ROYAL CANADIAN ARMY CADETS

GREEN STAR

INSTRUCTIONAL GUIDE

SECTION 5

EO M121.05 – RECOGNIZE ENVIRONMENTAL HAZARDS

Total Time: 30 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-701/PG-001, *Green Star Qualification Standard and Plan*, Chapter 4. Specific uses for said resources are identified throughout the instructional guide within the TP for which they are required.

Review the lesson content and become familiar with the material prior to delivering the lesson.

PRE-LESSON ASSIGNMENT

Nil.

APPROACH

An interactive lecture was chosen for this lesson to introduce the cadets to environmental hazards.

INTRODUCTION

REVIEW

Nil.

OBJECTIVES

By the end of this lesson the cadet shall be expected to identify animal behaviour, hazardous insects, and hazardous plants, and identify possible strategies for dealing with them.

IMPORTANCE

When participating in an activity in the field, it is important to know how to recognize and deal with environmental hazards in order to remain safe at all times.

Teaching Point 1 **Explain interpreting behaviour of wild animals.**

Time: 5 min Method: Interactive Lecture

ANIMAL LANGUAGE

All animals use body language to give directions and indicate to one another when they are mad or glad, relaxed or hurt. They indicate where to find food, warn others of impending danger, or remind others who is leader. Through all kinds of subtle and overt mannerisms, communication is made, even in and around peers. There are four basic messages wildlife will give off via their body language: Contentment, Submission, Alarm and Aggression.

CONTENTMENT

Contentment is defined as a satisfied state; tranquil happiness. An animal that displays contentment is not threatened by one's presence and continues to go about its business of eating, sleeping, and moving from one place to another. This behaviour is displayed similarly by most species. A deer, for example, will frequently flick its tail and ears, walk slowly - with evenly spaced steps - and lower and raise its head in an alert fashion. When around wildlife displaying this behaviour it is likely the creature is aware of one's presence, but is not likely to become aggressive unless something is done to change the dynamic.

SUBMISSION

Submission is defined as giving way; yielding. This is an expression of social courtesy and submission to others that could be interpreted as a sign of alarm. When animals move past one another, like deer and coyotes, they often lower their heads and flatten their ears, or crouch and curl their tails between their legs. These signs of submission imply "hey, everything is cool", or "let's keep the peace". Similar postures show up in other animals from wolves to wild horses.

ALARM

Alarm is defined as a warning of danger. An animal that is alarmed is not relaxed, but is suddenly alert. When an animal picks ups its ears and stares, it is showing alarm. Stress is created from being too close for comfort. When alarmed, an animal quickly stops feeding, may change direction, and if standing, it may move away or suddenly turn and face you.

Some animals have unique ways of expressing alarm; a beaver slaps its tail on the water, a deer "flags" its white tail and runs to safer ground. Skunks and rabbits beat their feet on the ground. The hair on coyote's backs goes up; they get stiffed legged, and they will tend to flatten their ears.

Alarmed animals issue warnings to others, including their kin. When witnessing these signs it is time to back off. An alarmed animal is under stress, and may become aggressive or flee their habitat when they feel these actions are critical to their survival.

AGGRESSION

Aggression is defined as the act or practice of attacking without provocation; an unprovoked attack. Sometimes, when one has failed to recognize the early warnings and has invaded an animal's space, the animal will stand its ground, becoming confrontational. Animals that become aggressive are generally protecting their young, food, or have been startled by a new presence.

To respond to such aggressive actions, one must use body language to diffuse the situation. Every move made can be interpreted as a reply. In most cases, stand tall and make yourself look big. Pick up a large stick and back away slowly. This will be interpreted by the animal to mean you are "too big to be messed with", and there is no desire to pick a fight.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS

Q1. What is the definition of contentment?

Q2. What are the signs of submission from an animal?

Q3. If you came upon a moose and it stood tall, looked straight at you and grunted furiously, what sign would be present?

