ROYAL CANADIAN ARMY CADETS

SILVER STAR

INSTRUCTIONAL GUIDE

SECTION 6

EO C324.01 – IDENTIFY ANIMAL AND INSECT FOOD SOURCES

Total Time: 60 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-703/PG-001, 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.

Complete a reconnaissance of area used to teach the lesson. Locate different signs of animals and their tracks for TP3

Photocopy the handouts located at Annexes F and G.

PRE-LESSON ASSIGNMENT

N/A.

APPROACH

An interactive lecture was chosen for TPs 1 and 2 to introduce daily energy requirements and orient the cadet to food sources when lost.

A demonstration was chosen for TP 3 as it allows the instructor to explain and demonstrate finding animal and insect food sources.

A practical activity was chosen for TP 4 as it is an interactive way to allow the cadets to demonstrate identifying animal and insect food sources in a safe, controlled environment. This activity contributes to the development of their outdoor survival skills in a fun and challenging setting.

INTRODUCTION

REVIEW

N/A.

OBJECTIVES

By the end of this lesson the cadet shall be expected to identify animal and insect food sources.

Unofficial convenience copy of A-CR-CCP-703/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-703-PF-001/A-CR-CCP-703-PF-001.pdf.
Verify against the official publication.

IMPORTANCE

It is important for cadets to be able to identify animal and insect food sources in the field. For those participating in expedition training the need to live off natural resources while in the field may become a realistic situation. In a survival situation, a cadet may rely on and make appropriate choices to supplement nutrition and avoid a situation of accidental poisoning or illness.

Teaching point 1 **Discuss the Daily Energy Requirements for an Average Person When Surviving in the Field**

Time: 10 min Method: Interactive Lecture

ENERGY REQUIREMENTS

The body needs food to:

- supply heat;
- supply energy;
- speed recovery after hard work or injury; and
- help fight off disease and maintain mental and physical capabilities.

A healthy body can survive for several days, even weeks without food, depending on environmental conditions. Food replenishes the nutritional substances that a body uses. It provides vitamins, minerals, salts, and other elements essential to good health.



A calorie is a unit of heat – it is the amount needed to raise the temperature of 1 L of water by one degree Celsius. It is the way energy is expressed when discussing nutrition.

ENERGY NEEDS

The average person in a completely restful state requires 70 calories per hour to maintain their basic metabolism. The simplest activities that make up an ordinary day demand another 45 calories per hour (eg, standing up, sitting down, lighting a fire, etc). That makes a total of about 2040 calories a day without major activities. Participating in a strenuous activity could burn up a further 3500 calories daily. Even mental effort or anxiety will burn additional calories.

Calories are not produced equally by all foods. In general, the energy values of the basic food types are:

- **Carbohydrates.** 1 g produces 4 calories;
- **Fat.** 1 g produces 9 calories; and
- **Protein.** 1 g produces 4 calories.

Consuming more than one source of food will avoid the possibility of nutrient deficiencies. Nutrients must include a combination of carbohydrates, fats and proteins, minerals and other trace elements and vitamins. A balanced diet is important for long-term survival. Do not rely on the easiest source of food for a balanced diet.

Carbohydrates

Carbohydrates form the bulk of our diets and are a primary source of energy for the body, not just for physical effort but also for fuelling the body and running the nervous system. There are two types of carbohydrates:

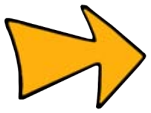
- **Fibre.** A complex carbohydrate, and

Unofficial convenience copy of A-CR-CCP-703/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-703-PF-001/A-CR-CCP-703-PF-001.pdf.
Verify against the official publication.

- **Sugar.** A simple carbohydrate.

Fats

Fats contain the same elements as carbohydrates but are combined differently. They are a concentrated source of energy, providing twice as many calories as carbohydrates. Fat is stored in the body as a layer under the skin and around the organs. Fats heat and insulate the body, protect organs, lubricate the alimentary tract and build an energy reserve. They are found in meat, eggs, milk and nuts.



