ROYAL CANADIAN ARMY CADETS

GOLD STAR

INSTRUCTIONAL GUIDE

SECTION 1

EO M424.01 – SHARPEN A SURVIVAL KNIFE

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-704/PG-001, *Gold 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 TPs 1–4 to introduce the cadet to a survival knife and how to care for and maintain a survival knife.

A demonstration and performance was chosen for TP 5 as it allows the instructor to explain and demonstrate sharpening a survival knife while providing the cadet the opportunity to practice these skills under supervision.

INTRODUCTION

REVIEW

Nil.

OBJECTIVES

By the end of this lesson the cadet shall have sharpened a survival knife with a sharpening stone.

IMPORTANCE

It is important for cadets to know how to sharpen a knife as it is an invaluable asset in the field. In a survival situation, a knife serves a number of purposes such as chopping, cutting, slicing and sawing. Having a sharp knife will allow the cadet to make the necessities they will need to live and thrive in the outdoors.

Teaching Point 1 **Identify types of knives.**

Time: 5 min Method: Interactive Lecture

TYPES OF KNIVES

Knives come in many varieties and serve many purposes, including carving, hunting and survival. This TP will discuss three types of knives that are commonly carried by outdoorsmen.

If possible, have the three types of knives available so the cadet can see the differences between them.

Folding Blade

A folding blade knife connects the blade to the handle through a pivot, allowing the blade to fold into the handle. The blade typically has a locking mechanism to stop the blade from accidentally closing on the user. Some types of locking mechanisms include slip joint, lockback, liner lock, frame lock, and pick lock.

The following are locking mechanisms on a folding blade knife:

- **Slip joint.** Holds the blade in place by a spring device that allows the blade to fold when a certain amount of pressure is applied.
- **Lockback.** Includes a pivoted latch connected to a spring that can be disengaged only by pressing the latch down to release the blade.
- **Liner lock.** Uses a leaf spring-type liner within the groove of the handle that snaps into position under the blade when it is open. The lock is released by pushing the liner to the side, allowing the blade to return to its groove in the handle.
- **Frame lock.** Also known as an integral lock or monolock. This locking mechanism works in a similar manner to the liner lock but uses a partial cut-out of the actual knife handle, rather than a separate liner inside the handle to hold the blade in place.
- **Pick lock.** A round post on the back base of the blade locks into a hole in a spring tab in the handle. To close, manually lift the spring tab off the blade post, or swivel the bolster clockwise to lift the spring tab off the blade post.

Figure 1 Folding Blade

Note. From "R.L. Hammette & Associates", by R. L. Hammette & Associates, 2009, *Lockback Knife*. Copyright 2009 by R.L. Hammette & Associates. Retrieved February 25, 2009, from http://www.hammette.com/knives.htm

Fixed Blade

Tang. The part of the blade that extends into the handle for strength. When the tang of the knife is full, the edge of the entire tang can been seen along the handle. A full tang is a solid piece of steel from tip to butt and is the strongest blade / handle arrangement.

A fixed-blade knife does not fold or slide. The blade is typically stronger due to the tang and lack of moving parts. It is best suited for use as a survival knife. The fixed-blade knife is a simple design; however, custom fixed-blade knives are produced in many different variations.

Figure 2 Fixed Blade

Note. From "Knives Plus Retail Cutlery and Cutlery Accessories Since 1987", by Knives Plus Retail Cutlery Accessories Since 1987, 2008, *Buck Gen 5 Skinner*. Copyright 2001–2008 by Knives Plus, Inc. Retrieved February 26, 2009, from http://www.knivesplus.com/buckknifebu-5rws.html

Multi-purpose

These knives come with many tools that may be useful in a survival situation. Some of these knives have bigger blades making them more suitable as a primary knife. However, these knives may have poor blade locks and small, weak blades, limiting their usefulness as a primary knife.

Figure 3 Multi-purpose Knife

Note. From “Leatherman”, by Leatherman Tool Group, Inc, *Charge ALX*. Copyright 2009 by Leatherman Tool Group, Inc. Retrieved February 26, 2009, from http://www.leatherman.com/multi-tools/full-size-tools/charge-alx.aspx

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CONFIRMATION OF TEACHING POINT 1

QUESTIONS:

Q1. What three types of knives may be used as a survival knife?

Q2. What type of knife would be best suited as a survival knife?

Q3. What are some of the negative factors that limit the multi-purpose knife as a survival knife?

ANTICIPATED ANSWERS:

A1. Three types of knives that may be used as a survival knife are the folding blade, fixed blade and multi-purpose knives.

A2. The knife that would be best suited as a survival knife is the fixed-blade knife.

A3. A multi-purpose knife can have a small, weak blade combined with a poor blade locking mechanism.

Teaching Point 2 **Describe the parts of a survival knife.**

Time: 5 min Method: Interactive Lecture

During this TP, point out the parts of the survival knife as each one is mentioned.

PARTS OF A KNIFE

A knife is the most common item carried by individuals who enjoy the outdoors and participate in expedition training. Not all knives have all of the parts listed, as it depends on the cost and intended use of the knife. The following parts are listed for a fixed-blade knife:

1. **Blade.** The cutting portion of the knife.
2. **Cutting edge.** The bottom edge of the blade. It can be very sharp and is used to slice, cut and chop.
3. **Tip or point.** Sharp tip of the blade.
4. **Back.** The back edge of the blade, also called the top or spine.
5. **Handle.** Where the user grasps the knife. It is comprised of many components including the bolsters, scales, fittings, sculpting, spacers, pins and tang framework.
6. **Tang.** The piece of the blade that extends into the handle for strength.
7. **Scale or slab.** The material that makes up the knife handle. These can be man-made or natural material such as bone, wood or ivory. Scales are pinned or riveted to the tang.
8. **Butt plate or pommel.** A metal piece at the end or the back of the handle. It is the butt area of the knife.
9. **Pins or rivets.** The hardware that is used to join scale handles to the tang.
10. **Shank.** Consists of the tang and blade. It is the continuous body of the knife.
11. **Spacers.** Material layered between the handle and the hilt or guard of the knife. The spacer is used to adjust the fit of the handle. The material can be any metal, (copper, brass, nickel, silver, or stainless steel) plastic and / or leather.
12. **Hilt.** Can also be referred to as the bolster or guard. It is the cross member attached to the blade and prevents the hand from sliding up onto the blade**.**
13. **Finger grips.** Grooves that are cut or shaped into the handle so that it fits the hand comfortably (as illustrated in Figure 5).
14. **Hollow grind.** The grind of the blade is where the side of the knife is hollowed out. Knives with a hollow grind cut easier, but are not as strong. A hollow grind is also known as the concave bevel (as illustrated in Figure 5).

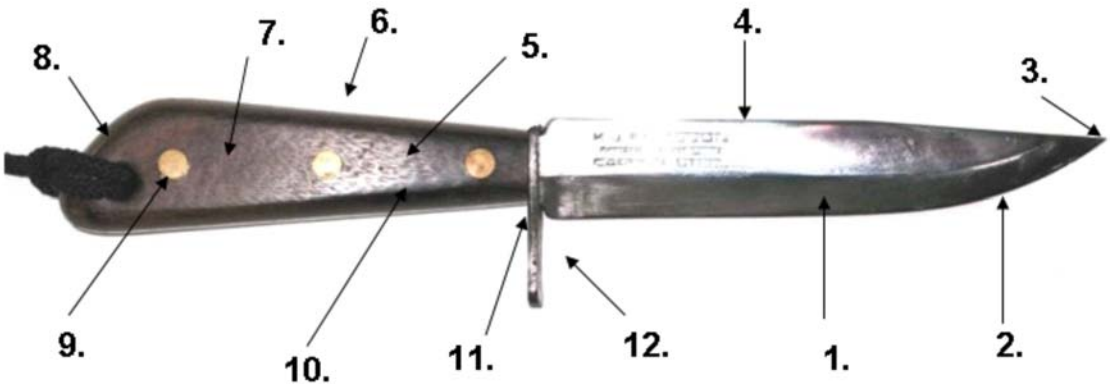

Figure 4 Knife Parts

Note. Created by Director Cadets 3, 2009, Ottawa, ON: Department of National Defence.

Figure 5 Hollow Grind and Finger Grips

Note. From “Foldingknife.com", by Foldingknifepro 2007, *Kalinga Pro*. Copyright 2007 by Foldingknifepro.com. Retrieved March 9, 2009, from http://www.folding knivepro.com/pro1322538.html

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CONFIRMATION OF TEACHING POINT 2

QUESTIONS:

Q1. Identify six parts of a survival knife and explain each part.

Q2. What is a shank?

Q3. What is a tang?

ANTICIPATED ANSWERS:

A1. Any six of the following:

- blade,
- cutting edge,
- tip or point,
- back,

- handle,
- tang,
- scale,
- butt plate or pommel,
- pins or rivets,
- shank,
- spacers,
- hilt,
- finger grips, and
- hollow grind.

A2. Shank refers to the tang plus blade, the continuous body of the knife.

A3. Tang refers to the piece of the blade that extends into the handle for strength.

Teaching Point 3 **Describe the characteristics of a survival knife.**

Time: 5 min Method: Interactive Lecture

CHARACTERISTICS OF A SURVIVAL KNIFE

Length of the Blade

The ideal survival knife should have a blade length somewhere between 10–15 cm (4–6 inches). This size of blade offers a good mix of size and control. Anything bigger is bulky and adds to the weight of the survival gear.

Figure 6 Blade Length

Note. From “Knives Plus Retail Cutlery and Cutlery Accessories Since 1987”, by Knives Plus Retail Cutlery Accessories Since 1987, 2008, *Buck Gen 5 Skinner*. Copyright 2001–2008 by Knives Plus, Inc. Retrieved February 26, 2009, from http://www.knivesplus.com/buckknifebu-5rws.html

Width of the Blade

The optimum survival knife will generally have a blade thickness of between 0.4–0.6 cm (5 / 32 to 8 / 32 inches). Any thinner and the blade becomes too flexible; yet thicker blades lack the finesse for the finer work for which survival knives may be used.

Figure 7 Blade Width

Note. Created by Director Cadets 3, 2009, Ottawa, ON: Department of National Defence.

Composition of the Blade

The material of a knife blade will affect the durability and maintenance of the knife. Most blades are made of stainless steel, an alloy that contains chromium to make it corrosion-resistant. Chromium is softer than steel and is blended with stainless steel. Stainless steel blades offer a compromise between rust resistance, edge retention and ease of sharpening.

Numbers marked on the blade (usually a 400 number) indicate the type of alloy used. For example, a marine knife that will be exposed to salt water, salt air and spray is usually made of rust-resistant, high chromium steel such as 420. A blade intended for frequent cutting or food preparation will be harder steel such as 440.

Letters A, B, and C indicate progressively higher levels of carbon and thus harder steel. A harder blade will hold a sharp edge longer, but will be more difficult to sharpen.

The two main types of steel used in making high quality survival knives are:

- **Carbon steel.** Knife blades are tough, can be very sharp, retain their sharp edge fairly well and sharpen with little effort. They have a tendency to be brittle and can break under stress. This blade will rust if not used or cleaned regularly or coated. Carbon steel blades hold an edge better than their stainless steel counterparts.
- **Stainless steel.** Knife blades are rust resistant and work especially well in wet environments. They require less care than the carbon steel knives. Drawbacks to using stainless steel knives are that they tend to be more expensive, are more difficult to sharpen, and may not hold an edge as well.

Some factors a user may want to consider when determining which type of survival knife to use are:

- how the knife will be used;
- how easy it is to sharpen;
- how well it keeps a sharp edge; and
- how susceptible is it to corrosion.

Length of Tang

An optimum survival knife is constructed of one piece of metal (tang) to which there may be slabs of material attached to form a comfortable handle. A full tang is a solid piece of steel from tip to butt and is the strongest blade / handle arrangement. This kind of construction is known in among those who know knives as full tang or narrow tang.

- **Full tang.** The blade merges into the handle (this is the best option and stronger of the two types of tang).
- **Narrow tang.** The size of the blade material is reduced as it enters the handle.

Figure 8 Tang

Note. From "Recipetips.com", by Types of Kitchen Knives, 2009, *Types of Kitchen Knives–Tang*. Copyright 2009 by Tecstra Systems. Retrieved February 27, 2009, from http://www.recipetips.com/kitchen-tips/t--1075/types-of-kitchen-knives.asp#maintaining

Poorly constructed or cheap survival knives are often made so that the metal blade is separate from the handle. This type of construction creates a weak point where the blade and handle may break and separate.

Composition of the Handle

The handle is comprised of many components including:

- bolsters,
- scales,
- fittings,
- spacers,
- pins, and
- tang.

The handle will be made of a specific material such as horn, bone, ivory or some other man-made material(s).

CONFIRMATION OF TEACHING POINT 3

QUESTIONS:

Q1. What is the recommended blade length for a survival knife?

Q2. What two types of materials make up the composition of the blade?

Q3. What does the letter designation on a blade represent?

ANTICIPATED ANSWERS:

A1. The recommended blade length for a survival knife should be 10–15 cm (4–6 inches).

A2. The two types of material that make up the blade composition are carbon steel and stainless steel.

A3. The letter designation indicates progressively higher levels of carbon and thus harder steel.

Teaching Point 4 **Explain the care and maintenance of a survival knife.**

Time: 5 min Method: Interactive Lecture

CARE AND MAINTENANCE OF A SURVIVAL KNIFE

Practicing Proper Usage

When handling the knife the cadet must practice the following:

- Always cut away from the body, never toward.
- If the knife slips and is dropped, let it fall to the ground. Trying to catch it could cause serious injury.
- Never point or use a knife in the direction of another person.
- Never walk or run around with an open or unsheathed knife.
- Do not throw or place the blade into soil; this will rapidly dull the blade.
- Use the knife in one location and close or sheath the knife before moving.
- Do not use a knife for prying lids open; it may damage the tip of the knife.
- Do not throw a knife to anyone. Hand it to them butt first so the receiver can grasp the handle.

Cleaning

A knife is low maintenance but should be cleaned on a regular basis (using a towel and cotton swabs). If water is used to remove stubborn debris, make sure the knife is completely dry before storage to stop rust from forming. Wiping the knife down with a clean towel and lightly blowing it with a hair dryer, if available, will ensure the knife is completely dry and ready for storage. Lightly wipe the blade with oil two to three times a year to keep rust from forming.

If the knife blade has a blue, grey, or black colour, it is a sign of oxidation and the precursor to rust—clean and oil the knife immediately.

Storing

When storing a knife for a prolonged period of time, keep it in a location that is dry and out of direct sunlight. Ensure the knife is clean before storage and secure it so it will not rub against other items. Do not store in a leather sheath. Leather is a natural material and can harm a blade because it will cause the blade to sweat and attract moisture. The acids soaked into the leather during the tanning process could leach out and damage the knife.

Sharpening

Every knife requires sharpening from time to time. Ideally, a sharpening stone should be used; however, if that is unavailable, any sandstone, such as grey clay, quartz, or granite should be used. Rub two pieces of stone together to make them smooth and follow the sharpening process described later in the lesson.

Never sharpen a knife on a power-driven grinding wheel. This can burn the temper from your blade, which will make the edge brittle and possibly chip or crack.

Figure 9 Sharpening Stone

Note. From "Recipetips.com", by Types of Kitchen Knives, 2009, *Types of Kitchen Knives–Sharpening Stone*. Copyright 2009 by Tecstra Systems. Retrieved February 27, 2009, from http://www.recipetips.com/kitchen-tips/t--1075/types-of-kitchen-knives.asp#maintaining

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CONFIRMATION OF TEACHING POINT 4

QUESTIONS:

Q1. Identify three guidelines to handling a knife.