ANTICIPATED ANSWERS

A1. Contentment is defined as a satisfied state, tranquil happiness.

A2. Animals often lower their heads and flatten their ears or crouch and curl their tails between their legs.

A3. Aggression.

Teaching Point 2 **Discuss hazardous insects.**

Time: 10 min Method: Interactive Lecture

Biting and stinging insects are found everywhere in the wilderness. They are the most common hazard for the nature enthusiast. About 15 percent of people will react seriously to bee and wasp stings, and to insect bites. For them, an insect can produce a condition known as “anaphylactic shock,” where tissues swell extensively and can constrict the airway. Reactions can start with headaches, fever, and muscle spasms, and can develop into widespread hives, nausea, dizziness and difficult breathing.

Common insects, such as mosquitoes and ticks, carry many serious diseases such as West Nile virus, typhoid fever, dysentery, malaria and yellow fever. It is important to recognize the potentially dangerous insects, know which precautions to take, and immediate actions if stung.

SCORPIONS

Scorpions live in the grasslands found in southern Alberta and Saskatchewan and in the Okanagan Valley in British Columbia. The Canadian scorpion is a relatively innocuous variety called Pararuroctonus Boreas, which reaches one and a half inches in length. In Canada, scorpions are only active from May to September.

Only 25 species of scorpions are potentially lethal to humans, and ours is not one of them. Their sting is described as resembling that of a bee sting with a little pain and itching locally. If stung, apply a cold compress or immerse in cold water. Take an aspirin if necessary and see a physician if pain is prolonged.

http://people.uleth.ca/~dan.johnson/bws/dj_p_boreaus_cricket_400.png

Figure 1 Scorpion

MOSQUITOES

Mosquitoes carry a lot of diseases with them. When they bite a human, it may cause reactions and make people sick. Swelling and fever may result from multiple bites.

Recent studies on mosquitoes show the following:

- Mosquitoes seem to be attracted to taller people and ones that are fidgety as they exhale more carbon dioxide, which attracts mosquitoes.
- They are attracted to wet clothing and even more to clothing with perspiration. They also prefer the colour blue.
- Mosquitoes can detect humans from as far away as six metres. They are attracted by heat, moisture and carbon dioxide. All of these factors are increased when moving a lot on a warm day.
- Upon biting, the mosquito injects saliva into the body to help extract the blood. This saliva causes the itching.

TICKS

Ticks can cause irritation and, in some cases, carry harmful germs. They are flat-bodied and round, with a small biting head that eats into a wound.

SAS Survival Guide, by John Wiseman, 1999

Figure 2 Tick

Hikers and walkers must check their legs daily for ticks embedded in the skin. If one is found, the following should be done:

1. use heat, oil, petroleum jelly, alcohol, nail polish or hot water to make the tick drop off. This will prevent the tick from breathing and it will release its hold immediately;

2. if the tick does not come off, leave the oil on for half an hour and use a pair of tweezers to remove it by pinching as close to the skin as possible, pulling gently. Do not use fingers to pull it out; and

3. wash the area with water and soap.

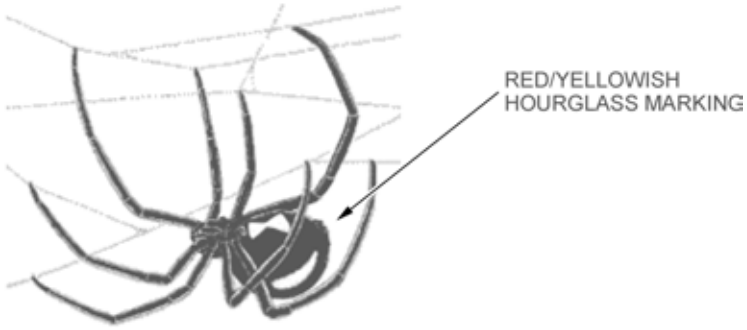
SPIDERS

Though most spiders are venomous and considered predators, of the thousands of species found in Canada, few are actually considered a health threat. In fact, spiders are actually helpful in controlling other pests in the home or garden since they feed on other insects and spiders. They generally bite and inject venom into their prey. Spiders however, rarely bite humans. The venom of most species is not very toxic to humans, usually resulting in no more than a slight swelling, inflammation, or itching sensation. In Canada, the two spiders that can be a health risk are the black widow and the brown recluse.

