spread when infected saliva comes into contact with a scratch, open wound or the mucous membranes of the mouth, nasal cavity or eyes. However, human rabies deaths are rare in North America. Prompt treatment following exposure to or a bite from an animal suspected of having rabies can prevent human illness.

The following actions are recommended:

- Immediately wash the wound or exposed surface with soap and water.
- Remove any clothing that may have been contaminated.
- Seek medical attention as soon as possible.

### 4.2.8 Plants

**Objective:** All searchers must be aware of the plant species in Ontario that can cause harm. Searchers should also know what to do if they are faced with a poisoning scenario.

The following are the 15 species of plants in Ontario which cause a reaction if touched and should be known to all searchers:

- Canada nettle (*laportea canadensis*)
- False ragweed (*iva xanthifolia*)
- February daphne (*daphne mezereum*)
- Giant hogweed (*heracleum mantegazzianum*)
- Leatherwood (*dirca palustris*)
- Motherwort (*leonurus cardiaca*)
- Wild Parsnip (*pastinaca sativa*)
- Petty spurge (*euphorbia peplus*)
- Pink lady's-slipper (*cypripedium acaule*)
- Poison ivy (*rhus radicans*; synonym *toxicodendron radicans*)
- Poison sumac (*rhus vernix*; synonymy *toxicodendron vernix*)
- Showy lady's-slipper (*dypripedium reginae*)
- Sneezeweed (*helenium autumnale*)
- Stinging nettle (*urtica dioica*)
- Yellow lady's-slipper (*cypripedium calceolus*)

#### 4.2.8.1 Plants and their Effects on SAR

*Role of team leader* - ensure team members are aware of this risk and protocols. If poisonous plants are encountered, ensure a wash station is set up and have all boots washed in strong soapy water. Instruct all members exposed to wash clothes separately from others in their household and run washing machines through an empty wash cycle once completed. Ensure that all searchers know what to do if a casualty is suspected of suffering from having been poisoned by a plant.

*Actions of searcher* - know how to recognize common poisonous plants in Ontario. Dress appropriately. Avoid contact with poisonous plants. Follow instructions given. Know how to contact the Ontario Poison Centre and what information they will need. Be prepared to carry out first aid to the level trained.

*What could affect said actions?*

- *Searcher* - lack of ability to recognize specific species of poisonous plants.
- *Team leader* - same as searcher.
- *Team* - lack of preparation or protocols to deal with the discovery of poisonous plants while conducting search operations (whether training or operational).
- *Command post* - same as Team.
- *Environment* - Unfamiliar terrain and vegetation could lead to searchers being poisoned by unfamiliar plant species. Train in as many different types of terrain within your area of operations. Get to know the natural landscape you operate in.

*What protocols are in place to address any problems?*

- In Ontario there are over 70 plant species that are poisonous if eaten and at least 15 that cause skin ailments. All team members need to be able to recognize common poisonous plants and avoid them.
- No team members should eat any plants found outdoors while on a search. All members should wear closed footwear, pants and long sleeved shirts. They should wear leather gloves.
- Upon discovery of a person suspected of poisoning from a plant, berry, seed, bulb or wild mushroom do the following:
    - Immediately call the Ontario Poison Centre (1800 268 9017 or 416 813 5900) and be prepared to give the following information:
        - Any symptoms of illness being displayed.
        - Name of plant (if you know it). The specialists at the Centre are specialists in poison Information, they are not plant specialists. They cannot identify plants over the phone.
        - How much and what parts were eaten?
        - How recently it was eaten or touched?
        - Age and weight of the casualty.
- Render first aid appropriate to your level of training.

#### 4.2.8.2 Canada Nettle (laportea canadensis)

(Also known as Canada Lettuce, Canada Woodnettle) Canada nettle is found in moist woods and along streams. This plant has stinging hairs on the leaves and stem that readily penetrate thin-skinned areas on humans. The tips of the hairs break off, allowing the contained liquid to penetrate the body. Intense localized itching results. Applying water to the surface of the affected area can increase the sensation; this problem may persist for several weeks. Avoid this plant if possible.