Q2. What is a sign that oxidation is beginning to occur on a knife blade?

Q3. How should a knife be stored for a prolonged period?

ANTICIPATED ANSWERS:

A1. Guidelines to handling a knife include:

- Always cut away from the body, never toward.
- If the knife slips and is dropped, let it fall to the ground. Trying to catch it could cause serious injury.
- Never point or use a knife in the direction of another person.
- Never walk or run around with an open or unsheathed knife.
- Do not throw or place the blade into soil; this will rapidly dull the blade.
- Use the knife in one location and close or sheath the knife before moving.
- Do not use a knife for prying lids open; it may damage the tip of the knife.
- Do not throw a knife to anyone. Hand it to them butt first so the receiver can grasp the handle.

A2. If the knife is found to have a blue, grey, or black color, it is a sign of oxidation and the precursor to rust.

A3. When storing a knife for a prolonged period of time, keep it in a location that is dry and out of direct sunlight. Ensure the knife is clean before storage. Do not store a knife in a leather sheath.

Teaching Point 5 **Explain, demonstrate and have the cadets sharpen a survival knife.**

Time: 30 min Method: Demonstration and Performance

For this TP, it is recommended that instruction take the following format:

1. Have the cadets lay out their sharpening stone and knife in front of them.
2. Explain and demonstrate each step to sharpen a survival knife and have the cadets then practice it.
3. Have the cadets continue to sharpen the survival knife after all steps have been observed and practiced.

Note: Assistant instructors may be used to monitor the cadets' performance.

STEPS TO SHARPEN A SURVIVAL KNIFE

For best results use the appropriate sharpening stone. A fine grit stone will be useful for quick touch-ups on blades that are not too dull. For a more thorough sharpening on a blade that is dull, use a heavier coarse grit stone first, then go to the fine grit stone.

1. **Lubricate the sharpening stone.** To prepare the sharpening stone, apply a light-weight oil or water to assist sharpening the blade. The oil or water will allow the knife to glide across the stone with ease and disperse the heat buildup that may affect the temper of the steel. A stone can be used dry but is not recommended.

2. **Lay the sharpening stone on a flat surface.** The sharpening stone should be positioned on a flat surface. This will allow the user to adjust the angle at which they sharpen the knife.

Figure 10 Placement of the Sharpening Stone

Note. From "Recipetips.com", by Types of Kitchen Knives, 2009, *Types of Kitchen Knives–Sharpening Stone*. Copyright 2009 by Tecstra Systems. Retrieved February 27, 2009, from http://www.recipetips.com/kitchen-tips/t--1075/types-of-kitchen-knives.asp

3. **Hold the survival knife by the handle.** Hold the knife firmly by placing the handle in one hand with the index finger on top of the blade and the thumb on the back / spine. The blade should be facing away from the individual. Place the fingers of the other hand along the length of the blade.

Figure 11 Holding the Knife

Note. From "Recipetips.com", by Types of Kitchen Knives, 2009, *Using a Sharpening Stone*. Copyright 2009 by Tecstra Systems. Retrieved February 27, 2009, from http://www.recipetips.com/kitchen-tips/t--1075/types-of-kitchen-knives.asp

4. **Determine the sharpening angle of the knife blade.** Place the edge of the knife on the stone so it is angled at the same bevel (the angle at which the blade is made) as the edge of the knife, which should be at a 20-degree angle. The sharp edge should be facing away from the individual.

Figure 12 Sharpening Angle

Note. From "Recipetips.com", by Types of Kitchen Knives, 2009, *Using a Sharpening Stone*. Copyright 2009 by Tecstra Systems. Retrieved February 27, 2009, from http://www.recipetips.com/kitchen-tips/t--1075/types-of-kitchen-knives.asp

5. **Apply pressure to the blade while pushing it in a circular motion on the sharpening stone.** Start at the tip and grind in a counter-clockwise motion as if cutting a fine sliver off the surface of the stone. Continue to lightly rotate in this circular motion on the stone while gradually moving the length of the blade across the stone, keeping consistent pressure. Grind along the entire length of the blade edge.

   As the knife edge is being sharpened, a slight ridge will form along the edge on the side that is not being sharpened. This ridge indicates that the other side is ready to be sharpened.

Figure 13 Sharpening the Knife

Note. From "Recipetips.com", by Types of Kitchen Knives, 2009, *Using a Sharpening Stone*. Copyright 2009 by Tecstra Systems. Retrieved February 27, 2009, from http://www.recipetips.com/kitchen-tips/t--1075/types-of-kitchen-knives.asp

6. **Turn the survival knife over and sharpen the other side of the knife.** As the knife edge is being sharpened, a slight ridge will form along the edge on the side that is not being sharpened. This ridge indicates that the other side is ready to be sharpened. To detect the ridge, use a fingernail (as illustrated in Figure 14) and run it along the edge of the side of the blade that has not been sharpened. If the fingernail catches the edge, the blade is ready to have the other side sharpened. Be sure to check the ridge in several locations along the length of the blade to ensure the entire blade has been sharpened. If there is a spot that has not been sharpened, go back and sharpen that area again.

Figure 14 Checking the Bevelled Edge

Note. From "Recipetips.com", by Types of Kitchen Knives, 2009, *Using a Sharpening Stone*. Copyright 2009 by Tecstra Systems. Retrieved February 27, 2009, from http://www.recipetips.com/kitchen-tips/t--1075/types-of-kitchen-knives.asp

Once the first side of the knife has been sharpened properly, turn the knife over so the blade edge is facing toward the individual. Hold the knife in the same manner as when sharpening the first side. Now the hand holding the handle will have the forefinger on the spine and the thumb will be on the blade (illustrated in Figure 15).

Begin grinding at the tip in a counter-clockwise direction in the same manner as before. Carefully apply consistent pressure across the blade. When finished grinding the second side, check again for the ridge to have formed. If it has not formed, continue to grind in those areas until the ridge forms.

Figure 15 Sharpening the Reverse Side of the Knife

Note. From "Recipetips.com", by Types of Kitchen Knives, 2009, *Using a Sharpening Stone*. Copyright 2009 by Tecstra Systems. Retrieved February 27, 2009, from http://www.recipetips.com/kitchen-tips/t--1075/types-of-kitchen-knives.asp

7. **Check to ensure the survival knife is sharp.** There are various ways to check the sharpness of the blade, such as:

- rubbing the thumb lightly across the blade perpendicular to the length of the blade;
- cutting a piece of paper, watching to see that the knife slices with ease through the paper—the paper should have a clean cut with no tearing; or
- slicing a piece of fruit—there should be little resistance when slicing the fruit.

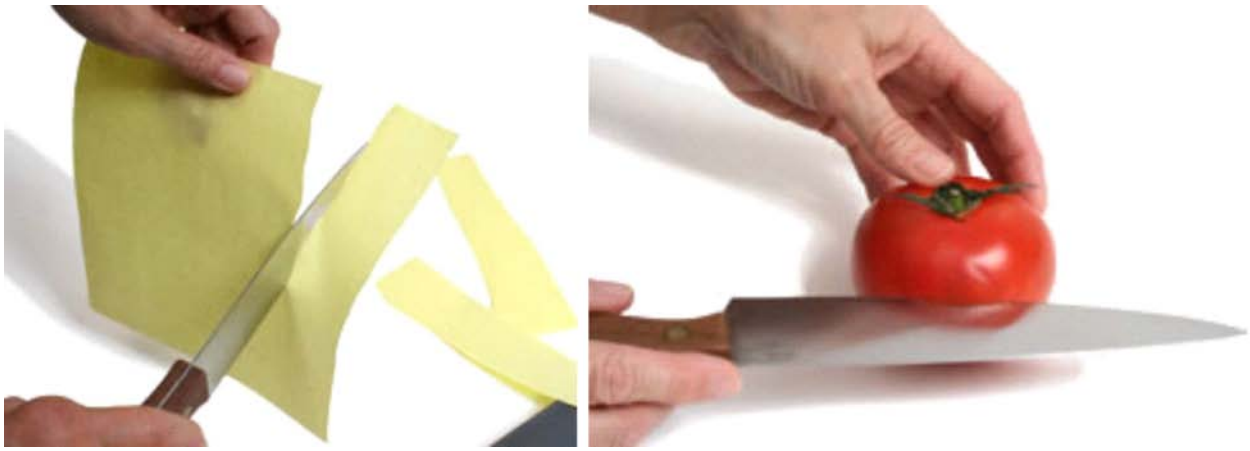

Figure 16 Sharpness Test

Note. From "Recipetips.com", by Types of Kitchen Knives, 2009, *Using a Sharpening Stone*. Copyright 2009 by Tecstra Systems. Retrieved February 27, 2009, from http://www.recipetips.com/kitchen-tips/t--1075/types-of-kitchen-knives.asp

8. **Repeat sharpening on both sides, if required, until desired sharpness is achieved.** Using a fine grit stone, grind the blade edge using the same basic method used with a coarser grit stone. Make four or five counter-clockwise strokes across the stone and turn the blade over and make four or five strokes on the other side. Continue to alternate back and forth in this manner until the blade edge is polished and razor sharp. Repeat until the blade develops the desired sharpness.

9. **Clean the survival knife.** As a knife is sharpened, steel is being filed away, leaving shards or filings on the blade. Once the blade has reached the desired sharpness, wipe or rinse the blade. It is important to remove this leftover material to avoid it from splintering the user's hand or getting into food.

   After the knife is cleaned, wash the sharpening stone(s) with hot soapy water and brush it to remove all debris. Allow the stone to dry completely before storing.

Although using oil is a plausible option, it is suggested to use water when removing dirt and grime from the stone after sharpening is complete.

Figure 17 Cleaning

Note. From "Recipetips.com", by Types of Kitchen Knives, 2009, *Using a Sharpening Stone*. Copyright 2009 by Tecstra Systems. Retrieved February 27, 2009, from http://www.recipetips.com/kitchen-tips/t--1075/types-of-kitchen-knives.asp

CONFIRMATION OF TEACHING POINT 5

The cadets' participation in sharpening a survival knife will serve as the confirmation of this TP.

END OF LESSON CONFIRMATION

The cadets' participation in sharpening a survival knife will serve as the confirmation of this lesson.

CONCLUSION

HOMEWORK / READING / PRACTICE

Nil.

METHOD OF EVALUATION

Nil.

CLOSING STATEMENT

A survival knife is an important tool. It can help to procure food and materials and help build structures in a survival situation. Prolonged use of a knife will eventually wear down the blade, reducing the blade's ability to cut and slice effectively. Being able to sharpen a survival knife will help create materials in a survival situation.

INSTRUCTOR NOTES / REMARKS

This EO shall be conducted prior to the bivouac field training exercise.

The instructor shall remind the cadet to use the survival knife in a safe manner. Caution the cadet when working the blade on a sharpening stone. If it is dark, make sure a source of light is positioned nearby.

REFERENCES

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ROYAL CANADIAN ARMY CADETS

GOLD STAR

INSTRUCTIONAL GUIDE

SECTION 2

EO M424.02 – EMPLOY THE IMPROVISING PROCESS

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-704/PG-001, *Gold 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.

Select an area that can provide natural items (eg, deadfall, rocks, vines, bushes, cattail, grass) that can be used for improvising.

PRE-LESSON ASSIGNMENT

Nil.

APPROACH

An interactive lecture was chosen for TP 1 to review techniques for survival and to generate interest.

A practical activity was chosen for TP 2 as it is an interactive way to introduce cadets to the improvising process. This activity contributes to the development of survival skills and knowledge in a fun and challenging setting.

INTRODUCTION

REVIEW

Nil.

OBJECTIVES

By the end of this lesson the cadet shall have employed the improvising process.

IMPORTANCE

It is important for cadets to learn how to improvise items when in a survival situation. When a cadet determines they are lost, the ability to stop and inspect their immediate surroundings can provide the necessities to improvise items that will allow them to survive while awaiting help. Improvising items can increase the chances of survival.

Teaching Point 1 **Review techniques for survival.**

Time: 5 min Method: Interactive Lecture

Briefly review the survival techniques cadets have learned throughout the Cadet Program—STOP, five elements of survival and the seven enemies of survival.

These techniques will help guide them in a survival situation when applying the improvising process to determine what items should first be created.

THE STOP PROCEDURE

A person can become lost simply by leaving a tent to go to the washroom or by following an incorrect compass bearing on a hike. Once it is determined that one is lost, the best thing to do is to stay in one place, keep calm and try to gather information to determine one's location. It is extremely important to concentrate on making good decisions.

Sit. Sit where you are! Do not panic. Many lost people waste valuable energy and risk injury by panicking—running aimlessly, continuing to travel after dark, or walking in circles. If a lost person decides to wander in an attempt to find their location, in most cases they will move further away, increasing the distance between the known points of their course. This will only increase the size of the search area, increasing the time it will take for a rescue team to locate an individual. During the first 30 minutes of being lost is when people tend to make their biggest mistakes. Making good decisions about the situation involves thinking through options without panicking.

Think. Think about immediate and future dangers and the factors involved in the situation. Consider the time of day, personal physical condition, and the last time water or food was consumed. Try to list the options that are available.

Observe. Observe and listen for the signals of rescuers. Study the immediate environment, determining weather, terrain and resources available. Check the immediate area for a shelter location, fresh drinking water, and for clues of the current location.

Plan. Plan the best course of action. It could be close to dark and consideration should be given to setting up shelter, finding water or starting a fire. A safety bearing could have been provided prior to beginning the activity and consideration should be given to use it or not. Include in the plan how to signal rescuers.

FIVE ELEMENTS OF SURVIVAL

After successfully completing the STOP action and recognizing a survival situation, the lost individual shall take inventory of all the food and equipment on hand and proceed to implement the five elements of survival. These are listed in order of priority.

Attitude. Maintaining a positive attitude is essential. One can survive by staying calm, using all available resources, and prioritizing personal needs.

Shelter. Designed to provide protection from the weather and, depending on the conditions, protect a person from either hot or cold temperatures. Hypothermia and hyperthermia are two of the greatest dangers in a survival situation. A proper shelter can help prevent these from occurring. In a desert scenario, for example, the goal is to stay under a shelter, shaded from the effects of the sun. In cold weather situations, the shelter will provide insulation.

Water. The most essential nutrient for the human body. Even when thirst is not extreme it can dull your mind. Lack of water will slowly degrade the ability to survive. With adequate shelter and water you can survive for weeks.

Fire. In a survival situation, fire provides heat and light, and signals to rescuers. Cold weather not only lowers the ability to think, but it also lowers one's will to do anything. Even a few degrees drop in body temperature can affect the ability to make reasonable decisions.

Food. Individuals in good physical condition can go for many days or even weeks without food. Your goal in a wilderness survival situation is to be located in the shortest time possible, so in most cases you will be located long before food becomes a survival issue. However it is always important to prepare for the worst and find ways to supply the body with substance, through berries, fish, animals, birds, etc.

SEVEN ENEMIES OF SURVIVAL

Cold. More of a threat than most people think. Cold lowers the ability to think and distracts people from doing much more than thinking about getting warm. Because cold slows the body down, it is easy to feel the need to sleep. Cold numbs the mind, the body and the will. Stay moving to try to get warm.

Pain. Nature's way of letting the mind know that something is wrong. The mind can postpone the feeling of pain, if the mind and body are distracted doing something else. Once the mind recognizes pain, it can weaken the drive to survive. It can become overwhelming, even if it is not serious or prolonged. Keep spirits up to postpone the feeling of pain.

Thirst. The hidden enemy of survival. Even when someone has a mild thirst, the mind can feel dull. Like pain and cold, if attention is drawn to it, it can lower the drive to survive. Remember to drink water if it is available and safe. The feeling of thirst can fog the mind. One can become dehydrated even when water is available because they forget to drink or do not force themself to drink. Lack of water leads to dehydration as well as headaches and nausea.