Black widow spider

Black widow spiders have a dark brown to glossy black body. However, the young black widows are white in colour. When their legs are extended, they have a size of 2.54 x 3.81 cm. The female is extremely poisonous. She has a red or yellow hourglass marking on the underside of the abdomen (see Figure 3). The male does not have this marking and is smaller.

Black widows are usually found outdoors in sheds, outhouses, under stones, logs, in hollow stumps, and sometimes indoors in dark corners of garages, rock walls, barns or woodpiles. Their web is distinctive. The strands of silk run in many directions so the web appears as a concentration of irregularly arranged threads. The silk strand of the web is considerably heavier and stronger than those of other species that form similarly shaped webs.



http://desertmuseum.org

Figure 3 Female Black Widow

The female black widows will bite when handled or accidentally touched. Their bites produce local redness with two tiny red spots, severe pain, sweating, shivering, nausea and weakness. The victim could even writhe in agony and have difficulty talking and breathing. It is rarely fatal, but can disable the victim for up to a week. The venom's effect will occur in about 30 minutes and attacks the nervous system. Serum is needed to counteract the black widow's venom.

When travelling to the doctor's, keep the victim calm and apply an antiseptic to the sting area. Place an ice pack around the bite area to slow the spread of the venom.

Wearing leather gloves when working around potential black widow habitats will help avoid getting bitten.

BEES

Bees are a venomous, stinging, social insect that are abundant in urban areas. When nests are disturbed, bees will get defensive and can inflict multiple stings.

Honeybees are less aggressive, as they live in well-protected hollow trees and other cavities. They do not have to protect their nests, so they do not have to be aggressive and sting as frequently to protect their home. This type of bee stings only once, as the barbed stinger will stay embedded in the skin. The stinger embedded in the skin must be removed as soon as possible as the venom sac will continue to pump for two to three minutes driving the venom deeper into the skin. The best way to remove the stinger is to scrape it out with a fingernail, as this will avoid squeezing the venom sac.

African bees make nests in the openings of tree branches and in holes in the ground. Their nests are vulnerable to attack and they have to fight potential predators. For this reason, they are easily provoked and highly defensive. They respond more quickly, stay agitated longer, and chase enemies further, than European bees. The sting of a single African bee is no more dangerous than the one of other honey bees but the massive attack of hundreds of bees and hundreds of stings can prove fatal. African bees are sometimes referred to as "killer bees."

African bees look like other honeybees but they are slightly smaller, weigh less, and have shorter stingers and forewings. They are more nervous in their hives, and fly farther and in a more zigzag pattern than European bees.

WASPS

There are several varieties of wasps in North America, including the yellow jacket, hornet and paper wasp. Colour ranges from black to combinations of black with yellow, white or brown markings. The slim winged body measures 10 to 19 mm. All wasps species have chewing mouthparts and the females possess a stinger.

www.abellgroup.com

Figure 4 Wasp

Nests can be found around buildings, on verandas, under eaves, ceilings, attics or in trees and shrubs. Several varieties of wasps build nests under ground. Wasps are very protective of their nest and, though they will use the nest for only one season, it can contain as many as 10 000 to 30 000 individuals.

As bees do, wasps inject venom under the skin. Wasps have smoother stingers than bees and so can sting numerous times. Their sting produces a few minutes of fierce burning, followed by redness and itching at the point of the sting. A welt may form and subside in three or four hours. A wasp sting, aside from being very painful, can prove serious and sometimes fatal.

If a wasp stings someone, the sting area must be washed with water and soap. If the stinger and venom sac remain in the wound, a fingernail or knife blade can be used to scrape them out. The sting area should be washed again.