The alimentary tract is the passage along which food is passed from the mouth to the anus during digestion.

Proteins

Proteins build muscles, bones, and teeth and are found in a variety of foods such as meat, poultry, fish, legumes, nuts, milk products, and grain products. Proteins are the only food ingredient containing nitrogen and are therefore essential for the growth and repair of the body. If carbohydrates and fats are missing from the diet, protein is used to generate energy but at the expense of the body's other needs; the body will burn its own tissue muscle for energy.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS

Q1. What nutrients provide calories for energy?

Q2. How many calories will an average person at a completely restful state burn in a day?

Q3. When doing strenuous work how many calories could the body burn?

ANTICIPATED ANSWERS

A1. Carbohydrates, fats, and proteins.

A2. A average person at rest will burn approximately 2040 calories.

A3. Strenuous work may burn upward of 3500 calories.

Teaching point 2 **Identify Edible Insects and Their Habitat**

Time: 10 min Method: Interactive Lecture



This TP should be conducted somewhere close to rotting logs, stones, boards or any other materials lying on the ground providing good nesting sites for insects. During the TP provide examples of insects and grubs found under one of the listed objects above.

Be cautious when overturning objects, as dangerous or poisonous insects or creatures may be found underneath (snakes, spiders, bees, wasps, etc).

EDIBLE INSECTS

Insects are the most abundant life form on earth and are easily caught. They provide ample amounts of proteins, fats, carbohydrates, calcium and iron. This makes insects a valuable food source for survival.

Unofficial convenience copy of A-CR-CCP-703/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-703-PF-001/A-CR-CCP-703-PF-001.pdf.
Verify against the official publication.

Although a fair number of insects can be eaten raw, it is best to cook them in order to avoid ingesting parasites. Collect only living specimens. Avoid any that look sick or dead, have a bad smell or produce skin irritation or a rash when handled. The nutritional value per 100 g of various insects is illustrated in the chart at Figure 1.



Individuals with known allergies to insects or arthropods should exercise caution. Insects and shellfish are in the same category. People who suffer allergic reactions to lobster, shrimp, crayfish, and other such foods should avoid eating insects.

NUTRITIONAL VALUE

One gram of carbohydrates equals four calories. This calculation relates to the amount of calories that must be consumed to maintain strength and basic functions when surviving in the field. Note that there is a significant amount of protein that comes from insects.



Distribute handout Annex G.

Have cadets, based on the chart, determine what two insects they would eat. Have them then calculate the amount of insects they would have to eat in order to make up half of their daily caloric intake (roughly 1020 calories).

Insect (per 100 g)	Protein (g)	Fats (g)	Carbohydrates (g)	Calcium (mg)	Iron (mg)
Crickets	**12.9**	**5.5**	**5.1**	**75.8**	**9.5**
Small grasshoppers	**20.6**	**6.1**	**3.9**	**35.2**	**5.0**
Giant water beetles	**19.8**	**8.3**	**2.1**	**43.5**	**13.6**
Red ants	**13.9**	**3.5**	**2.9**	**47.8**	**5.7**
Silkworm pupae	**9.6**	**5.6**	**2.3**	**41.7**	**1.8**
Termites	**14.2**	**n/a**	**n/a**	**0.050**	**35.5**
Weevils	**6.7**	**n/a**	**n/a**	**0.186**	**13.1**

G. Davenport, Wilderness Survival, Stackpole Books (p. 161)

Figure 1 Nutritional Value

INSECT HABITAT

Rotting logs, stones, boards or any other materials lying on the ground provide good nesting sites and are excellent places to find a variety of insects including ants, termites, beetles and grubs. Grassy areas are good areas to search because insects are easily seen. The following insects can commonly be found in most locations.