Hunger. The feeling of hunger can affect a person's rational thought. Thirst and hunger can increase the chances of weakening to the effects of cold, pain and fear. This is especially true after three days, when the stomach shrinks and reduces its desire for food.

Fatigue. Even a small amount of fatigue (tiredness) can reduce mental ability. It is easy to become lazy and adopt a careless attitude. Fatigue is one of the biggest dangers to wilderness survival and may be responsible for some deaths. Although there is a real danger of over-exertion, fatigue may be caused by a feeling of hopelessness or frustration. Sleep allows someone to escape from a situation they feel may be too difficult to handle.

Boredom and loneliness. Boredom and loneliness are two of the toughest enemies of survival because they are unexpected. When there is nothing to do, feelings of boredom and loneliness may creep up. Try to find some way to keep occupied. Working on a plan allows one to be constructive while staying busy. Building amenities for the site or something as simple as singing and talking can keep the cadet's mind occupied.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS:

Q1. When stressed about being in a survival situation, what do some people forget to use?

Q2. What are the seven enemies of survival?

Q3. What are the five elements of survival?

ANTICIPATED ANSWERS:

A1. When stressed about being in a survival situation, some people forget to use their common sense.

A2. The seven enemies of survival are cold, pain, thirst, hunger, fatigue and boredom and loneliness.

A3. The five elements of survival are attitude, shelter, water, fire and food.

Teaching Point 2 **Conduct a scenario-based activity where the cadets will employ the improvising process.**

Time: 20 min Method: Practical Activity

BACKGROUND KNOWLEDGE

IMPROVISING PROCESS

Being lost and unaware of one's surroundings can be an uncomfortable and scary situation. It can happen at any time. Even when leaving a campsite to go to the washroom, a person can easily take a wrong turn and find themselves wandering aimlessly in the forest. Improvising can turn an uncomfortable survival situation into one that is more comfortable. With creativity and imagination, anyone can improvise the basic survival necessities, gather food, make shelter and create a source of heat. The only limiting factor is the imagination. This is all possible, it just requires the person to stop, think and follow the improvising process. When working through the improvising process, the following steps will help in making the best choices:

1. **Determine items needed for survival.** When in a survival situation, determine what is required to survive from the most to least important (eg, shelter, food, fire, water).

2. **Identify available resources.** Take inventory of available resources, to include two types of materials—natural and man-made. Man-made items can be anything from a survival knife to the laces in footwear and even the clothes on oneself. Natural items include resources found in the area such as trees, branches, leaves, cattails, etc.

3. **Consider options available.** Think about that what options are available to meet the needs of the situation by remembering the five elements of survival and determining priorities. If there is an injury, the first thing would be to tend to the wound, (eg, a broken or sprained ankle may need to be splinted) to allow one to continue about the site.

4. **Select a survival item to improvise.** Particular factors determine the practicality of an item to improvise. The factors that influence the type of survival item to be improvised include:

    a. **Time.** How much time will be consumed constructing the item? Time is important to survival. As time passes the remaining hours of sunlight diminish. If time is assessed correctly, many improvised items can be created to help prolong survival until help arrives. In the big picture, if an item will take a considerable amount of time to construct, the question needs to be asked: will this benefit the situation?

    b. **Energy.** Will the item benefit the situation if a lot of energy was expended creating it? Choosing to construct an item that consumes considerable amounts of energy without having a source of food to replenish that energy can threaten the chances of survival.

    c. **Materials.** Will the item require man-made or natural materials? These materials may be limited depending on area. Could the materials be put to better use and are the materials being used in an appropriate fashion? This must be considered.

5. **Construct the survival item.** Once it is determined that the item is viable and required, the person can continue with the construction, ensuring that the final product is safe and durable.

Some survival items do not need to be constructed (eg, using a rock as a hammer).

6. **Repeating the process for other survival items.** The process can be repeated to create more survival items. This should continue until found; an idle mind can be devastating to survival.

Items that are common to improvise include:

- bed / layer of comfortable material to rest on,
- cordage,
- cutlery,
- shelters,
- tools,
- traps,
- water carrying devices,
- weapons for hunting, and
- wind and heat reflectors.

ACTIVITY

Time: 20 min

OBJECTIVE

The objective of this activity is to have the cadets employ the improvising process.

RESOURCES

- Natural and man-made items found in the surrounding area, and
- River Folly scenario located at Attachment A.

ACTIVITY LAYOUT

Nil.

ACTIVITY INSTRUCTIONS

1. Conduct a briefing to include an explanation of:
   a. the objectives and importance of the activity,
   b. the resources that may be required to perform the activity, and
   c. any safety guidelines that must be followed while performing the activity.

2. Divide the cadets into pairs.
3. Read the River Folly scenario located at Attachment A to the cadets.
4. In pairs, based on the scenario, have the cadets:
   a. determine items needed for survival from most to least important;
   b. identify available resources in the immediate area, to include:
      (1) man-made, and
      (2) natural;
   c. consider options available by:
      (1) referring to the five elements of survival,
      (2) determining what should be improvised first to assist the survival situation;
   d. select a survival item to improvise;
   e. construct the survival item if time permits; and
   f. repeat the process for other survival items.
5. Conduct a debriefing of the activity.

The items improvised should be small and simple given the amount of time available.

SAFETY

Cadets shall be briefed on any boundaries for this activity.

CONFIRMATION OF TEACHING POINT 2

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

END OF LESSON CONFIRMATION

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

CONCLUSION

HOMEWORK / READING / PRACTICE

Nil.

METHOD OF EVALUATION

Nil.

CLOSING STATEMENT

The improvising process is a method a person can use to help determine a requirement and provide basic constructed materials to aid in a survival situation. This process allows the one to weigh the pros and cons of a particular item before committing materials and resources. Creating improvised items can increase the chances of survival.

INSTRUCTOR NOTES / REMARKS

This EO shall be conducted during the allocated bivouac field training exercise.

REFERENCES

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RIVER FOLLY

The cadet corps has planned a three-day canoe trip for senior cadets. The trip covers a total distance of 53 km and includes travel across many lakes, including portages and some white water canoeing. It is late August, the weather at this time of year has normal daytime temperatures between 18–23 degrees Celsius and temperatures overnight between 8–13 degrees Celsius.

It is Day Two, early afternoon of the canoe trip and the group has travelled by canoe on flatwater. The final leg of the day takes the group down a fast moving river with a few Class 2 rapids. The group is required to travel 2 km down the river and complete a final portage to that evening's campsite. All groups are directed to follow the lead canoe, giving ample distance between canoes in case of accidental capsizing.

You and your partner are the third canoe in the chain. As you follow the lead canoes ahead, you see they are turning and rafting in an eddy. Just past the eddy is what appears to be an area of Class 3 rapids—larger rapids than what this group expected today. As you approach the lead canoes, you are directed to raft up in the eddy. However, when turning into the eddy something goes wrong. You feel a sudden rush of cold water engulf your body and you are stunned, as the rushing current pulls you downstream.

You awaken face down on a small rocky beach, pebbles are in your mouth, your face is covered in mud and half your body is still in the water. You feel a slight headache and have a rather sizable lump on your forehead. You instantly assume you must have been knocked unconscious when the canoe capsized and have no idea where you are on the river. You remember in the briefing the instructor informed everyone that this river is over a 100 km long and runs directly into the ocean—you could be anywhere.

Climbing out of the river and to higher ground, you gather your thoughts and assess the situation. You realize you are only left with your personal flotation device (PFD), a wet suit and a knife on your belt. Everything else is missing, including your shoes, helmet and survival kit.

Thinking back to your training, you remember that stern looking warrant officer teaching you about survival factors who told you that if you get lost the first thing you should consider are the techniques for survival including STOP, five elements of survival and the seven enemies of survival.

Well you are lost, you are wet, you have a headache and it is going to be dark in four or five hours. What items can you improvise to help you survive the night while you wait for help?

Scan the surrounding area to see what available natural resources may be employed.

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ROYAL CANADIAN ARMY CADETS

GOLD STAR

INSTRUCTIONAL GUIDE

SECTION 3

EO M424.03 – WEAVE CORDAGE

INTRODUCTION

OBJECTIVES

By the end of this lesson the cadet shall have weaved cordage from raw materials.

IMPORTANCE

It is important for cadets to be able to weave cordage from natural resources. Possessing this skill makes it easier for the cadet to survive in a survival situation. Cordage has multiple uses that can assist the cadet with combating the seven enemies of survival.

Teaching Point 1	**Identify the uses of cordage.**

Cordage (cord). A long thin flexible material made from several twisted strands—usually thicker than string and finer than rope.

Cordage may be used in many different ways to combat the seven enemies of survival.

USES FOR CORDAGE

One of the most indispensable items in a survival situation is cordage. Some of its common uses include:

- lashing materials together;
- binding materials;
- making snares;
- hanging food;
- hanging items;
- constructing water carrying devices;
- making shelter;
- constructing clothing; and
- sewing items together.

Teaching Point 2	**Identify the characteristics of cordage materials.**

Cordage may be used in a multitude of ways. It is important to ensure that the materials selected meet some basic characteristics. This makes it easier to construct the cordage and to ensure that the final product is of high quality.

CHARACTERISTICS OF CORDAGE MATERIALS

The following characteristics must be considered when selecting cordage materials:

Length of the fibre. The longer the fibre being used, the easier it is to work with. Longer fibres also make cordage stronger as there are fewer weak areas in the cordage where smaller pieces are joined together.

Strength of the fibre. The fibres must be strong enough that they may be pulled apart without breaking. This ensures that when the cordage is being constructed, pieces do not break apart.

Pliability of the fibre. The fibre should be pliable enough to be tied into a knot without breaking.

Pliable. Bending easily / supple.

Availability of grip on the fibre. To assist with making cordage, the fibre should have some grip that allows it to bite into (dig into) other pieces when twisted together. This grip may be caused by ridges on the surface, jagged edges, etc.

The stronger the fibre, the stronger the cordage will be. Some stiff fibres, such as vines, may be made more pliable by steaming or warming them in warm water.

Teaching Point 3	**Explain, demonstrate and have the cadets select cordage materials.**

It is important to understand that it is not the actual raw material—bark, root, vine—that makes it a good selection for making cordage. It is the fibres that make up / come from that piece of raw material.

Think about the fabric that makes up a silk shirt. The fabric is constructed from hundreds of silk fibres that are woven together to make string. The pieces of string are constructed from the leaves of a silk plant that have been separated.

CORDAGE MATERIALS

The following is a list of raw materials that can be used to make cordage:

- trees,
- stalks,
- leaves,
- roots, and

miscellaneous materials, to include:

- rushes / sedges / grasses,
- animal sinew, and
- animal hair.

Trees

The dried inner bark of just about any tree supplies workable material to construct cordage. Some of the best bark comes from the following trees:

- basswood,
- elm,
- walnut,
- cherry,
- aspen,
- cottonwood,
- maple, and
- cedar.

When collecting bark to use for cordage, it is best to look for dead, rather than live trees. The fibrous, inner bark should be pulled off the dead tree in strips that are as long as possible. If there are no dead trees in the area, live trees can be used by stripping the inner bark off the tree and then letting it dry out before use.

Figure 1 Bark Fibres

Note. From "Wildwood Survival", *Cordage*, Copyright 2008 by Walter Muma. Retrieved April 23, 2009, from http://www.wildwoodsurvival.com/survival/cordage/basswood/index.html

If a tree has been down a long time, it may have decayed. Test the fibres to ensure they are not too brittle.

Stalks

The dried inner portion of the stalk of fibrous plants can also be useful in making cordage. Examples include:

- dogbane,
- milkweed,
- velvet leaf,
- wild hemp,
- evening primrose,
- stinging nettles,
- fireweed,
- sagebrush,
- thistle, and
- yucca.

When using stalks to make cordage, the fibrous material can be extracted:

A pithy plant has a spongy inner core, while a non-pithy plant has a hard inner core.

- from pithy plants (eg, dogbane, milkweed, thistle) by pulling off the outside of the stalk in long ribbons (when wet) or when dry by crushing and opening up the stalk, breaking off sections of the woody inner core to get long ribbons of fibres; and

Figure 2 Pulling off the Outside Stalk of a Dogbane

Note. From "Wildwood Survival", *Cordage*, Copyright 2008 by Walter Muma. Retrieved April 23, 2009, from http://www.wildwoodsurvival.com/survival/cordage/dogbane/index.html

- from non-pithy (eg, nettles) plants by soaking the long stems in water for 24 hours, laying them on a piece of wood, pounding them with a smooth stone to shred the outer surface, exposing the fibrous centre and drying the fibrous centre.

Figure 3 Extracting Fibres From the Yucca Stalk

Note. From "Wildwood Survival", *Cordage*, Copyright 2008 by Walter Muma. Retrieved April 23, 2009, from http://www.wildwoodsurvival.com/survival/cordage/syucca/index.html

When selecting plants, look for ones that grow very tall. This makes constructing cordage from the collected fibrous material much easier.

Leaves

The leaves of some plants / trees are very fibrous and may be used to make cordage. Examples include the:

- lily,
- aloe,
- palm,
- cattails, and
- yucca.

When using leaves to make cordage, it is important that the leaves are soaked to remove the flesh, however, leave the fibrous portion.

A leaf may be tested to see if it is fibrous by tearing it apart to see if it separates into stringy layers.

Roots

The surface roots of many trees can be used to make very strong cordage. Roots that run just above or just under the surface of the ground are often the most pliable and strong. The thinner the root, the better it is. Examples of trees with good roots are:

- cedar,
- pine,
- juniper,
- tamarack, and
- spruce.

It is best to gather roots from dead trees. If this is not possible, cut only small sections of root from a variety of trees in the area. This limits damage to trees.

Figure 4 Roots

Note. From "Wildwood Survival", *Cordage*, Copyright 2008 by Walter Muma. Retrieved April 23, 2009, from http://www.wildwoodsurvival.com/survival/cordage/roots/index.html

Miscellaneous Materials

There are a number of other sources of fibrous materials to make cordage. They include:

Rushes / sedges / grasses. These types of items can be found anywhere. They should be used while still green and it is important to remember that as they dry out, their strength diminishes. When selecting rushes, sedges and grasses, choose the longest pieces first.

A sedge is a grasslike plant that grows in wet areas.

Animal sinew. Animal sinew (tendons, ligaments) can be used to create exceptionally strong cordage. The longest sinew is found in the white cords that run along either side of an animal's backbone or attached to muscles and bones. The sinew is cut out, removed from its protective sheath, cleaned, dried, separated into fibres and then placed in hot water just before use to make it pliable.

Animal hair. Animal hair provides an excellent and easy to use source for making cordage—if it can be found. Large amounts, the longer the better, are required to ensure the cordage is strong. Animal hair can be found on trees, the ground and on the carcass of a dead animals.

Teaching Point 4	**Explain, demonstrate and have the cadet construct cordage from the selected materials by wrapping the raw materials into a 1-m (3-foot) long continuous cord.**

The first step in making cordage is to wrap the raw materials that have been gathered into long single strands. To do this:

1. Collect and prepare raw materials, as required (completed in TP 3).

Figure 5 Collecting Raw Materials

Note. From *Tom Brown's Field Guide: Wilderness Survival* (p. 245), by T. Brown, Jr., and Morgan, B., 1983, New York, NY: Berkley Publishing Group. Copyright 1983 by Tom Brown, Jr.

It is important to ensure the raw material is broken down completely and as much of the fibre as possible is separated from the non-fibrous materials. This can be done by rolling the raw material between the palms of the hands.

2. Decide on the desired width and length of the cordage to be constructed.

For this TP cadets will be required to construct a 1-m (3-foot) long continuous cord.