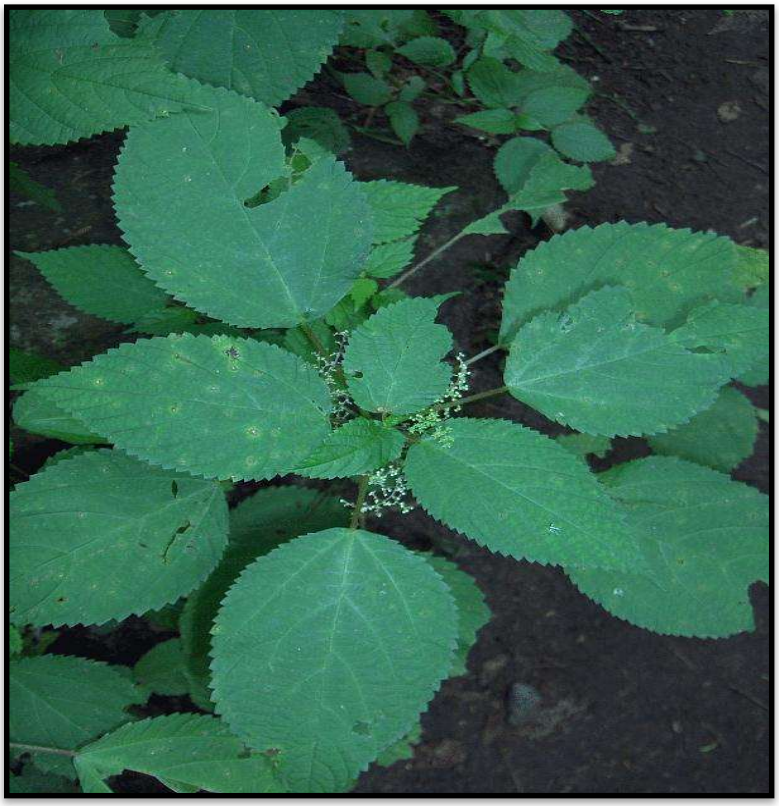

**Figure 4-15 Canada Nettle**

##### 4.2.8.2.1 Description

This plant grows to a height of 30 to 150cm, and in small clumps. It has whitish green flowers, produced from spring to early fall.

##### 4.2.8.2.2 General Symptoms of Poisoning

- Erythema (abnormal redness of the skin).
- Itchiness.
- Pain.
- Skin flushed.

#### 4.2.8.3 False Ragweed (*iva xanthifolia*)

(Also known as burweed marshelder, carelessweed, giant marshelder, giant sumpweed, horseweed, marshelder, rag sumpweed) False ragweed is a native herb found across southern Canada in moist areas such as shores or disturbed sites. The plant can cause dermatitis in sensitive humans after they come in contact with the leaves.

**Figure 4-16 False Ragweed**

##### 4.2.8.3.1 Description

The Plant 150cm in height, un-branched, coarse forb; stems smooth toward the bottom. The Flower had a head green to cream, no rays, no bracts; inflorescence with many, mostly stalk less heads (3.9cm long), large, branched clusters; blooms Aug to Oct. The leaf - upper might become alternate; long-stalked, very widely oval, doubly toothed, roughly hairy on the top, softly fuzzy and light green on the bottom.

##### 4.2.8.3.2 General Symptoms of Poisoning

- Erythema (abnormal redness of the skin)

#### 4.2.8.4 February Daphne (*daphne mezereum*)

(Also known as paradise plant) February Daphne is an ornamental shrub that grows across southern Canada. This shrub and other *Daphne* species are poisonous to humans. The plants contain irritant chemicals that cause pain, burning, and tingling sensations on exposed skin. These sensations are intensified on mucous membranes in the mouth, throat and stomach after ingesting the fruits. More serious symptoms also occur in humans, including kidney damage, which may lead to death. With the exception of February Daphne, the other *Daphne* species and cultivars are found only as ornamental plants in the more southerly and temperate parts of Canada. February Daphne is naturalized in several eastern provinces.

**Figure 4-17 February Daphne**

##### 4.2.8.4.1 Description

It is a deciduous shrub growing to 1.5m tall. The leaves are soft, 3-8cm long and 1-2cm broad, arranged spirally on the stems. The flowers are produced in early spring on the bare stems before the leaves appear. They have a four-lobed pink or light purple (rarely white) perianth 10-15mm in diameter and are strongly scented. The fruit is a bright red berry 7-12mm in diameter.