Grasshoppers. Most commonly found in open fields. Watch for them jumping out of the way when walking. Eaten raw or cooked, remove the legs.

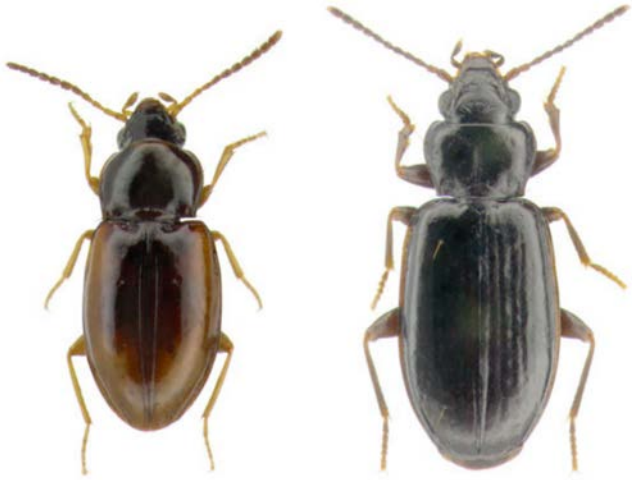
Unofficial convenience copy of A-CR-CCP-703/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-703-PF-001/A-CR-CCP-703-PF-001.pdf.
Verify against the official publication.



Discover Entomology, by Carl D. Patrick, Grasshoppers and Their Control, Copyright 2008 by Texas A&M University Department of Entomology. Retrieved March 5, 2008, from http://insects.tamu.edu/extension/bulletins/l-5201.html

Figure 2 Grasshopper

Beetles. Often found under rotting logs, stones, boards or any other material lying on the ground. Insects with hard outer shells will have parasites so cook them before eating.



Canadian Biodiversity Information Facility, Ground Beetles of Canada. Retrieved March 5, 2008, from http://www.cbif.gc.ca/spp_pages/carabids/phps/image1_e.php#Bembidiini

Figure 3 Beetles

Worms. Worms are an excellent source of protein, a large proportion of essential amino acids and are easily collected. Dig for them in damp soil or watch for them on the ground after rain. After collecting them, drop them into clean, potable water for a few minutes. The worms will naturally purge or wash themselves out, after which they can be eaten raw.

Unofficial convenience copy of A-CR-CCP-703/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-703-PF-001/A-CR-CCP-703-PF-001.pdf.
Verify against the official publication.



Cheshire Wildlife Trust, Find Out About Earth Worms, Copyright 2004 by Cheshire Wildlife Trust. Retrieved March 5, 2008, from http://www.wildlifetrust.org.uk/cheshire/watch_earthworms.htm

Figure 4 Earth Worm

Grubs. Known as insect larva, grubs are often found under rotting logs, stones, boards or any other materials lying on the ground.



Green Smiths, Grub Worms. Retrieved March 5, 2008, from http://www.greensmiths.com/grubs.htm

Figure 5 Grubs

Aquatic Insects. Many species of edible insects exist around the edges of lakes, or ponds, or the ocean. Cook any hard shell insects.

Unofficial convenience copy of A-CR-CCP-703/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-703-PF-001/A-CR-CCP-703-PF-001.pdf.
Verify against the official publication.



P. Tawrell, Camping and Wilderness Survival (2nd ed.), Paul Tawrell (p. 912)

Figure 6 Water Insects

CONFIRMATION OF TEACHING POINT 2

QUESTIONS

Q1. What nutritional value will insects provide for survival?

Q2. Where would insects be generally located?

Q3. How would someone find worms?

ANTICIPATED ANSWERS

A1. Insects will provide ample amounts of proteins, fats, carbohydrates, calcium and iron.

A2. Under rotting logs, stones, boards or any other materials lying on the ground providing good nesting sites and are excellent places to find a variety of insects.

A3. Dig for them in damp soil or watch for them on the ground after rain.