3. Collect the required amount of raw materials to achieve the width and length desired.

4. Select a bundle of fibres (enough to cover the palm of the hand).

A larger bundle of fibres will not necessarily make the piece of cordage stronger. Stronger cordage is made by combining multiple pieces of wrapped strands.

5. Place the bundle on the top of the upper thigh.

6. Roll the bundle on the thigh, in one direction, using the palm of the hand to wrap the fibres.

Figure 6 Rolling Fibres on the Thigh

Note. From "Wildwood Survival", *Cordage*, Copyright 2008 by Walter Muma. Retrieved April 23, 2009, from http://www.wildwoodsurvival.com/survival/cordage/men79/index.html

It is sometimes easier to wrap fibres when the thigh is damp.

7. Add additional fibres, in small staggered bundles, to one end by spreading and fitting the fibres into each other to create a continuous piece of cordage the desired length.

The rolling wraps the fibres together. The staggering of the new fibres ensures they bind at different intervals along the piece of cordage—making it stronger.

Teaching Point 5	**Explain, demonstrate and have the cadet weave cordage into a 0.5-m (1.5-foot) one-strand braid (simple wrap).**

Once the piece(s) of long continuous cordage has been constructed, the next step in the process is to weave the cordage together. There are multiple ways to weave cordage together—the more strands that are weaved together, the stronger the end product is going to be. The chosen method of weaving will therefore depend on what the cordage is going to be used for. The following weaves, in order of strength with strongest being listed last, can be completed:

- one-strand braid (simple wrap),
- two-strand braid (reverse wrap),
- three-strand braid, and
- four-strand braid.

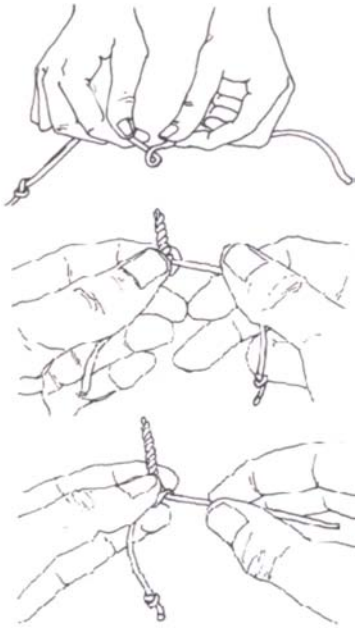

Figure 7 Two-Strand Braid (Reverse Wrap)

Note. From *Tom Brown's Field Guide: Wilderness Survival* (p. 243), by T. Brown, Jr., and Morgan, B., 1983, New York, NY: Berkley Publishing Group. Copyright 1983 by Tom Brown, Jr.

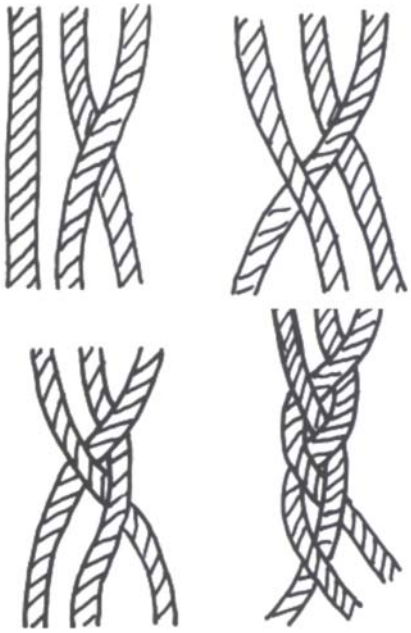

Figure 8 Three-Strand Braid

Note. From *Wilderness Survival* (p. 271), by J. Davenport, 2006, Mechanicsburg, PA: Stackpole Books. Copyright 2006 by Gregory J. Davenport.

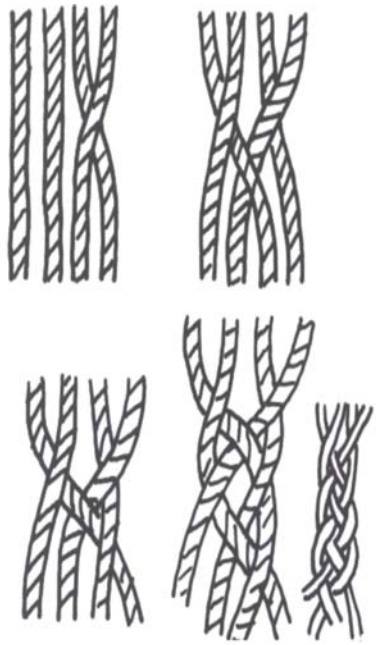

Figure 9 Four-Strand Braid

Note. From *Wilderness Survival* (p. 272), by J. Davenport, 2006, Mechanicsburg, PA: Stackpole Books. Copyright 2006 by Gregory J. Davenport.

The one-strand braid (single wrap) is a quick and easy way to weave cordage that can be used in many different applications where strength is not the primary concern. To execute a one-strand braid (single wrap) use the following process:

1. Hold one end of the cordage between the thumb and forefinger of the non-dominant hand.
2. Roll the cordage with the palm of the dominant hand in one direction on the thigh until tight.

Steps 1 and 2 are the same as Steps 5 and 6 in constructing cordage.

3. Grasp the other end of the cordage.
4. Place the middle of the cordage between the teeth.

Figure 10 Placing Middle of Cordage Between Teeth

Note. From *Tom Brown's Field Guide: Wilderness Survival* (p. 245), by T. Brown, Jr., and Morgan, B., 1983, New York, NY: Berkley Publishing Group. Copyright 1983 by Tom Brown, Jr.

It is important to ensure that cordage being used was not constructed from poisonous raw materials when placing cordage into mouth.

5. Bring both ends of the cordage tightly together.
6. Hold the ends of the cordage tightly together in one hand.
7. Release the doubled cordage from between the teeth to create the braid (wrap).

Releasing the cordage allows for it to naturally twist around itself to form the braid.

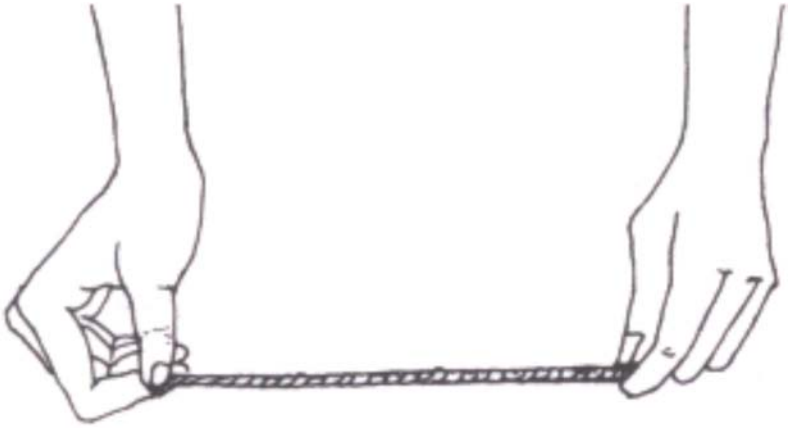

Figure 11 Doubled Cordage

Note. From *Tom Brown's Field Guide: Wilderness Survival* (p. 245), by T. Brown, Jr., and Morgan, B., 1983, New York, NY: Berkley Publishing Group. Copyright 1983 by Tom Brown, Jr.

8. Tighten the braid (wrap) by twisting it and adjusting the cordage.

Figure 12 Example of Good Braid (Top) and Bad Braid (Bottom)

Note. From *Wilderness Survival* (p. 270), by J. Davenport, 2006, Mechanicsburg, PA: Stackpole Books. Copyright 2006 by Gregory J. Davenport.

9. Tie an overhand knot at the end of the cordage.

Once the braid (wrap) is completed, the length of the cordage has shrunk by at least half. This must be taken into consideration to ensure the length of the final product meets what is required.

Figure 13 Examples of Completed Cordage—Burdock and Hemp

Note. From "Wildwood Survival", *Cordage*, Copyright 2008 by Walter Muma. Retrieved April 23, 2009, from http://www.wildwoodsurvival.com/survival/cordage/finishedcordage.html

CONCLUSION

CLOSING STATEMENT

Being able to weave cordage from raw materials is a skill that will assist a cadet in survival when lost. Cordage may be used in so many different ways, that it is an integral item to have in a survival situation. Applying this skill assists in combating the seven enemies of survival.

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ROYAL CANADIAN ARMY CADETS

GOLD STAR

INSTRUCTIONAL GUIDE

SECTION 4

EO C424.01 – WHITTLE WOOD

Total Time: 90 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-704/PG-001, *Gold 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.

Select an area where natural resources for whittling wood may be found.

Collect sticks that are 11–12 cm long for each cadet.

Collect branches and complete Step 1 on the Whittle a Whistle handout located at Attachment A for each cadet.

PRE-LESSON ASSIGNMENT

Nil

APPROACH

An interactive lecture was chosen for TPs 1 and 3 as it introduces the cadet to the craft of whittling wood using a survival knife.

A group discussion was chosen for TP 2 as it allows the cadet to interact with their peers and share their knowledge, experiences, opinions and feelings on the many survival items that may be crafted by whittling wood using a survival knife. Sharing in the discussion encourages the cadet to examine their own thoughts and may prompt them to re-think their previously held ideas. Participating in a group discussion improves the cadet's listening skills and team development.

A practical activity was chosen for TP 4 as it is an interactive way to allow the cadet to whittle wood in a safe and controlled environment. This activity contributes to the development of survival skills and knowledge in a fun and challenging setting.

INTRODUCTION

REVIEW

Nil.

OBJECTIVES

By the end of this lesson the cadet shall have whittled wood.

IMPORTANCE

It is important for cadets to whittle wood so they can learn how to manipulate a survival knife to create useful items. Whittling wood can help a cadet procure food, water and shelter in a survival situation. Whittling wood also keeps the mind occupied while being alone in an environment awaiting rescue.

Teaching Point 1 **Define whittling.**

Time: 5 min Method: Interactive Lecture

To engage the cadets and develop an interest in the topic, present the cadets with the following questions:

1. What is whittling?
2. Who has whittled before? What did you whittle?

WHITTLING

Whittling is described as the art of changing the shape of a piece of wood with the removal of shavings or the cutting of small amounts of wood using a knife or small wedge-edged tool.

To whittle wood:

- hold the survival knife in the dominant hand;
- secure the piece of wood with the non-dominant arm;
- make small precise strokes to remove excess wood and shape the object; and
- adhere to safe knife usage.

Whittling requires no special tools, no special circumstance or any specific type of working environment; just a piece of wood and a knife. True whittling is very simple, the objects are very easily identified, as the knife strokes are plainly visible.

Materials used to whittle are small branches or twigs; however, depending on the size of the item that is desired, a larger piece of wood may be required.

If immediate access to good branches for whittling are unavailable, milled scraps of wood are a fine alternative. Make sure the milled lumber is straight-grained, without knots.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS:

Q1. Define whittling.

Q2. What tools are required to whittle wood?

Q3. What is the main raw material used to whittle?

ANTICIPATED ANSWERS:

A1. Whittling is described as the art of changing the shape of a piece of wood with the removal of shavings or the cutting of small amounts by using a knife or smaller wedge-edged tool.

A2. Whittling does not require any special tools. All that is required is a piece of wood and a knife.

A3. The main raw material to whittle is wood.

Teaching Point 2 **Discuss items that can be whittled out of wood.**

Time: 10 min Method: Group Discussion

The point of the group discussion is to draw the following information from the group using the tips for answering / facilitating discussion and the suggested questions provided.

BACKGROUND KNOWLEDGE

ITEMS THAT CAN BE WHITTLED OUT OF WOOD

There are a number of items that can be whittled out of wood. Imagination and determination are the driving forces and the ideas one comes up with are only limited to a persons creativity. When lost, many items can be created with the survival knife to help with survival. Items that can be whittled out of wood include:

- a walking stick,
- a splint,
- a hunting spear,
- a sling shot,
- a fire poker,
- a whistle, and
- utensils, such as:
    - spoon,
    - spreader,
    - fork, and
    - knife.

TIPS FOR ANSWERING / FACILITATING DISCUSSION:

- Establish ground rules for discussion, eg, everyone should listen respectfully; don't interrupt; only one person speaks at a time; no one's ideas should be made fun of; you can disagree with ideas but not with the person; try to understand others as much as you hope they understand you; etc.
- Sit the group in a circle, making sure all cadets can be seen by everyone else.
- Ask questions that will provoke thought; in other words avoid questions with yes or no answers.
- Manage time by ensuring the cadets stay on topic.
- Listen and respond in a way that indicates you have heard and understood the cadet. This can be done by paraphrasing their ideas.
- Give the cadets time to respond to your questions.
- Ensure every cadet has an opportunity to participate. One option is to go around the group and have each cadet answer the question with a short answer. Cadets must also have the option to pass if they wish.
- Additional questions should be prepared ahead of time.

SUGGESTED QUESTIONS:

Q1. What purpose does whittling serve in a survival situation?

Q2. What items do you think could be whittled out of wood?

Q3. Of those items considered, what items do you think could be beneficial in a survival situation?

Other questions and answers will develop throughout the group discussion. The group discussion should not be limited to only those suggested.

Reinforce those answers given and comments made during the group discussion, ensuring the teaching points have been covered.

CONFIRMATION OF TEACHING POINT 2

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

Teaching Point 3 **Explain how to whittle wood using a survival knife.**

Time: 10 min Method: Interactive Lecture

Before a cadet can whittle an item, they must first learn how to perform basic cutting strokes.

For basic cutting strokes it is recommended that instruction take the following format:

1. Explain and demonstrate the basic cutting strokes.
2. Explain and demonstrate each step required to complete the strokes.
3. Monitor the cadets' performance as they practice each stroke.

Note: Assistant instructors may be used to monitor the cadets' performance and safety.

IDENTIFY BASIC CUTTING STROKES

The following are ways to cut with a knife:

Straightaway cut. Good for removing a lot of wood or bark quickly. Hold the wood in the non-dominant hand, and using long, firm strokes, cut away from the body with the dominant hand. The dominant hand wrist is locked, and does not bend during the stroke.

Figure 1 Straightaway Cut

Note. Created by Director Cadets 3, 2009, Ottawa, ON: Department of National Defence.

Draw cut. Involves placing the wood in the non-dominant hand and the knife in the dominant hand. Cut toward the body (similar to peeling an apple) with short strokes, using the dominant hand thumb as a brace against the wood. Be sure to keep some wood between the blade and the thumb. It is safer to keep the dominant hand thumb braced on the other thumb, not on top of the wood itself. This decreases the risk of the blade moving into the thumb on its follow-through when it clears the wood.