#### 4.2.8.4.2 General Symptoms of Poisoning

- Abdominal pains
- Breathing, labored
- Convulsions
- Death
- Diarrhea
- Dysphagia (difficulty in swallowing)
- Gait, staggering
- Hoarseness
- Kidney failure
- Mouth, irritation of
- Muscle twitching
- Prostration
- Temperature, elevated
- Thirsty
- Vomiting

#### 4.2.8.4.3 Notes on Poisoning

Human poisoning by the *Daphne* species can include minor irritation of the mouth region including pain, burning, and tingling. If the plant material is also chewed and ingested, more severe symptoms occur, including bloody diarrhea, abdominal pains, vomiting, and convulsions. In severe cases, prostration, hallucinations, shedding of the lining of the oral and mucous membranes and renal damage can occur. In one case, a child died in Nova Scotia after ingesting berries. Ingestion may lead to muscular twitching and somnolence (drowsiness) which persists for days. Few cases of poisoning actually occur, but the consequences of ingestion can be serious.

#### 4.2.8.5 Giant Hogweed (heracleum mantegazzianum)

Also known as cartwheel-flower, wild parsnip, wild rhubarb, giant cow parsnip, or giant cow parsley) Giant Hogweed is naturalized in south central Ontario. It has caused photosensitization in children after exposure to the plant followed by sunlight. This plant has also been introduced into New York State, where children have also contracted dermatitis from it.

**Figure 4-18 Giant Hogweed**

##### 4.2.8.5.1 Description

It typically grows to heights of 2 to 5m. Giant Hogweed has a stout, dark reddish-purple stem and spotted leaf stalks that are hollow and produce sturdy bristles. Stems vary from 3 to 8cm in diameter, occasionally up to 10cm. The stem shows a purplish-red pigmentation with raised nodules. Each purple spot on the stem surrounds a hair and there are large, coarse white hairs at the base of the leaf stalk. The plant has deeply incised compound leaves which grow up to 1 to 1.7m in width.

Giant Hogweed flowers in its final year (5th to 7th year) from late spring to mid-summer, with numerous white flowers clustered in an umbrella-shaped head that is up to 80cm in diameter across its flat top.

##### 4.2.8.5.2 General Symptoms of Poisoning

- Blistering
- Erythema (abnormal redness of the skin)
- Brown pigment of skin

#### 4.2.8.5.3 Notes on Poisoning

Symptoms of phytophotosensitization include serious and extensive weeping blisters. The lesions often occur in a line where the person has brushed aside the stems. The bullae can be massive and irritating, and brown pigmentation may remain for years after healing.

### 4.2.8.6 Leatherwood (dirca palustris)

(Also known as eastern leatherwood, moosewood) Leatherwood is a native shrub found in parts of eastern Canada in woodlands. This shrub contains unknown poisonous chemicals that are most potent in the bark. Chewing the bark can cause severe burning in the mouth and can produce a nauseating taste; dermatitis can occur, especially during flowering and fruiting time.

**Figure 4-19 Leatherwood**

#### 4.2.8.6.1 Description

Leatherwood is a shrub that grows to a maximum height of about 3m. It is native to the eastern half of North America but uncommon, found in rich woods, and is occasionally cultivated. It is often hard to recognize because the flowers, which come out just before leafing, last a very short time.

#### 4.2.8.6.2 General Symptoms of Poisoning

- Blistering
- Irritation of the mouth.

#### 4.2.8.7 Motherwort (leonurus cardiaca)

(Also known as Throw-wort, Lion's Ear, and Lion's Tail) Motherwort is a naturalized herb that is weedy in flower and fruit gardens. This plant can cause dermatitis in sensitive individuals. Fragrant, lemon-scented oil can cause photosensitivity when ingested.

**Figure 4-20 Motherwort**

##### 4.2.8.7.1 Description

Motherwort has a square stem and opposite leaves. The leaves have serrated margins and are palmate lobed with long petioles; basal leaves are wedge shaped with three points and while the upper leaves are more latticed. Flowers appear in leaf axils on the upper part of the plant. It blooms between June and August. The flowers are small, pink to lilac in colour, often with furry lower lips. The plant grows to about 60 to100cm in height. It can be found along roadsides and in vacant fields and other disturbed areas.