Teaching point 3 **Discuss Finding Small Animals**

Time: 15 min Method: Demonstration



During this TP move about the training area pointing out different signs of animals. Identify their tracks and habitat to the cadets.

IDENTIFYING TRACKS AND HABITAT

All animals can be a source of nourishment. The more one knows about animals, the better the chances of locating an animal. To find an animal in the wild, one must be observant for signs. If a person can recognize the signs an animal leaves, and identify the animal, one can devise a method to hunt and trap it.

Unofficial convenience copy of A-CR-CCP-703/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-703-PF-001/A-CR-CCP-703-PF-001.pdf.
Verify against the official publication.

Most mammals are on the move at dawn and dusk (first light, last light), using regular routes between their watering spots, feeding places and homes. Animal tracks and trails can be identified by looking for specific signs.

The following are tips to locate and identify animals:

- Tracks are more obvious on wet ground snow and damp sand.
- The size of the impression is left from their tracks.
- The age of the track can be identified by its sharpness and moisture content.
- The clearer the track the more recent it is. If water or rain has seeped into it, it may be older.
- Heavy vegetation reveals regularly used routes or paths.
- Some animals never travel very far; any tracks likely mean they are in the area.
- Smaller animals make tunnels through dense underbrush.
- Broken twigs along a route, will identify direction of travel and the height of the animal.

Rabbits and Hares

Rabbits and hares are easy to catch. They live either in burrows or above ground and most often use a specific run that they routinely retrace. Rabbits and hares have long hind legs with small front paws. When looking for rabbits or hares, keep the following in mind:

- They leave little detail on soft ground.
- They have a narrow hind foot with four toes.
- They leave tracks with their hind feet in front of the forefoot instead of side by side.
- They eat tree bark and may nibble the base of a tree.
- They warn other rabbits and hares by using their paws to create sounds. The sound emitted sounds like a thump or someone hitting a cushion.



N. Bowers, R. Bowers, and K. Kaufman, Kaufman Focus Guides: Mammals of North America, Houghton Mifflin Company (p. 35)

Figure 7 Rabbit and Tracks

Squirrels

Squirrels are alert and very nimble. Most are active day and night – feeding on nuts, fruits, shoots and for some bird's eggs. Their nests are usually the size of a small day pack, made of sticks and leaves, high in

Unofficial convenience copy of A-CR-CCP-703/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-703-PF-001/A-CR-CCP-703-PF-001.pdf.
Verify against the official publication.

trees. However, squirrels seek out tree hollows for winter dens. Squirrels are small and their tracks are barely noticeable. Signs of squirrel presence include:

- chewed cones,
- cone scales piled about, and
- loud and almost continuous high-pitched squeals and chirps.



N. Bowers, R. Bowers, and K. Kaufman, Kaufman Focus Guides: Mammals of North America, Houghton Mifflin Company (p. 49)

Figure 8 Squirrel and Tracks

Marmots (Groundhogs)

The groundhog is most commonly found in pastures, on roadsides, and overgrown fields. Groundhogs live alone in burrows up to 9 m long (30 feet), excavated under stumps, rocks or edges of buildings. Normally there are three entrances to the burrows. They are visible, measuring 20–30 cm (8–12 inches) across, with big mounds of dirt nearby.



N. Bowers, R. Bowers, and K. Kaufman, Kaufman Focus Guides: Mammals of North America, Houghton Mifflin Company (p. 91)

Figure 9 Marmot (Groundhog) and Tracks

Porcupines

The porcupine is the second largest rodent. It has sharp quills that are solid at the base and barbed at the tip. This animal feeds mainly on grasses, acorns and twigs and is fond of salt. Their tracks and signs include:

- footprints, where the front paws have four toes and hind paws have five toes,
- trees with bark stripped in irregular patches, and
- nipped twigs littering the ground.