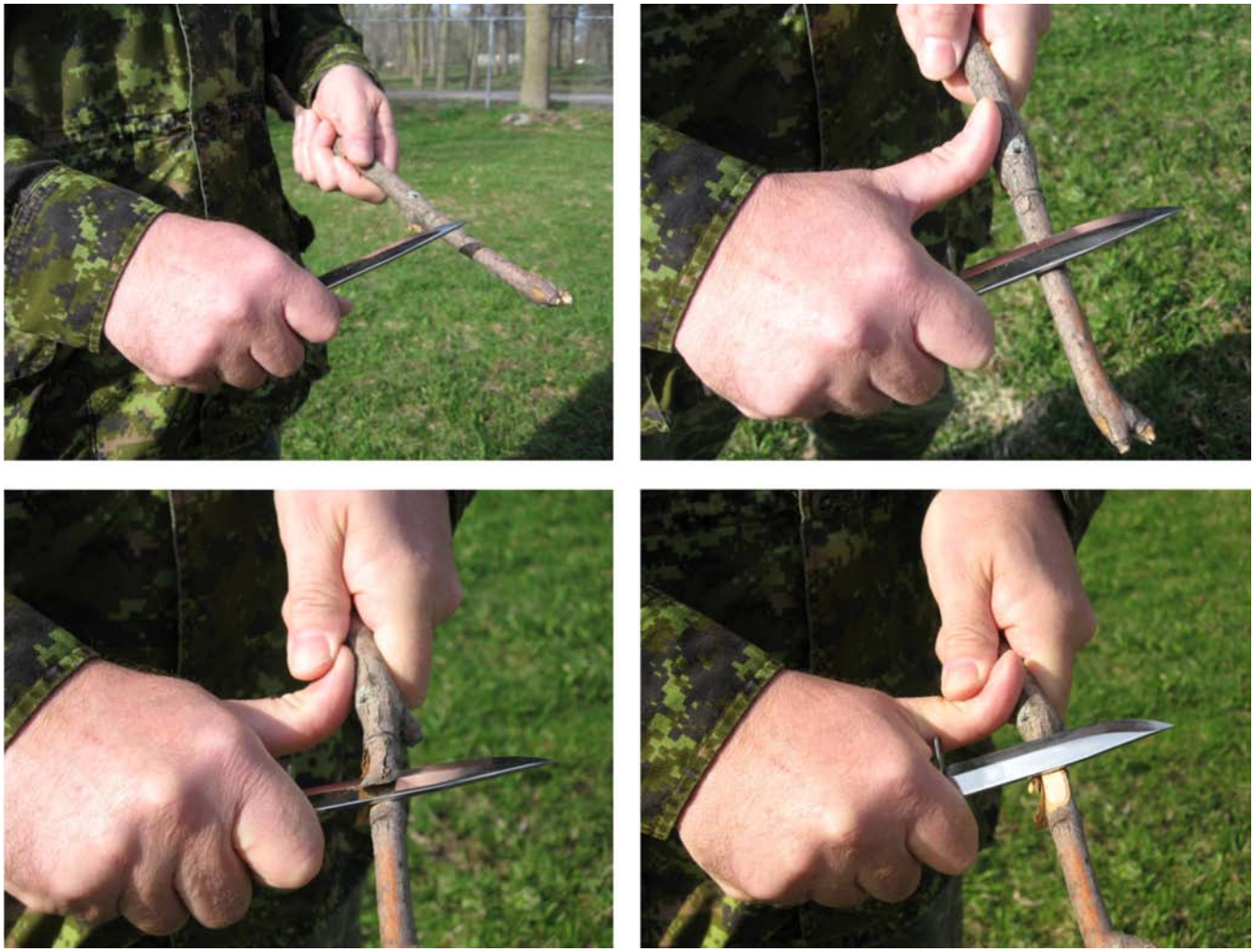

Figure 2 Draw Cut

Note. Created by Director Cadets 3, 2009, Ottawa, ON: Department of National Defence.

Thumb push. Practical for small cuts where precise control is needed and limited cutting is required. Hold the wood in the four fingers of the non-dominant hand, leaving the thumb free. Grip the knife in the dominant hand, keeping the thumb against the back of the blade. With the non-dominant hand thumb, push either the back of the blade or the back of the dominant hand thumb.

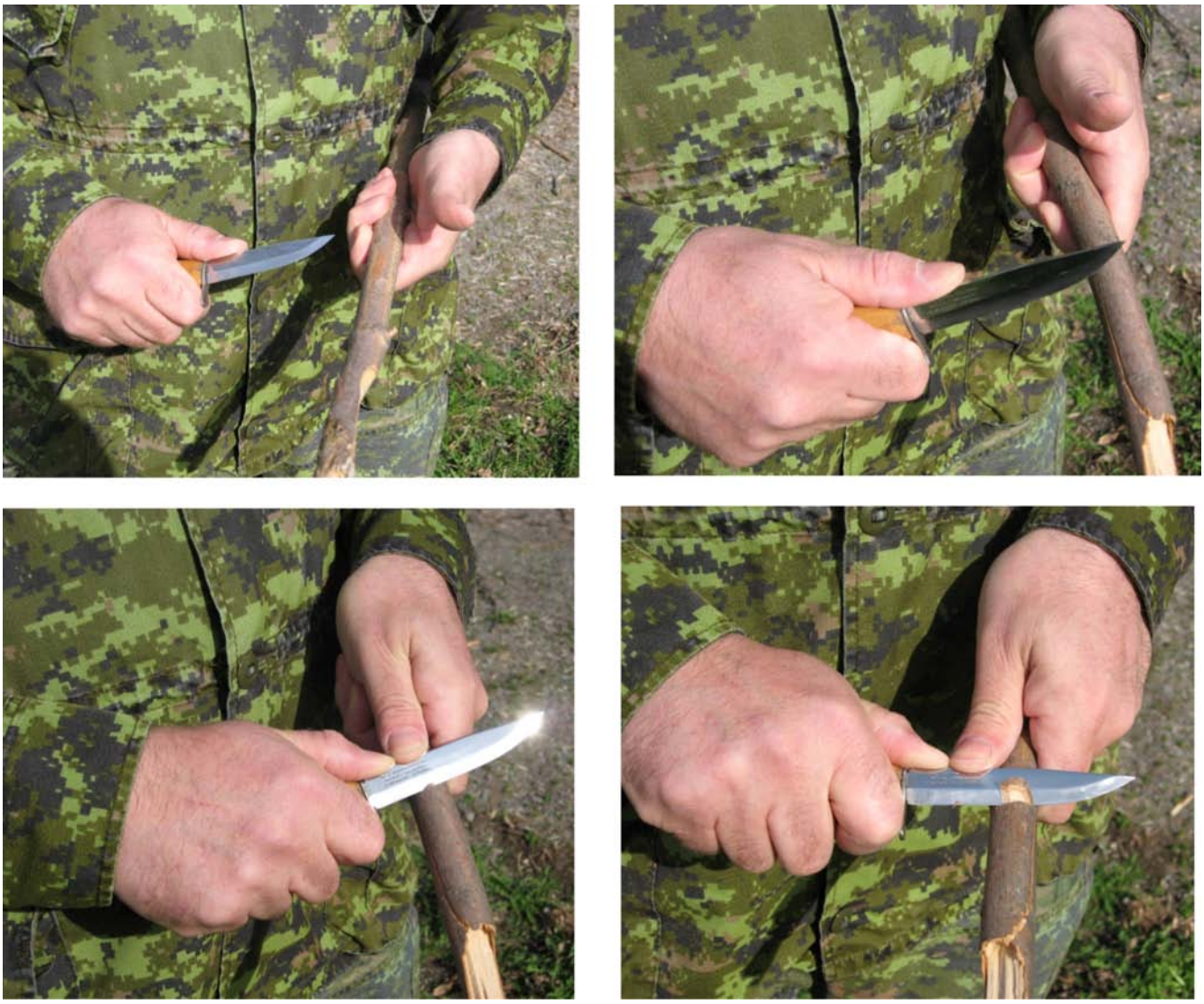

Figure 3 Thumb Push

Note. Created by Director Cadets 3, 2009, Ottawa, ON: Department of National Defence.

Shoulder and latissimus pull. This stroke is among the most powerful, because it slices away from the body and does not require a safety stop to protect the user from the blade. The knife is held in the dominant hand and the wood in the non-dominant hand. The arms are held close to the body so when the two objects meet, the chest provides a leverage point. The knife is held at an angle in the hand such that the stroke leads with the handle and the tip of the blade trails. The slice is powered by the shoulders and the back, but the leverage against the chest also helps power it.

Figure 4 Shoulder and Latissimus Pull

Note. Created by Director Cadets 3, 2009, Ottawa, ON: Department of National Defence.

IDENTIFY THE WHITTLING PROCESS

To whittle wood, there are specific steps to follow to successfully create an object. Use the following steps when whittling:

In a survival situation, choose an object that is relatively easy to whittle. A difficult object with many curves and angles requires a meticulous approach, increasing the time required to complete the item.

1. **Determine an object to whittle.** The object selected to whittle are determined based on the needs of the individual in the survival situation. When survival items are limited, the survivor will first determine what to whittle based on priority of needs.

Many whittlers believe that a piece of wood will speak to the whittler—that the object already exists imprisoned deep within the wood, and that it is the whittler's job to let it out.

2. **Select a piece of wood.** The piece of wood should be big enough to whittle down, yet small enough to hold comfortably (depending on the object being whittled).

3. **Ensure the survival knife is sharp.** The knife should be extremely sharp. The sharp blade allows the knife to easily slice and cut away pieces of wood. The actions of the blade are predictable with each stroke. A dull blade requires greater amounts of force and can glance off or move suddenly causing an undesired result or injury. Sharpen if necessary.

4. **Mark the outline, if required.** The item to be whittled may require an outline of the design drawn on the piece of wood to be whittled. The outline guides the cadet to cut and chip the correct areas. This is only required on items that may be more difficult or require a precise design to follow. To mark an outline, use a pencil or pen. If those items are not available scrape the outline on the piece of wood.

5. **Whittle the wood into the object.** Once the design is determined, whittle the item out of the wood.

Teaching Point 4 **Explain, demonstrate and have the cadets whittle a whistle using a survival knife.**

Time: 55 min Method: Practical Activity

The whistle is a simple item to whittle out of wood and is a good platform to practice many of the basic cutting strokes, while learning how a simple item can be made from minimal resources. Also, if lost, a whistle could be a key to becoming located by rescuers. This type of whistle would not be chosen in a survival situation, since a drill and wood glue are required.

Provide the cadets with the Whittle a Whistle handout located at Attachment A.

ACTIVITY

OBJECTIVE

The objective of this activity is to have the cadets whittle a whistle.

RESOURCES

- Survival knife (one per cadet),
- One piece of seasoned (dry) wood, approximately 11–12 cm long with the thickness of a broom handle (one per cadet),
- One piece of wood matching the diameter of the drilled hole (one per cadet),

- Wood glue, and
- Whittle a Whistle handout located at Attachment A.

ACTIVITY LAYOUT

Select an area where natural resources for whittling wood may be found.

ACTIVITY INSTRUCTIONS

1. Conduct a briefing to include an explanation of:
   a. the objectives and importance of the activity;
   b. the resources that may be required to perform the activity; and
   c. any safety guidelines that must be followed while performing the activity.
2. Distribute the Whittle a Whistle handout and resources to each cadet.
3. Have cadets whittle a whistle, following the handout procedures step by step.
4. Have the cadets test the whistle.
5. Conduct a debriefing of the activity.

SAFETY

Remind cadets to use the survival knife in a safe manner when whittling wood and avoid whittling toward oneself or in close proximity to others.

CONFIRMATION OF TEACHING POINT 4

The cadets' whittling a whistle will serve as the confirmation of this TP.

END OF LESSON CONFIRMATION

The cadets' whittling a whistle will serve as the confirmation of this lesson.

CONCLUSION

HOMEWORK / READING / PRACTICE

Nil.

METHOD OF EVALUATION

Nil.

CLOSING STATEMENT

Practicing whittling wood with a survival knife in a supervised environment provides an unskilled user with appropriate practices and methods. The survival knife can be a dangerous tool if used incorrectly. Inexperience can cause a serious injury that may threaten survival. Having the skills to manipulate wood keeps one busy in a survival situation, while at the same time creating a useful product.

INSTRUCTOR NOTES / REMARKS

Select an area where natural resources for whittling wood may be found.

The instructor shall remind the cadet to use the survival knife in a safe manner when whittling wood and avoid whittling toward oneself or in close proximity to others.

REFERENCES

C2-228 eHow Hobbies, Games & Toys Editor. (2009). *How to whittle*. Retrieved February 13, 2009, from http://www.eHow.com/how_11286_whittle.html

C2-256 ISBN 978-1-56523-274-7 Lubkemann, C. (2005). *The little book of whittling*. Petersburg, PA: Fox Chapel Publishing, Inc.

C2-257 ISBN 0-918804-53-1 (1986). *Fine wood working on hand tools*. Newtown, CT: The Taunton Press, Inc.

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WHITTLE A WHISTLE

The following instructions describe how to whittle a whistle from two pieces of wood. Step 1 shall be completed by the instructional staff prior to this lesson. However, this step is provided for the purpose of understanding how the whittling of a whistle is completed.

Resources

- a stick or branch that is approximately 11–12 cm long with the thickness of a broom handle, and
- a stick or branch that is smaller in diameter than that of the previous; however has the diameter slightly greater than the diameter of the drill bit used to drill the hole in the first branch.

Instructions

1. Drill a hole in the thick branch. The branch should be approximately 11–12 cm long with the thickness of a broom handle. Stop before reaching the end, as seen in Figures A-1 and A-2.

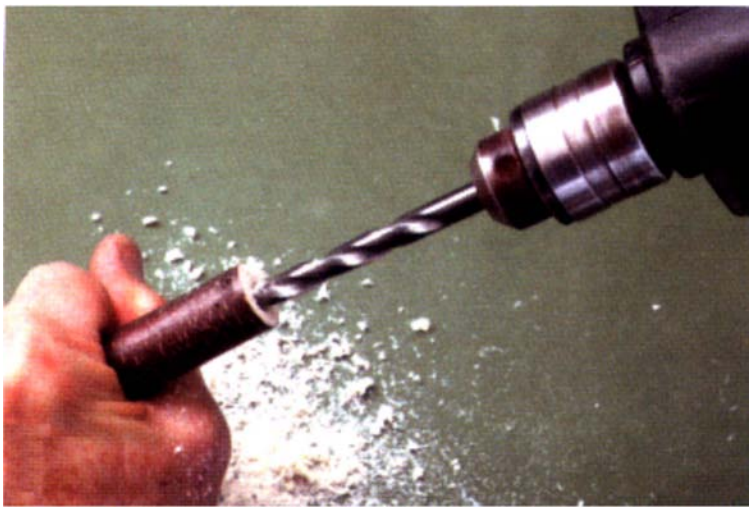

Figure A-1 Drill a Hole

Note. From *The Little Book of Whittling*, (p. 90), by C. Lubkemann, 2005, East Petersburg, PA: Fox Chapel Publishing, Inc. Copyright 2005 by Fox Chapel Publishing Company, Inc.

Figure A-2 Drill a Hole

Note. From *The Little Book of Whittling*, (p. 90), by C. Lubkemann, 2005, East Petersburg, PA: Fox Chapel Publishing, Inc. Copyright 2005 by Fox Chapel Publishing Company, Inc.

2. Remove the bark halfway around the hole end of the whistle, as seen in Figure A-3.

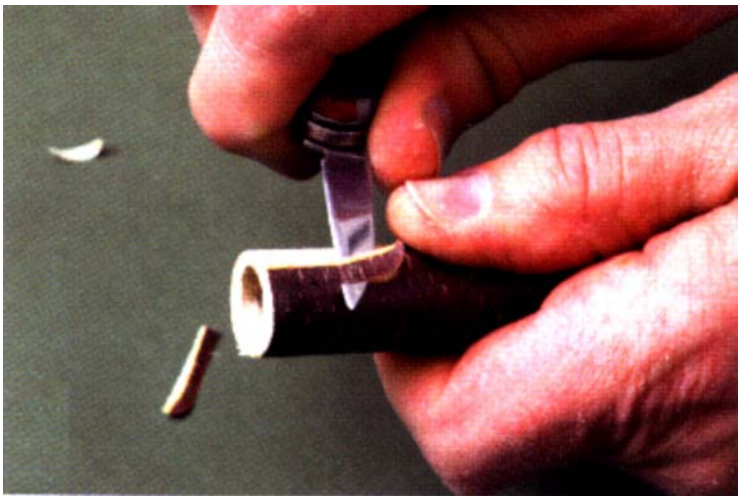

Figure A-3 Remove Bark

Note. From *The Little Book of Whittling*, (p. 90), by C. Lubkemann, 2005, East Petersburg, PA: Fox Chapel Publishing, Inc. Copyright 2005 by Fox Chapel Publishing Company, Inc.