#### 4.2.8.8 Wild Parsnip (pastinaca sativa)

Wild Parsnip is a cultivated and a naturalized herb in much of Canada. The plant juices can cause photo dermatitis in some individuals after exposure to sunlight. Exposure to leaves, stems, and peeling roots can cause the problem as well. The edible roots contain enough furocoumarins to be physiologically active in some cases. These toxins are mutagenic (even in the dark) inducing melanization in human skin. Photo dermatitis from this plant is often confused with poison-ivy dermatitis.

**Figure 4-21 Wild Parsnip**

##### 4.2.8.8.1 Description

Wild Parsnip is a member of the Umbelliferae (parsnip) family. Not to be confused with Queen Anne's Lace, which is a white flower. Rosettes grow close to the ground and bear leaves averaging 15cm in height. The plant has a long, thick taproot, which is edible. Flowering plants produce a single, thick stem that contains hundreds of yellow umbellate flowers. The lateral flowers often overtop the terminal flowers. Depending on the habitat and growing conditions, individual flowering plants range to over 120cm in height. Leaves are alternate, pinnately compound, branched and have saw-toothed edges. Each leaf has 5 to15 ovate to oblong leaflets with variable toothed edges and deep lobes.

##### 4.2.8.8.2 General Symptoms of Poisoning

- Blistering
- Erythema (abnormal redness of the skin)

### 4.2.8.9 Petty Spurge (euphorbia peplus)

(Also known as Radium Weed or Cancer Weed) Petty Spurge is a naturalized herb found across Canada. This plant contains a caustic and irritant chemical in the latex (sap), which causes burning and inflammation of skin and eyes. Ingestion results in complications.

**Figure 4-22 Petty Spurge**

#### 4.2.8.9.1 Description

It is an annual plant growing 5 to 30cm tall (most plants growing as weeds of cultivation tend towards the smaller end), with smooth hairless stems. The leaves are oval-acute, 1 to 3cm long, with a smooth margin. It has green flowers in three-rayed umbels. The glands, typical of the euphorbiacae, are kidney-shaped with long thin horns.

#### 4.2.8.9.2 General Symptoms of Poisoning

- Discharge from eye
- Irritation of mouth

#### 4.2.8.9.3 Notes on Poisoning

Skin and mucous membrane irritation result from contact with the latex (sap). Severe eye irritation also occurs.

#### 4.2.8.10 Pink Lady's-Slipper (c*ypripedium acaule*)

(Also known as lady's-slipper orchid, moccasin flower) Pink Lady's-Slipper is a native perennial orchid that grows across most of Canada. The plant can cause severe dermatitis in some individuals, as do the other *Cypripedium* spp, upon contact with the glandular hairs on the leaves and stem.

**Figure 4-23 Pink Lady's-Slipper**

##### 4.2.8.10.1 Description

Unlike most other members of Cypripedium, the pouch of Pink Lady's-Slipper opens in a slit that runs down the front of the labellum rather than a round opening. The plant consists of two plicate leaves near the ground. From between those leaves sprouts a long, pubescent stalk that bears a single pink flower. The sepals and petals tend to be yellowish-brown to maroon with a large pouch that is usually some shade of pink but can range from nearly magenta to pure white.

##### 4.2.8.10.2 General Symptoms of Poisoning

- Blisters, weeping

### 4.2.8.11 Poison ivy (r*hus radicans)*

Poison ivy is a native shrub or vine found throughout southern Canada. Three recognized varieties are found in various parts of the country. Urushiol is the allergenic agent found in most parts of the plant. Damage to plant tissues causes the nonvolatile chemicals to be exposed. Humans are often sensitized, with symptoms ranging from mild itchiness and redness to severe oozing lesions with fever. Poison ivy is probably responsible for more cases of plant dermatitis in Canada than any other plant. Urushiol can contaminate clothes, tools and can subsequently develop dermatitis from contact. Humans do not contract the dermatitis on first contact, but most people are sensitized the first time.