Unofficial convenience copy of A-CR-CCP-703/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-703-PF-001/A-CR-CCP-703-PF-001.pdf.
Verify against the official publication.



N. Bowers, R. Bowers, and K. Kaufman, Kaufman Focus Guides: Mammals of North America, Houghton Mifflin Company (p. 109)

Figure 10 Porcupine and Tracks

Beavers

Beavers are known as dam builders. They are aquatic animals with scaly, padded-like tails. They can be found using regular runs along streams, lakes, or bogs/marshes and reside in a den known as a beaver house, where they can be trapped. Their tracks and signs include:

- fore footprints that have five toes with claw marks but, often only four show,
- rear footprints that are webbed, roundish and larger,
- water levels that are higher than normal in lakes, bogs or marshes,
- the presence of a beaver dam, lodges, fallen and chewed saplings, and
- the presence of bark shavings near water.



N. Bowers, R. Bowers, and K. Kaufman, Kaufman Focus Guides: Mammals of North America, Houghton Mifflin Company (p. 110)

Figure 11 Beaver and Tracks

Raccoons

The “masked bandit” lives in a variety of habitats, from forests to prairies to city parks. They prefer to be in the vicinity of water and trees and are most abundant in wooded swamps. They reside in dens often in a hollow

Unofficial convenience copy of A-CR-CCP-703/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-703-PF-001/A-CR-CCP-703-PF-001.pdf.
Verify against the official publication.

tree or log, rock crevice, cave or abandoned building. A raccoon's diet from land sources includes nuts, fruit, insects, small rodents, and birds. Near water they will eat frogs, fish, molluscs and insects. Their tracks and signs include:

- a hind track that is about 7.62 cm (3 inches) long with 5 toes, and
- a front paw that is like a small hand with five fingers.



N. Bowers, R. Bowers, and K. Kaufman, Kaufman Focus Guides: Mammals of North America, Houghton Mifflin Company (p. 99)

Figure 12 Raccoon and Tracks

DETECTING SIGNS OF FEEDING

A skilled eye can often identify the species of animal by the pattern left by teeth or beak marks on a nut, or the way in which a pine cone has been stripped to get at its seeds. Some signs of feeding that may be found in the wilderness include:

- bark stripped from trees,
- the gnawed shells of nuts,
- partially-eaten fruits,
- bitten-off shoots,
- the remains of prey, and
- remains of carnivores or the destruction of nests.

Discarded fruits or nuts are often found when food is plentiful – an animal finds one piece not to its liking and drops it to try another. They not only disclose an animal's presence but suggest bait for traps.

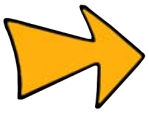
FINDING DROPPINGS

Droppings (sometimes called scat) are one of the best indications of whether an animal is a herbivore or a carnivore. The size of the animal can be judged from the mass and quantity of droppings. The dropping's dryness is an indication of how long it has been since they were passed. Old droppings will be hard and odourless. Fresh droppings will be wet, still smell and may be covered by flies.

The composition of droppings can be used to figure out what kind of animal deposited it. Bits of plant material (stems, seeds, husks, and stalks) indicate a herbivore (plant eater). There is almost no scent to the droppings of a plant eater, although those that have gorged on berries leave sweet smelling scat.

Unofficial convenience copy of A-CR-CCP-703/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-703-PF-001/A-CR-CCP-703-PF-001.pdf.
Verify against the official publication.

Droppings filled with animal material (scales, bones, and fur) left by a carnivore, usually has a rank smell. A mass of flies indicate a pile of fresh droppings.



If flies can be heard buzzing but they can not be spotted, there may be fresh kill from a ferocious wild animal. Leave the area immediately.

IDENTIFYING ROOTINGS

Some animals root up the ground in search of insects and tubers. If the earth is still crumbly and fresh an animal is likely to have been active on the spot. Small scratches may be where a squirrel or other rodents have been digging for shoots.