3. Round and smooth the end, as seen in Figure A-4.

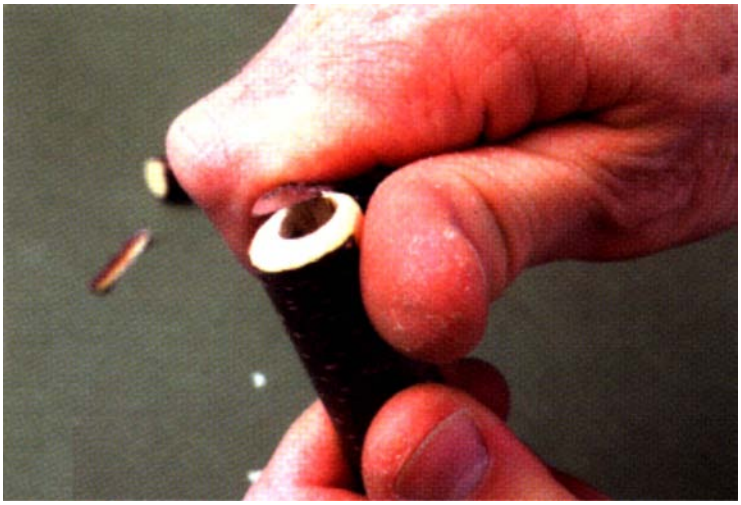

Figure A-4 Rounding

Note. From *The Little Book of Whittling*, (p. 90), by C. Lubkemann, 2005, East Petersburg, PA: Fox Chapel Publishing, Inc. Copyright 2005 by Fox Chapel Publishing Company, Inc.

4. Notch the barked side of the branch with repeated straight and diagonal cuts until about halfway through the drilled hole, as seen in Figure A-5.

Figure A-5 Notching the Stick

Note. From *The Little Book of Whittling*, (p. 91), by C. Lubkemann, 2005, East Petersburg, PA: Fox Chapel Publishing, Inc. Copyright 2005 by Fox Chapel Publishing Company, Inc.

5. Select a smaller branch that has a diameter slightly greater than the diameter of the hole.

Figure A-6 Selecting a Smaller Branch

Note. From *The Little Book of Whittling*, (p. 91), by C. Lubkemann, 2005, East Petersburg, PA: Fox Chapel Publishing, Inc. Copyright 2005 by Fox Chapel Publishing Company, Inc.

6. De-bark the end of the little branch, as seen in Figure A-7.

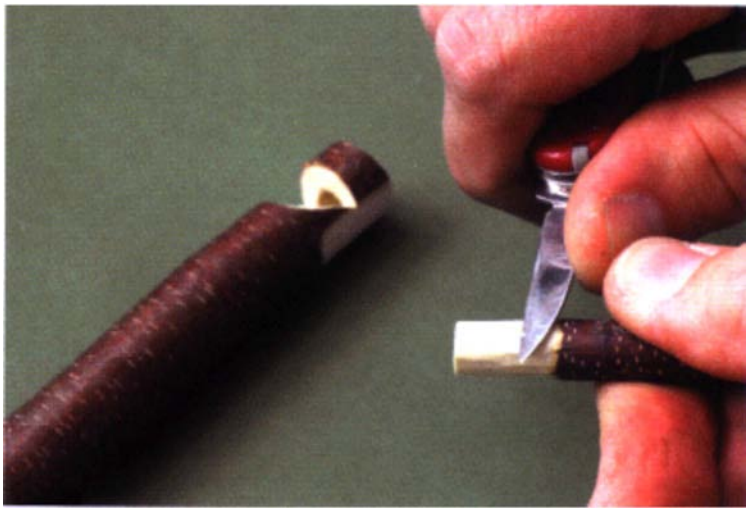

Figure A-7 Whittling a Dowel

Note. From *The Little Book of Whittling*, (p. 91), by C. Lubkemann, 2005, East Petersburg, PA: Fox Chapel Publishing, Inc. Copyright 2005 by Fox Chapel Publishing Company, Inc.

7. Make the smaller branch end into a small dowel that flattens slightly on one side, as seen in Figure A-8.

Figure A-8 Fitting the Dowel

Note. From *The Little Book of Whittling*, (p. 92), by C. Lubkemann, 2005, East Petersburg, PA: Fox Chapel Publishing, Inc. Copyright 2005 by Fox Chapel Publishing Company, Inc.

8. Fit the dowel piece into the hole, flat side up and reaching to the edge of the hole, as seen in Figure A-9.

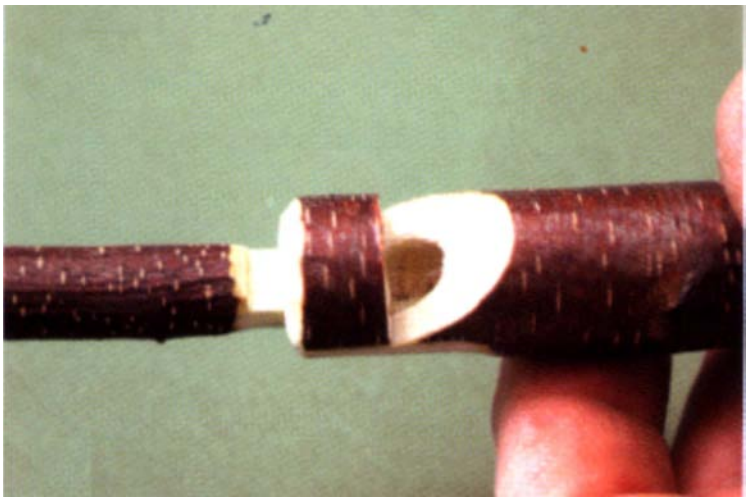

Figure A-9 Fitting the Dowel

Note. From *The Little Book of Whittling*, (p. 92), by C. Lubkemann, 2005, East Petersburg, PA: Fox Chapel Publishing, Inc. Copyright 2005 by Fox Chapel Publishing Company, Inc.

9. Cut the dowel piece flush with the mouthpiece of the whistle, as seen in Figure A-10.

Figure A-10 Cut Dowel

Note. From *The Little Book of Whittling*, (p. 92), by C. Lubkemann, 2005, East Petersburg, PA: Fox Chapel Publishing, Inc. Copyright 2005 by Fox Chapel Publishing Company, Inc.

10. Fill in any cracks with wood glue. Let the glue dry. Once the whistle is dry, test it by blowing the whistle. If the hole is smooth and clean, it should work. Sometimes, the wood may need to dry longer before it will "whistle".

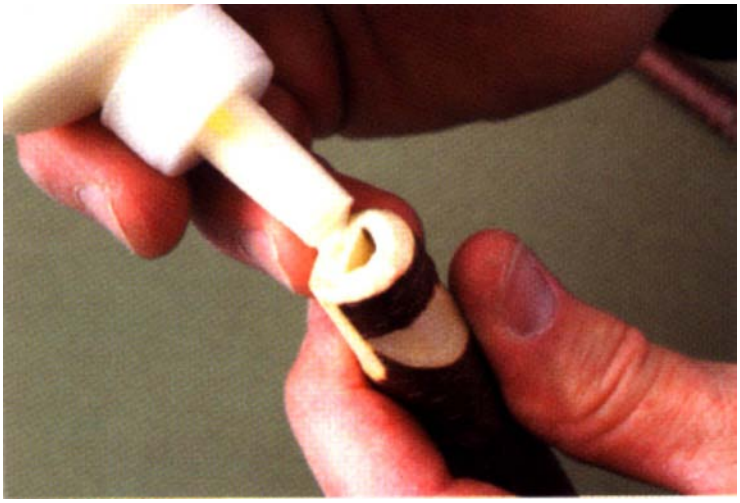

Figure A-11 Glue Cracks

Note. From *The Little Book of Whittling*, (p. 92), by C. Lubkemann, 2005, East Petersburg, PA: Fox Chapel Publishing, Inc. Copyright 2005 by Fox Chapel Publishing Company, Inc.

11. Ensure the whistle looks similar to Figure A-12 and produces a sound when air is blown through the end.

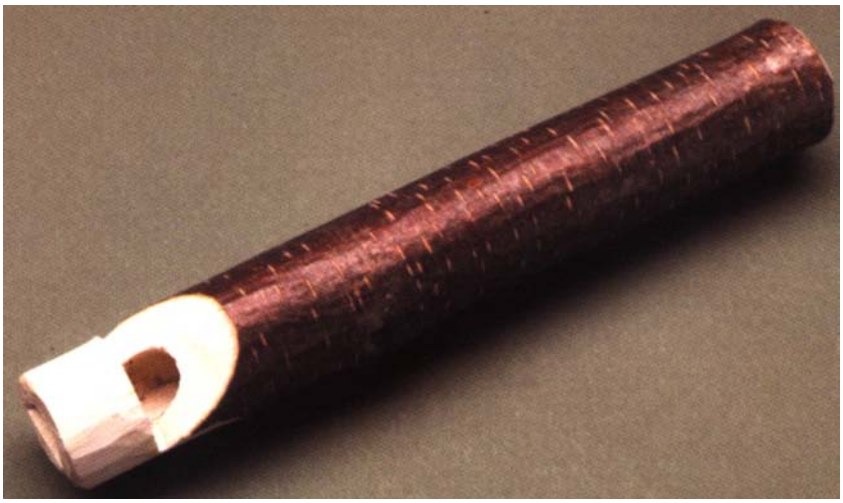

Figure A-12 Finished Whistle

Note. From *The Little Book of Whittling*, (p. 89), by C. Lubkemann, 2005, East Petersburg, PA: Fox Chapel Publishing, Inc. Copyright 2005 by Fox Chapel Publishing Company, Inc.

ROYAL CANADIAN ARMY CADETS

GOLD STAR

INSTRUCTIONAL GUIDE

SECTION 5

EO C424.02 – BOIL WATER USING HEATED ROCKS

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-704/PG-001, *Gold 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.

Prepare and light a fire(s) to use in TP 3 a minimum of one hour prior to instructing this lesson.

PRE-LESSON ASSIGNMENT

Nil.

APPROACH

A group discussion was chosen for TP 1 as it allows the cadets to interact with their peers and share their knowledge, experiences, opinions and feelings on uses of rocks in a survival situation. Sharing in the discussion encourages the cadets to examine their own thoughts and may prompt them to re-think their previously held ideas. Participating in a group discussion improves the cadets' listening skills and team development.

An interactive lecture was chosen for TP 2 as it introduces the cadets to types of rocks and their heating properties.

A practical activity was chosen for TP 3 as it is an interactive way for the cadets to develop skills and knowledge about boiling water using heated rocks in a safe and controlled environment. This activity contributes to the development of survival skills and knowledge in a fun and challenging setting.

INTRODUCTION

REVIEW

Nil.

OBJECTIVES

By the end of this lesson the cadet shall have boiled water using heated rocks.

IMPORTANCE

It is important for cadets to know how natural resources can be used in a survival situation. Rocks can be used in a variety of ways. There are different types of rocks—some of which are more useful than others. Knowing how to boil water using rocks is an extremely beneficial skill, especially when in a survival situation.

Teaching Point 1 **Discuss the uses of rocks in a survival situation.**

Time: 5 min Method: Group Discussion

BACKGROUND KNOWLEDGE

The point of the group discussion is to draw the following information from the group using the tips for answering / facilitating discussion and the suggested questions provided.

USES OF ROCKS IN A SURVIVAL SITUATION

When in a survival situation, there are many uses for rocks.

Insulation

Rocks are able to hold heat very well and can keep a person warm for a long period of time. Placing a heated rock anywhere near the body will help keep it warm during cold days and nights.

One can keep warm while sleeping on the ground by making a rock bed. To make a rock bed, place large, dry, flat stones in a fire pit. Once the stones are hot, remove them and place them in the ground. Cover the area with soil and enjoy. To avoid getting wet, allow time for moisture to evaporate from the ground.

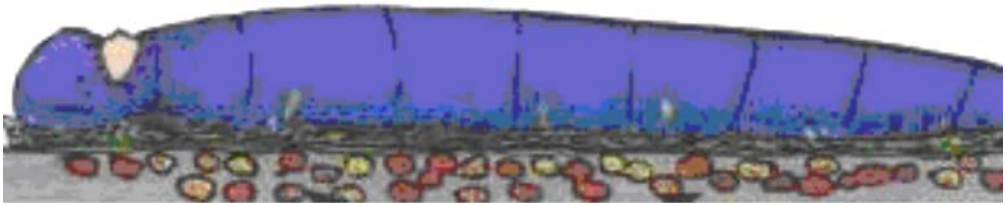

Figure 1 Rock Bed

Note. From *Camping and Wilderness Survival* (p. 417), by P. Tawrell, 2006, Lebanon, NH: Author. Copyright 2006 by Leonard Paul Tawrell.

Cooking

Rocks can be used to cook in a variety of ways. A flat rock can be used in much the same way as a grill and hot rocks can be used (along with grass) to steam food. Small game can be cooked by stuffing it with hot stones. It is also possible to bake food in the ground using rocks. They can also be used to cook or heat food.

Figure 2 Stone Grill

Note. From *Camping and Wilderness Survival* (p. 442), by P. Tawrell, 2006, Lebanon, NH: Author. Copyright 2006 by Leonard Paul Tawrell.

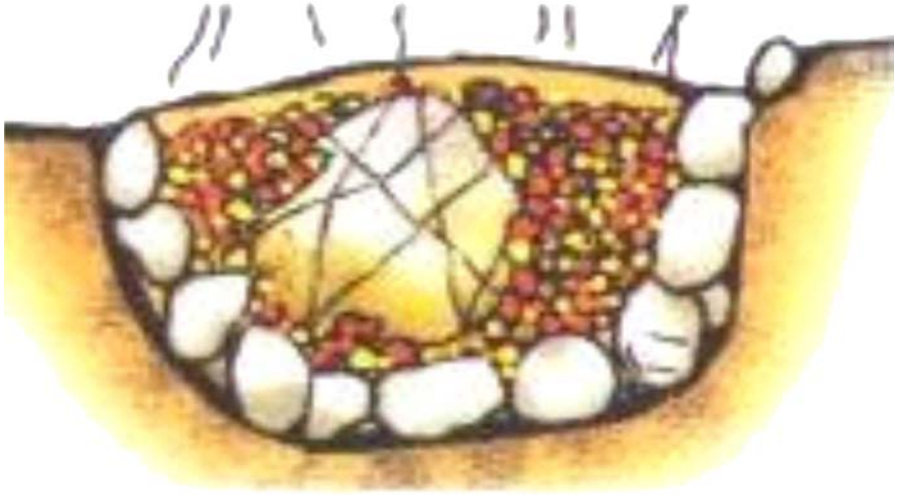

Figure 3 Baking in the Ground

Note. From *Camping and Wilderness Survival* (p. 451), by P. Tawrell, 2006, Lebanon, NH: Author. Copyright 2006 by Leonard Paul Tawrell.