**Figure 4-24 Poison Ivy**

#### 4.2.8.11.1 Description

The leaves of poison ivy are arranged in threes and almond-shaped. Leaf colour ranges from light green (usually the younger leaves) to dark green (mature leaves), turning bright red in fall; though other sources say leaves are reddish when expanding, turn green through maturity, then back to red, orange, or yellow in the fall. The leaflets of mature leaves are somewhat shiny. The leaflets are 3 to 12cm long, rarely up to 30cm. Each leaflet has a few or no teeth along its edge, and the leaf surface is smooth. Leaflet clusters are alternate on the vine, and the plant has no thorns. Vines growing on the trunk of a tree become firmly attached through numerous aerial rootlets. The vines develop adventitious roots, or the plant can spread from root crowns. The milky sap of poison ivy darkens after exposure to the air.

Poison Ivy flowering occurs from May to July. The yellowish or greenish-white flowers are typically inconspicuous and are located in clusters up to 8cm above the leaves. The berry-like fruit, a drupe, mature by August to November with a grayish-white colour. Fruits are a favorite winter food of some birds and other animals. Seeds are spread mainly by animals and remain viable after passing through the digestive tract.

The following four characteristics are sufficient to identify poison ivy in most situations:

- Clusters of three leaflets
- Alternate leaf arrangement
- Lack of thorns
- Each group of three leaflets grows on its own stem which connects to the main vine.

Various mnemonic rhymes describe the characteristic appearance of poison ivy:

- *Leaves of three; let it be.*
- *One, two, three. Don't touch me*.
- *Berries white, run in fright*. Or, *Berries white, danger in sight.*
- *Red leaflets in the spring, it's a dangerous thing.* This refers to the red appearance that new leaflets sometimes have in the spring.

**NOTE**

Later, in the summer, the leaflets are green, making them more difficult to distinguish from other plants, while in autumn they can be reddish-orange.

#### 4.2.8.11.2 General Symptoms of Poisoning

- Blistering
- Weeping blisters
- Erythema (abnormal reddishness of the skin)
- Face, edema (swelling)
- Itchiness
- Pneumonitis (inflammation of the lungs)
- Temperature, elevated
- Tracheitis (inflammation of the trachea)

#### 4.2.8.12 Poison Sumac (rhus vernix)

Poison Sumac is a native shrub or vine found in southern Quebec and southern Ontario. The sap of this plant contains the allergen urushiol. The chemical is released when plant tissue is damaged. Humans are highly sensitive to allergic reaction, although at least one exposure is needed for sensitization. Mild to severe dermatitis can result from exposure to poison sumac.

**Figure 4-25 Poison Sumac**

##### 4.2.8.12.1 Description

Poison sumac is a woody shrub or small tree growing to 7m in height, with 7 to 13 leaflets per pinnate leaf. These are oval to oblong; acuminate (tapering to a sharp point); cuneate (wedge-shaped) at the base; undulate (wavy-edged); underside is glabrous (hair-less) or slightly pubescent (down-like hair) beneath, and are usually 5-10cm long. Its flowers are greenish, in loose axillary panicles (clusters) 7-20cm long. The fruits are sub-globose (not quite spherical), gray, flattened and about 0.5cm across.

##### 4.2.8.12.2 General symptoms of poisoning

- Blistering
- Weeping blisters
- Itchiness
- Temperature, elevated

#### 4.2.8.13 Showy Lady's-Slipper (c*ypripedium reginae*)

Showy Lady's-Slipper is a native orchid found in eastern Canada. The plant can cause dermatitis in sensitive individuals. The symptoms are similar to those of poison-ivy.

**Figure 4-26 Showy Lady's-Slipper**

##### 4.2.8.13.1 Description

Showy Lady's-Slipper grows in calcareous wet lands, open wooded swamps, with tamarack and black spruce. Despite growing in mildly acidic environments, its roots can penetrate the mossy layers down to more neutral water sources. It forms clumps by branching of the underground rhizomes. It forms aerial roots in the swampy bog conditions. It is eaten by white-tailed deer.

##### 4.2.8.13.2 General Symptoms of Poisoning

- Weeping blisters

#### 4.2.8.14 Sneezeweed (helenium autumnale)

(Also known as bitterweed, common sneezeweed, fall sneezeweed, false sunflower, mountain sneezeweed) Sneezeweed is a native herb found in parts of central and western Canada. The plant is well-named because it is highly irritating to the nose, eyes, and stomach.

**Figure 4-27 Sneezeweed**

##### 4.2.8.14.1 Description

Common sneezeweed is cultivated as a garden perennial. There are multiple named varieties varying in color and height. Pumilum Magnificum is a yellow variety about 60cm tall. Bruno, a reddish brown cultivar, Kupfersprudel, which is yellow/orange, and Butterpat, which is golden, all grow 90cm to 105cm tall. Chippersfield Orange is up to 120cm tall and is orange streaked with gold.