AVOIDING INSECTS

Most insects are a nuisance rather than a danger. When bothered by insects like mosquitoes, black flies, deer flies, or chiggers, hikers have several options available to thwart such nuisances, and reduce exposure by controlling their surroundings. Try and avoid camping areas with tall grass, weeds and standing water where insects are abundant.

Preventive measures to avoid insects:

Clothing and Scents

- Avoid wearing brightly coloured clothing as it will attract insects. Wear pale colour clothing and fabrics.
- Cover up as much of the body as possible.
- Limit the use of fragrances (i.e., colognes, perfumes, deodorant, shampoos, etc.), as insects are attracted to them. Use fragrance-free soap and detergent.

Insect Repellents

Apply insect repellents such to ward off unwanted insects. These repellents should be applied to the exposed areas of the body. Many insect repellents rely on chemicals to repel insects and have effective durations per application.

Product effectiveness:

- **DEET:** Protects from bites for a period of two to six hours. Generally, the higher the concentration of DEET the longer the protection; however, use of a produce with more than 30 percent DEET is unlikely to yield any benefit.
- **P-Methane 3,8 Diol:** Provides up to two hours of protection. Not to be used by children under three years of age.
- **Soybean Oil:** Provides between one and three and one half hours of protection.

WARNING
DEET in high concentrations can be harmful to a person's health, specifically the nervous system.
NOTE
Health Canada recommends: • Children under six months are NOT to use insect repellents containing DEET. • Children aged six months to two years are NOT to use insect repellents containing DEET. • Children between 2 to 12 years: Apply no more than three times a day using the lowest concentration of DEET (10 percent or less). • Individuals 12 years or older: Apply insect repellents containing no more than 30 percent DEET.

CONFIRMATION OF TEACHING POINT 2

QUESTIONS

Q1. Why is it important to be protected against insects?

Q2. What can be used to remove ticks from skin?

Q3. How can the female black widow be recognized?

Q4. What is the remedy for a black widow bite?

Q5. What marking makes the brown recluse spider stand out amongst other spiders?

Q6. What precautions can be taken in order to prevent being bitten by a brown recluse?

Q7. What percentage of DEET can cadets use?

ANTICIPATED ANSWERS

A1. Some people will react seriously to stings and bites. Insects can also carry serious diseases.

A2. Heat, oil, petroleum jelly, alcohol, nail polish, hot water.

A3. She has a red or yellow hourglass marking on the underside of the abdomen.

A4. Serum (anti-venom).

A5. It has a distinctive fiddle-shaped mark on its back.

A6. Shake out unworn or stored shoes and clothes before wearing. Check bed linens of unoccupied beds. Wear leather gloves when working around potential habitats.

A7. 12 years old, apply no more than three times a day using the lowest concentration of DEET (10 percent or less). Individuals 12 years or older, apply insect repellents containing no more than 30 percent DEET.

Teaching Point 3 **Explain how to identify poisonous plants.**

Time: 10 min Method: Interactive Lecture

POISON IVY

Poison ivy is present in every province except Newfoundland and Labrador, and occurs on sandy, stony, or rocky shores of streams, rivers and lakes. It sprouts in thickets, along the borders of woods and in wood openings.

Characteristics

- glossy plant;
- grows as a:
    - trailing vine, a sub-shrub 5 to 120 cm high; and
    - aerial-rooted vine that climbs rough surfaces to 15 m;
- leaves consist of three leaflets with the middle one having a stalk longer than the other two; and

www.cwss-scm.ca/weeds/images/F22_centralPoidonIvy.jpg

Figure 5 Poison Ivy

- leaves alternate in colour and are reddish in the spring, green in the summer and are various shades of red, yellow, orange or bronze in fall.