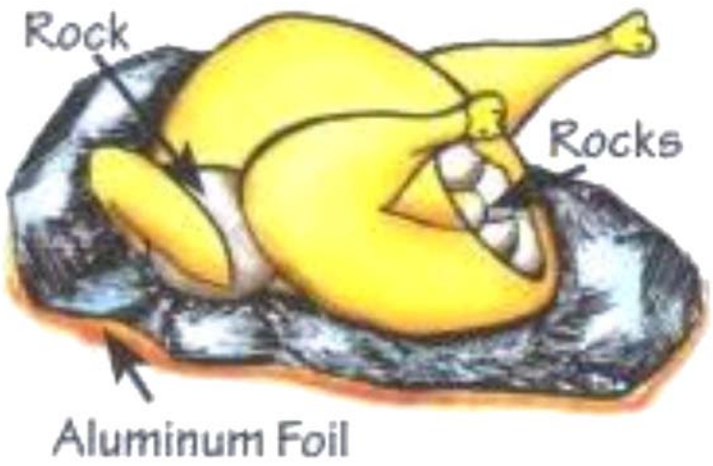

Figure 4 Hot Stone Cooking

Note. From *Camping and Wilderness Survival* (p. 445), by P. Tawrell, 2006, Lebanon, NH: Author. Copyright 2006 by Leonard Paul Tawrell.

Trapping Wildlife for Food

Traps are a way to catch food in the field. They should only be used in a survival situation. There are many different types of traps requiring the use of rocks.

Figure 5 Trap Using Rock—Example 1

Note. From *Tom Brown's Field Guide: Wilderness Survival* (p. 179) by T. Brown, Jr. & B. Morgan, 1983, New York, NY: The Berkley Publishing Group. Copyright 1983 by Tom Brown, Jr.

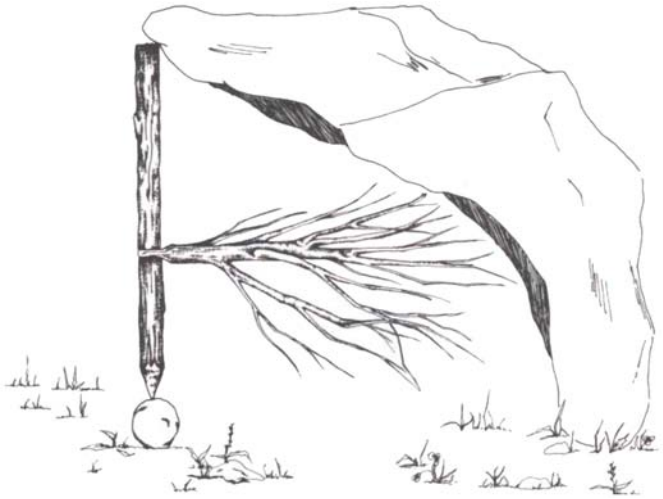

Figure 6 Trap Using Rock—Example 2

Note. From *Tom Brown's Field Guide: Wilderness Survival* (p. 183) by T. Brown, Jr. & B. Morgan, 1983, New York, NY: The Berkley Publishing Group. Copyright 1983 by Tom Brown, Jr.

Building Shelter

A big rock (eg, a cave) will provide a permanent shelter. To increase the height and size of a shelter, as well as keep out rain and wind, build a stone barrier. Rocks can also be used to add weight to a shelter made with a groundsheet or tarp as a way to ensure wind, rain and animals do not enter.

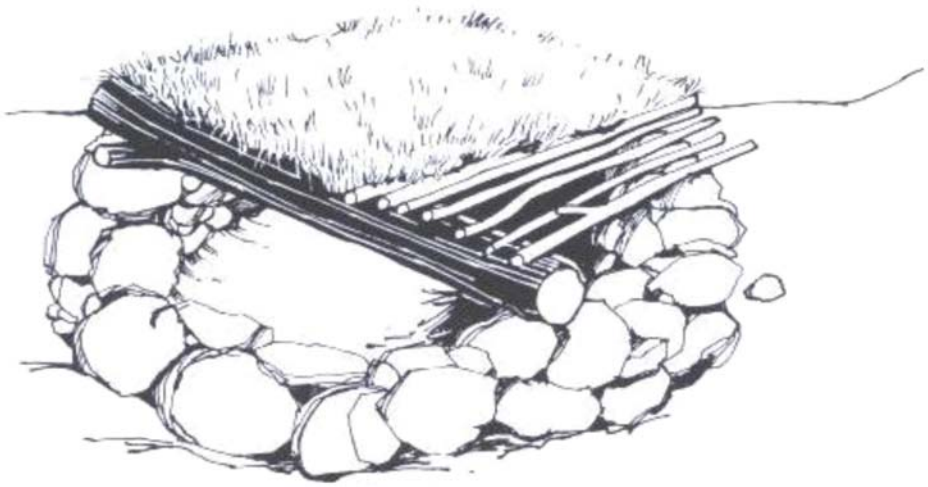

Figure 7 Stone Barrier

Note. From *The SAS Survival Handbook* (p. 246), by J. Wiseman, 1999, Hammersmith, London: HarperCollins Publishers. Copyright 1986 by John Wiseman.

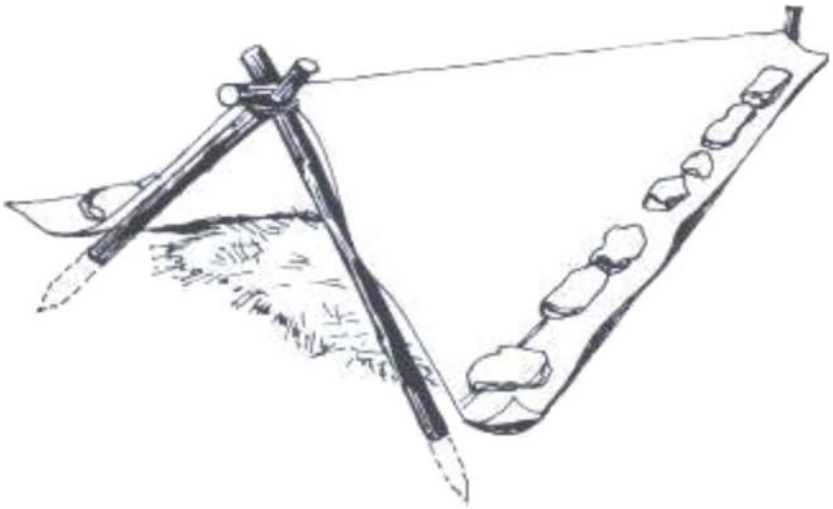

Figure 8 Adding Weight to a Groundsheet

Note. From *The SAS Survival Handbook* (p. 247), by J. Wiseman, 1999, Hammersmith, London: HarperCollins Publishers. Copyright 1986 by John Wiseman.

Tools

Rocks can be used as tools in a variety of ways, such as hammers, knives, carvers, scrapers and sanders. Certain types of rocks can even be used to shape other rocks.

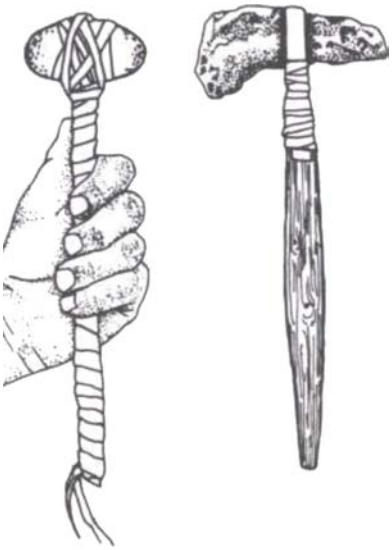

Figure 9 Rock Tools

Note. From *Tom Brown's Field Guide: Living With the Earth* (p. 102) by T. Brown, Jr. & B. Morgan, 1984, New York, NY: The Berkley Publishing Group. Copyright 1984 by Tom Brown, Jr.

GROUP DISCUSSION

TIPS FOR ANSWERING / FACILITATING DISCUSSION:

- Establish ground rules for discussion, eg, everyone should listen respectfully; don't interrupt; only one person speaks at a time; no one's ideas should be made fun of; you can disagree with ideas but not with the person; try to understand others as much as you hope they understand you; etc.
- Sit the group in a circle, making sure all cadets can be seen by everyone else.
- Ask questions that will provoke thought; in other words avoid questions with yes or no answers.
- Manage time by ensuring the cadets stay on topic.
- Listen and respond in a way that indicates you have heard and understood the cadet. This can be done by paraphrasing their ideas.
- Give the cadets time to respond to your questions.
- Ensure every cadet has an opportunity to participate. One option is to go around the group and have each cadet answer the question with a short answer. Cadets must also have the option to pass if they wish.
- Additional questions should be prepared ahead of time.

SUGGESTED QUESTIONS:

Q1. What can rocks be used for in a survival situation?

Q2. How can a rock be used as a tool?

Q3. How can rocks be used to cook?

Q4. If you were in a survival situation, how could rocks be used to make your shelter more comfortable?

Other questions and answers will develop throughout the group discussion. The group discussion should not be limited to only those suggested.

Reinforce those answers given and comments made during the group discussion, ensuring the teaching point has been covered.

CONFIRMATION OF TEACHING POINT 1

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

Teaching Point 2 **Identify types of rocks.**

Time: 5 min Method: Interactive Lecture

Boiling water with heated rocks requires that the rocks be heated to extreme temperatures—which can cause some types of rocks to explode. Some rocks hold heat better than others and are therefore a better choice.

When selecting rocks to heat, **NEVER** pick rocks that are next to a water source (eg, river, swamp, moss, bottom of a hill). Rocks that have moisture inside are likely to explode. Go to higher land to find dry rocks.

TYPES OF ROCKS

Geologists classify rocks into three groups according to the major Earth processes that formed them. The classification system will assist in finding types, but many rocks overlap between categories. The types of rocks are igneous, sedimentary and metamorphic.

Rocks are groups of different minerals pushed together and combined. They are a continuous spectrum of colour, content, form and composition.

Igneous rocks. Formed from magma (molten rock) that has cooled and then solidified. The majority of these rocks formed beneath the Earth's crust. Some examples of igneous rock are granite, pumice, rhyolite and basalt.

Basalt rocks hold heat very well.

Figure 10 Granite

Note. From "Geology.com", 2009, *Igneous Rocks*, Copyright 2005–2009 by Geology.com. Retrieved March 13, 2009, from http://geology.com/rocks/igneous-rocks.shtml

Figure 11 Pumice

Note. From "Geology.com", 2009, *Igneous Rocks*, Copyright 2005–2009 by Geology.com. Retrieved March 13, 2009, from http://geology.com/rocks/igneous-rocks.shtml

Figure 12 Rhyolite

Note. From "Geology.com", 2009, *Igneous Rocks*, Copyright 2005–2009 by Geology.com. Retrieved March 13, 2009, from http://geology.com/rocks/igneous-rocks.shtml

Figure 13 Basalt

Note. From "Geology.com", 2009, *Igneous Rocks*, Copyright 2005–2009 by Geology.com. Retrieved March 13, 2009, from http://geology.com/rocks/igneous-rocks.shtml

Sedimentary rocks. Formed in layers near the Earth's surface. They are composed of grains that have been compacted loosely under low pressure. They are normally loose and not very strong. Some examples of sedimentary rocks are coal, iron ore, shale and limestone.

When selecting rocks to heat, sedimentary rocks are generally a poor choice.

Figure 14 Coal

Note. From "Geology.com", 2009, *Sedimentary Rocks*, Copyright 2005–2009 by Geology.com. Retrieved March 13, 2009, from http://geology.com/rocks/sedimentary-rocks.shtml

Figure 15 Iron Ore

Note. From "Geology.com", 2009, *Sedimentary Rocks*, Copyright 2005–2009 by Geology.com. Retrieved March 13, 2009, from http://geology.com/rocks/sedimentary-rocks.shtml

Figure 16 Shale

Note. From "Geology.com", 2009, *Sedimentary Rocks*, Copyright 2005–2009 by Geology.com. Retrieved March 13, 2009, from http://geology.com/rocks/sedimentary-rocks.shtml

Figure 17 Limestone

Note. From "Geology.com", 2009, *Sedimentary Rocks*, Copyright 2005–2009 by Geology.com. Retrieved March 13, 2009, from http://geology.com/rocks/sedimentary-rocks.shtml

Metamorphic rocks. Created by heat / pressure, which changed the rock from one type to another. Since these rocks were created by heat / pressure, they are usually found deep beneath the Earth's surface. Some examples of metamorphic rock are phyllite, slate, hornfels and quartzite.

Slate rocks hold heat very well.

Figure 18 Phyllite

Note. From "Geology.com", 2009, *Metamorphic Rocks*, Copyright 2005–2009 by Geology.com. Retrieved March 13, 2009, from http://geology.com/rocks/metamorphic-rocks.shtml

Figure 19 Slate

Note. From "Geology.com", 2009, *Metamorphic Rocks*, Copyright 2005–2009 by Geology.com. Retrieved March 13, 2009, from http://geology.com/rocks/metamorphic-rocks.shtml

Figure 20 Hornfels

Note. From "Geology.com", 2009, *Metamorphic Rocks*, Copyright 2005–2009 by Geology.com. Retrieved March 13, 2009, from http://geology.com/rocks/metamorphic-rocks.shtml

Figure 21 Quartzite

Note. From "Geology.com", 2009, *Metamorphic Rocks*, Copyright 2005–2009 by Geology.com. Retrieved March 13, 2009, from http://geology.com/rocks/metamorphic-rocks.shtml

CONFIRMATION OF TEACHING POINT 2

QUESTIONS:

Q1. What are the three types of rocks?

Q2. When selecting rocks to heat, which type of rock is a poor selection?

Q3. Which rocks hold heat well?

ANTICIPATED ANSWERS:

A1. The three types of rocks are igneous, sedimentary and metamorphic.

A2. Sedimentary rocks are a poor selection.

A3. Basalt and slate.

Teaching Point 3 **Have the cadets, in a group of no more than three, boil water using heated rocks.**

Time: 40 min Method: Practical Activity

ACTIVITY

OBJECTIVE

The objective of this activity is to have the cadets, in groups of no more than three, boil water using heated rocks.

RESOURCES

- Water container (one per group),
- Controlled fire (one per group)

- Fire safety equipment, and
- 1 L of water (per group).

ACTIVITY LAYOUT

- Select an area with ample small rocks available for selection.
- Have a fire(s) prepared.

ACTIVITY INSTRUCTIONS

1. Divide the cadets into groups of no more than three.
2. Distribute a water container to each group and place each group at a fire.
3. Have each cadet select a minimum of six rocks about the size of a golf ball.

Due to the time it will take the rocks to heat, encourage the cadets to pick small rocks.

4. Have the cadets place their rocks in the fire.
5. While the rocks are heating:
   a. have each cadet create a method to remove the rocks from the fire (eg, tongs); and
   b. have each group place 1 L of water in their container.
6. After the rocks have been in the fire for a minimum of 25 minutes, have each group place two rocks in the water container.
7. Once the rocks have cooled (1–2 minutes), have each group add two more rocks.
8. Have the groups continue adding rocks until the water boils.
9. Have the groups extinguish their fire.

When in a survival situation where a container is not available, boiling can be done in a hollowed log, a rock depression, clay, rawhide, etc.

SAFETY

- Supervisory staff shall have fire safety equipment available in case of emergency.
- Rocks will be extremely hot; use extreme caution.

NEVER pick rocks that are next to a water source (eg, river, swamp, moss, bottom of a hill). Rocks that have moisture inside are likely to explode. Go to higher land when looking for rocks.

CONFIRMATION OF TEACHING POINT 3

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

END OF LESSON CONFIRMATION

The cadets' participation in boiling water using heated rocks will serve as the confirmation of this lesson.

CONCLUSION

HOMEWORK / READING / PRACTICE

Nil.

METHOD OF EVALUATION

Nil.

CLOSING STATEMENT

Rocks are virtually everywhere and have a variety of uses in survival situations. There are different types of rocks—some of which are more useful than others. Understanding the applications of different types of rocks could help an individual when they find themselves in a survival situation. Boiling is not the only option when cooking with rocks. Experiment and have fun!

INSTRUCTOR NOTES / REMARKS

Select an area where the natural resources required may be found.