DETECTING SCENTS AND SMELLS

Be alert and if you smell anything out of the ordinary. Try and register the smells. They may be indications of wildlife present. Where one kind of animal exists, there will also be others.

CONFIRMATION OF TEACHING POINT 3

QUESTIONS

Q1. When are most animals moving about their environment?

Q2. What route does a rabbit usually follow?

Q3. If you were lost in a wooded area near a lake, what animals may you find?

ANTICIPATED ANSWERS

A1. Most animals move about their environment during dawn and dusk.

A2. A rabbit will usually follow a specific route that they routinely retrace.

A3. You may find beavers and racoons.

Teaching point 4 — **Conduct an Activity Where Cadets, in Pairs, Will Search the Local Area for Animal and Insect Food Sources by Identifying Two Signs of Recent Activity That Will Lead Them to Food**

Time: 20 min — Method: Practical Activity

ACTIVITY

OBJECTIVE

The objective of this activity is to have the cadets identify animals and insect food sources by finding signs of recent activity in the field.

RESOURCES

Animal and insect handout.

Unofficial convenience copy of A-CR-CCP-703/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-703-PF-001/A-CR-CCP-703-PF-001.pdf.
Verify against the official publication.

ACTIVITY LAYOUT

N/A.

ACTIVITY INSTRUCTIONS

1. Divide the cadets into pairs.

2. Distribute the handout located at Annex F.

3. Have the cadets search the training area and identify animals and/or insect food sources by finding signs of recent activity in the field.

4. Have the cadets describe the signs of recent activity, to include:

    a. type of animal and or insect; and

    b. estimated size of the animal or insect.

SAFETY

- Set boundaries around the areas of use.
- Additional staff can be used to help supervise during this task.

CONFIRMATION OF TEACHING POINT 4

The cadets' participation in the activity will serve as the confirmation of this TP.

END OF LESSON CONFIRMATION

QUESTIONS

Q1. If a person was to consume 1 g of carbohydrates, how many calories would this produce?

Q2. What is the danger of consuming only one type of food when in a survival situation?

Q3. Where would you most likely find a beaver?

ANTICIPATED ANSWERS

A1. 1 g of carbohydrates produces four calories.

A2. Consuming only one type of food may limit the necessary nutrients the body needs to survive.

A3. Beavers can be found using regular runs along streams, lakes, or bogs/marshes and residing in their den known as a beaver house.

CONCLUSION

HOMEWORK/READING/PRACTICE

N/A.

METHOD OF EVALUATION

N/A.

Unofficial convenience copy of A-CR-CCP-703/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-703-PF-001/A-CR-CCP-703-PF-001.pdf.
Verify against the official publication.

CLOSING STATEMENT

A person who becomes lost in the field will find themselves in a scary and dangerous situation if they are unaware of how to deal with the situation. Cadets have been provided with knowledge of where and how to locate edible animal and insect food sources that will provide the necessary nutrients to survive.

INSTRUCTOR NOTES/REMARKS

N/A.

REFERENCES

C0-111 (ISBN 0-9740820-2-3) Tawrell, P. (2006). *Camping and Wilderness Survival: The Ultimate Outdoors Book* (2nd ed.). Lebanon, NH: Paul Tawrell.

C2-008 (ISBN 0-00-653140-7) Wiseman, J. (1999). *The SAS Survival Handbook*. Hammersmith, London: HarperCollins Publishers.

C2-148 (ISBN 978-0-8117-3292-5) Davenport, G. (2006). *Wilderness Survival*. Mechanicsburg, PA: Stackpole Books.

C2-155 (ISBN 978-1-58574-556-2) The Lyons Press. (2002). *U.S. Army Survival Handbook*. Guilford, CT: The Lyons Press.

Unofficial convenience copy of A-CR-CCP-703/PF-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-703-PF-001/A-CR-CCP-703-PF-001.pdf.
Verify against the official publication.