POISON SUMAC

Poison sumac is found in some of the wooded swamps of southern Ontario and southern Quebec. It is a tall shrub or small tree with 6 to 12 leaflets arranged in pairs and an additional single leaflet at the end. The small yellowish green flowers, born in clusters, mature into whitish-green fruits that hang in loose clusters 10 to 30 m in length.

http://res2.agr.gc.ca/ecorc/poison/vernix_e.htm

Figure 6 Poison Sumac

http://res2.agr.gc.ca/ecorc/poison/vernix_e.htm

Figure 7 Poison Sumac

http://res2.agr.gc.ca/ecorc/poison/vernix_e.htm

Figure 8 Poison Sumac With White Berries

POISON OAK

Poison oak is found only in western Canada. It grows as a bush, vine root and shrub-like forms, It has leaves divided into three leaflets that are roughly edged and densely haired. The white berry-like fruits are also haired. Poison oak continually changes colours corresponding with the seasons; red in spring, green in summer and red/bronze in the fall.

www.knowledge.org/oak/identify.html

Figure 9 Poison Oak

www.odsu.com/images/poioak1b.jpg

Figure 10 Poison Oak

www.coloma.com/reference/401-1-18-poisonoak.jpg

Figure 11 Poison Oak

Infected Symptoms

The symptoms of the allergic reaction to exposure to poison ivy, sumac, and oak are similar, they are:

- severe itching of the skin;
- red inflammation and blistering of the skin; and
- in severe cases, oozing blisters develop.

Wash infected skin as soon as possible with cold water to minimize severity of the rash and prevent the spread of the sap to uninfected parts of the body. Although extremely irritating, most cases disappear within a week to 10 days. Relief may be found through the application of medication such as calamine lotion, which is available in most drug stores.

Poison Ivy is treatable with a natural herbal remedy. When in the field and you have been exposed to poison ivy, oak, or sumac, locate a plant called jewelweed (preferable orange jewelweed not yellow). To apply jewelweed as a remedy, slice the stem then rub its juicy inside on exposed parts, this will promptly ease irritation and usually prevents breakouts.

www.westol.com/~banding/jewelweed-090602.jpg

Figure 12 Orange Jewelweed

www.donwiss.com/pictures/F-2001-07-0410019.jpg

Figure 13 Jewelweed

www.naturealmanac.xom/natural_events/j/jewelweed.jpg

Figure 14 Orange Jewelweed

CONFIRMATION OF TEACHING POINT 3

QUESTIONS

Q1. What three poison plants are found in Canada?

Q2. What are the symptoms that a person has come into contact with a poisonous plant?

Q3. What is the name of the plant that can be used as an herbal remedy to treat an exposed person?

ANTICIPATED ANSWERS

A1. Poison ivy, poison oak, and poison sumac.

A2. Severe itching of the skin, red inflammation and blistering of the skin. In severe cases, oozing blisters develop.

A3. Jewelweed.

END OF LESSON CONFIRMATION

QUESTIONS

Q1. Why is it important to be protected against insects?

Q2. What can be used to remove ticks from skin?

Q3. How can the female black widow be recognized?

Q4. What three poisons plants are found in Canada?

Q5. What are the symptoms that a person has come into contact with a poisonous plant?

ANTICIPATED ANSWERS

A1. Because some people will react seriously to stings and bites. Insects can carry serious diseases.

A2. Heat, oil, petroleum jelly, alcohol, nail polish and hot water.

A3. She has a red or yellow hourglass marking on the underside of the abdomen.

A4. Poison ivy, poison oak, and poison sumac.

A5. Severe itching of the skin, Red inflammation and blistering of the skin. In severe cases, oozing blisters develop.

CONCLUSION

HOMEWORK/READING/PRACTICE

Nil.

METHOD OF EVALUATION

Nil.

CLOSING STATEMENT

It is important for everyone who participates in field training to know how to recognize and deal with dangerous animals, insects, and poisonous plants, in order to ensure the safety of all participants.

INSTRUCTOR NOTES/REMARKS

This lesson should be delivered prior to the bivouac exercise.

REFERENCES

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