#### 4.2.8.15 Stinging Nettle (*urtica dioica*)

(Also known as California nettle, slender nettle, and tall nettle) Stinging Nettle is found across Canada and includes a wide-ranging native subspecies and an introduced subspecies found in the Maritime Provinces. The plant can form large colonies in orchards, farmyards, old pastures, ditches, and waste places. The stinging hairs readily break, allowing the secretions to enter skin. Humans receive a painful sting, followed by small reddish swelling and prolonged itching and numbness. Initial reactions last only a few minutes but repeated contact can cause the pain to intensify and last for days.

**Figure 4-28 Stinging Nettle**

##### 4.2.8.15.1 Description

Stinging nettle is 1 to 2m tall in the summer and dying down to the ground in winter. It has widely spreading rhizomes and stolon, which are bright yellow as are the roots. The soft green leaves are 3 to 15cm long and are borne oppositely on an erect wiry green stem. The leaves have a strongly serrated margin, a cordate base and an acuminate tip with a terminal leaf tooth longer than adjacent laterals. It bears small greenish or brownish numerous flowers in dense axillary inflorescences. The leaves and stems are very hairy with non-stinging hairs and also bear many stinging hairs, whose tips come off when touched, transforming the hair into a needle that will inject several chemicals. This mixture of chemical compounds cause a painful sting or paresthesia from which the species derives its common name, as well as the colloquial names burn nettle, burn weed, burn hazel.

#### 4.2.8.15.2 Notes on Poisonous Plant Parts

The stinging hairs on the stem, leaves, and flowers produce a painful sting. The hairs consist of a long shaft that narrows towards the point and has a small bulbous tip. The hair just below the tip is not silicified, unlike the rest of the hair, so that the tip is easily broken. A fine hollow shaft that remains can puncture the skin, through which secretions can enter.

#### 4.2.8.15.3 General Symptoms of Poisoning

- Erythema (abnormal reddishness of the skin)

### 4.2.8.16 Yellow Lady's-Slipper (c*ypripedium calceolus*)

Yellow Lady's-Slipper is a native perennial wild flower found across Canada. The plant causes a type of dermatitis that resembles the dermatitis caused by poison-ivy.

**Figure 4-29 Yellow Lady's-Slipper**

#### 4.2.8.16.1 Description

The lady's slipper is an orchid. The exotic looking flowers have claret petals that frame a beautiful bright yellow pouch. Each stem usually supports 1 or 2 flowers, but rarely three. The leaves have obvious nerves along their length and are mid-green in colour.

#### 4.2.8.16.2 General Symptoms of Poisoning

- Weeping blisters

## 4.3 Terrain

**OBJECTIVE:** Terrain presents the greatest challenge to SAR personnel. Most injuries to SAR personnel are the result to trips, slips and falls. Being ready to be outdoors and dressed for the weather is important but being able to get through difficult terrain and search at the same time is the basis of all SAR work.

### 4.3.1 Terrain and its Effects on SAR

*Role of team leader* - to ensure that searchers remain focused of searching while maintaining sight of potential terrain hazards. To stop the team from entering dangerous terrain features if unequipped or untrained. To understand the terrain well enough to make good choices while on the go.

*Actions of searcher* - to be dressed and equipped to be able to move cross country. To know the limitations of their training and when they are faced with terrain that is beyond their scope of operations.

*What could affect said actions*?

- *Searcher* - lack of knowledge about the sudden change in terrain. Lack of time to study a map or the change in terrain not reflected on the map. Over focusing on searching to the detriment of not remaining aware of changes in terrain.
- *Team leader* - same as searcher.
- *Team* - lack of preparation or protocols to deal with the discovery of hazardous terrain while conducting search operations (whether training or operational).
- *Command post* - same as team.
- *Environment* - different seasons can mask potential hazards in the terrain. Snow, fallen leaves or fresh growth can obscure mine shafts, well holes and other dangers. Teams should train is as many different terrains are possible and during different seasons.

*What protocols are in place to address any problems?*

- Each team should understand the limits of their capabilities and train their members to work within these parameters.