The instructor shall have prepared a fire(s) for the cadets to use.

REFERENCES

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ROYAL CANADIAN ARMY CADETS

GOLD STAR

INSTRUCTIONAL GUIDE

SECTION 6

EO C424.03 – EMPLOY CATTAILS

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-704/PG-001, *Gold 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.

The cadets will be required to choose one way to employ cattails in TP 3. Some methods will require preparation prior to conducting the lesson (eg, leaves picked and dried for weaving / making cordage, food) and some ways will require resources (eg, fires will require tinder, kindling, fuel, matches, fire safety equipment). Where required, limit or make the initial preparations for the way(s) the cadets will employ cattails. In the case of basket weaving, the cadets could select leaves to use during this lesson and construct the basket on their own time or collect leaves a day before the activity to let them dry.

PRE-LESSON ASSIGNMENT

Nil.

APPROACH

An interactive lecture was chosen for TPs 1 and 2 as it introduces the cadet to the many possible ways that cattails may be employed.

A practical activity was chosen for TP 3 as it is an interactive way for the cadets to employ cattails in a safe and controlled environment.

INTRODUCTION

REVIEW

Nil.

OBJECTIVES

By the end of this lesson the cadet shall have employed cattails.

IMPORTANCE

It is important for cadets to know how to employ cattails as they are abundant throughout North America and have numerous uses. In a survival situation, knowing how to employ cattails could prove to be extremely beneficial. They can be eaten, woven, used for insulation, burnt, and used to treat common ailments.

Teaching Point 1 **Identify a cattail and its environment.**

Time: 5 min Method: Interactive Lecture

A cattail (from the genus typha) is a tall, straight plant with sword-like leaves, topped with a cylindrical, sausage-like head. As a cattail matures, it turns from green to brown. In the spring, two green flower heads form at the top of the stalk—the male above and the female below. The sausage-like head is actually the female flower. The male flower grows above the female and disappears once fertilization has been completed.

A cattail can be found in marshes, ditches, wetlands, swamps and stagnant water (fresh or salt) throughout North America. When growing in thick settlements, they can grow up to nine feet tall.

The main parts of a cattail are described in Figure 3.

Finding cattails is a sure sign of nearby water. Military survival specialist and author Tom Squier once found them completely out of their environment, in a dry, sandy pine forest. A short search revealed an open manhole from an abandoned storm sewer system, full of water.

Figure 1 Cattail with Distinct Male and Female Flowers

Note. From "Roger Troy Peterson Institute of Natural History: Electronic Naturalist", *Cattails*, Copyright 2009 by John Wiessinger. Retrieved March 24, 2009, from http://www.enaturalist.org/units/308/img/Cattailyg1.jpg

Figure 2 Head of a Cattail

Note. From "Ontario Wildflowers", *Ontario Wildflowers*. Retrieved March 25, 2009, from http://www.wildflowersofontario.ca/cattail.jpg

In Figure 3, the parts of a cattail are as follows:

- 1 = the female flower,
- 2 = the stem,
- 3 = a leaf, and
- 4 = rootstock.

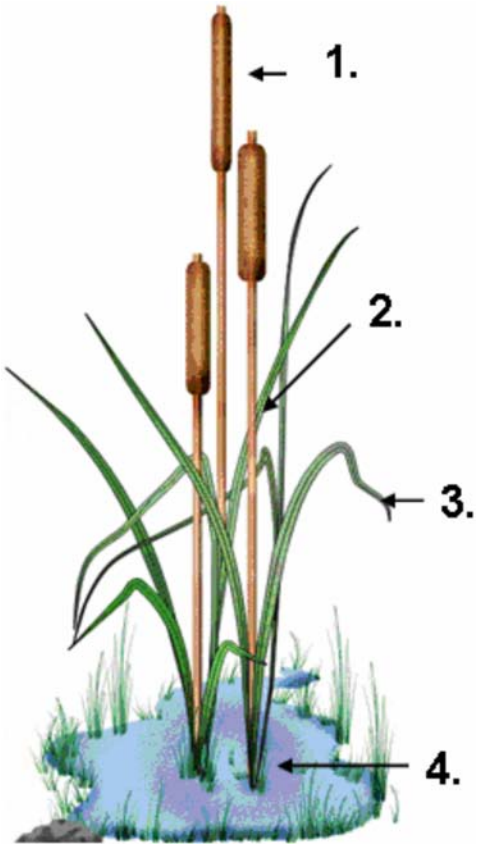

Figure 3 Cattail

Note. From "Pymatuning Cottages" by J. Weigel and K. Danessa. Retrieved March 25, 2009, from http://www.pymatuningcottages.com/NewFiles/cat-tail.gif

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CONFIRMATION OF TEACHING POINT 1

QUESTIONS:

Q1. Describe a cattail.

Q2. Where are cattails found?

Q3. How tall can a cattail grow?

ANTICIPATED ANSWERS:

A1. A cattail (from the genus typha) is a tall, straight plant with sword-like leaves, topped with a cylindrical, sausage-like head.

A2. A cattail can be found in marshes, ditches, wetlands, swamps and stagnant water (fresh or briny) throughout North America.

A3. When growing in thick settlements, they can grow up to nine feet tall.

Teaching Point 2 **Identify ways to employ cattails.**

Time: 15 min Method: Interactive Lecture

COOKING

Cattails have many delicious and edible parts. It is not an acquired taste, as with many wild edible plants, and will usually please fussy eaters. No matter what time of the year, there is always something edible and nutritious. It is one plant that, when found, can be depended on in a survival situation.

Edible parts of a cattail differ depending on the time of year.

Cattails have so many edible parts that they could be considered a wilderness supermarket.

The rootstock and stem of a cattail are edible raw or boiled. The plant can be pulled up by grasping it at the base. The leaves will disconnect easily from the rootstock. Once the green leaves are pulled back, there will be a white core. This soft core is commonly referred to as "Cossack's asparagus." It is similar to a mild cucumber-like vegetable. For those who like soft vegetables, the rootstock / stem can be boiled for 15 minutes.

Rootstalks are an excellent source of starch. They can be crushed, dissolved in cold water and made into flour after draining and drying. Once thoroughly dried, this flour can be stored and used the same way as store-bought flour.

The pollen from a mature male flower can be gathered from the yellow spikes. It can then be laid in the sun to dry and mixed with water to make dough, which can be baked or cooked. It can also be mixed half-and-half with flour and used as a thickener for foods such as stew or gravy.

Green male flower heads can be husked, boiled and eaten much the same as corn.

Cattail can be used in numerous recipes, which can be found through search engines on the Internet. Some recipes that can be found include:

- cattail pollen pancakes,
- cattail pollen biscuits, and
- cattail wild rice pilaf.

Figure 4 Cattail Pollen

Note. From "Heatlhlines", *Alaskan Flower Essences—Cattail Pollen*. Retrieved March 25, 2009, from http://www.healthlines.co.uk/FLOWER_ESSENCES/Alaskan_Essences/Alas_Images1/Cattail_Pollen.jpg

WEAVING

Leaves of the cattail can be collected (when green) and woven into mats for flooring or walls. They can also be woven to make baskets.

The stems can be bundled and tied together to form thick sleeping mats.

Figure 5 Cattail Basket

Note. From "North House Folk School", 2009, *Basketry Courses*, Copyright 2009 by North House Folk School. Retrieved March 25, 2009, from http://www.northhousefolkschool.com/images/Basketry/CattailBasket-035.jpg

Cattails should only be woven when they are green—usually in the late summer or early fall.

To prepare cattails for weaving:

1. Wear waterproof boots and heavy gloves.
2. Use a long, sharp knife to cut the cattail at the base. Get a large bundle as they will shrink to about a quarter of their original size when dried.
3. Dry the leaves under shade, out of direct sunlight. They could also be laid out on something flat. Air should be able to circulate, so they may need to be flipped occasionally.

In most weaving there are two important elements—the warp and the weft (as illustrated in Figure 6). The warp consists of all the vertical strands and the weft consists of all the horizontal strands. The warp and the weft are interwoven at right angles to each other. To weave a basket with cattails:

1. Lay the leaves on a flat surface.
2. Tightly weave the weft leaves in and out of the warp leaves.
3. Once the bottom of the basket has been formed, bend the sides upward and continue tightly weaving in the leaves.
4. If an extension is needed, overlap a leaf 5–8 cm (2–3 inches) into the leaf that requires an extension and continue weaving.
5. Once the final weft has been woven, there should be about 5 cm (2 inches) of warp leaves sticking up (if there is more, cut the excess off).
6. Bend the warp leaves inward and tuck them tightly between the second or third last weft. The leaves may need to be soaked in order for them to bend.

Note. This type of basket is commonly referred to as a plaited basket.

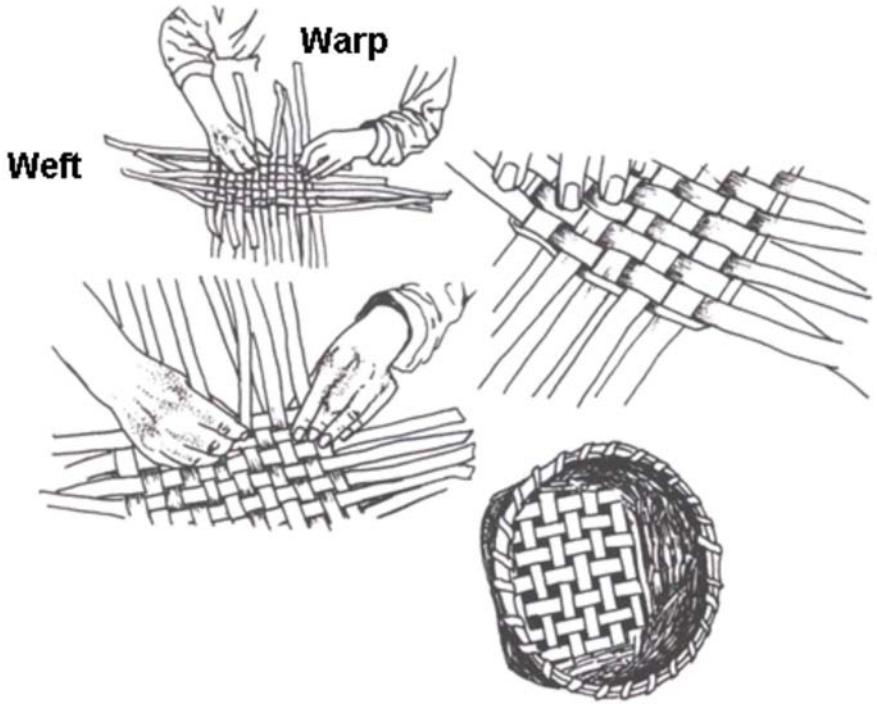

Figure 6 Basket Weaving

Note. From *Tom Brown's Field Guide: Living With the Earth*, p. 90, by T. Brown & B. Morgan, New York, NY: The Berkley Publishing Group. Copyright 1984 by Tom Brown, Jr.

MAKING CORDAGE

Cattail leaves can be used to make cordage. The leaves need to be cut and dried. Once dried, the leaves are split into strips, then dampened and twisted or braided into cordage.

Further information on the process for making cordage can be found in EO M424.04 (Weave Cordage).

INSULATING

Cattails can have fuzzy seeds on the outside or inside, which provide great insulation. Once the insulation has been removed from the cattail head, it can be stuffed into clothing to act as insulation in cold weather. It can also be used to make blankets, sleeping bags or pillows.

Figure 7 Insulation Outside a Cattail—Seed Head

Note. From *Camping and Wilderness Survival: The Ultimate Outdoors Book* (2nd ed.), (p. 331), by P. Tawrell, 2006, Lebanon, NH: Author. Copyright 2006 by Leonard Paul Tawrell.

Figure 8 Insulation Inside a Cattail

Note. From Bioimages, *Plant Features: Fruit and Seed Dispersal*, Copyright 2002 by Steve Baskauf. Retrieved March 25, 2009, from http://www.cas.vanderbilt.edu/bioimages/t/wtyla--frinfruct17156.jpg

BURNING

A cattail head dipped in oil or animal fat can be used as a torch.

The fuzzy seeds from the inside / outside of a cattail can be used as tinder to start a fire.

Figure 9 Cattail Torch

Note. From *Camping and Wilderness Survival: The Ultimate Outdoors Book* (2nd ed.), (p. 437), by P. Tawrell, 2006, Lebanon, NH: Author. Copyright 2006 by Leonard Paul Tawrell.

TREATING COMMON AILMENTS

Ripe cattail flowers can be mashed and used to soothe cuts and burns.

There is a sticky juice between the leaves that makes a great styptic, antiseptic and anesthetic. It will even numb an aching tooth if rubbed on the gums.

Two to three teaspoons of rootstock flour can be added to one cup of hot water to make an effective remedy to control diarrhea. The usual dosage is two cups a day.

The root contains a pasty starch that has a soothing effect on poison ivy and burns.

Boiled leaves make good external skin wash for rashes and skin irritations.

Pollen can help control bleeding when placed directly on a cut. It can also help relieve pain and can be used as a hair conditioner.

CONFIRMATION OF TEACHING POINT 2

QUESTIONS:

Q1. What parts of a cattail can be eaten?

Q2. How can a cattail insulate?

Q3. What part of a cattail makes a great styptic, antiseptic and anesthetic?

ANTICIPATED ANSWERS:

A1. The rootstock, stem, pollen, flower head and seeds can all be eaten.

A2. The fuzzy seeds can be stuffed into clothing to act as insulation in cold weather. It can also be used to make blankets, sleeping bags or pillows.

A3. The sticky juice between the leaves.

Teaching Point 3 **Have the cadets, in groups of no more than three, employ cattails.**

Time: 30 min Method: Practical Activity

ACTIVITY

OBJECTIVE

The objective of this activity is to have the cadets, in groups of no more than three, employ cattails by:

- cooking;
- weaving;
- making cordage;
- insulating;
- burning; or
- treating common ailments.

RESOURCES

- Cattails,
- Survival knife, and
- Resources will vary, as per selection.

ACTIVITY LAYOUT

- Select an area where cattails can be found.
- If fires will be used, the area must conform to fire safety regulations.

ACTIVITY INSTRUCTIONS

1. Divide the cadets into groups of no more than three.
2. Have the groups select a way to employ cattails.

Where basket weaving is selected, the cadets will have to collect leaves either before or during this lesson. If the leaves are being selected during this lesson, have the cadets bring their basket to the following week's parade night.

3. Have the groups employ cattails.

4. Once completed, have the groups share their results with the other groups.

SAFETY

- Fire safety equipment shall be present if fires are being lit.
- Enforce boundaries for the activity.

CONFIRMATION OF TEACHING POINT 3

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

END OF LESSON CONFIRMATION

The cadets' participation in employing cattails will serve as the confirmation of this lesson.

CONCLUSION

HOMEWORK / READING / PRACTICE

Nil.

METHOD OF EVALUATION

Nil.

CLOSING STATEMENT

Cattails are abundant throughout North America and have numerous important uses. Knowing what can be done with a cattail, as well as how to do it could be extremely beneficial if ever in a survival situation.

INSTRUCTOR NOTES / REMARKS

Select an area where cattails can be found.

Permission may need to be granted before employing cattails.

REFERENCES

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ROYAL CANADIAN ARMY CADETS

GOLD STAR

INSTRUCTIONAL GUIDE

SECTION 7

EO C424.04 – PREPARE REMEDIES FOR COMMON AILMENTS USING MEDICINAL PLANTS

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-704/PG-001, *Gold 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.

This instructional guide is to be used as a guideline. Refer to the reference book, approved by the Regional Cadet Support Unit, specific to the local area for further information on locating, identifying and processing plants, preparing remedies and treating common ailments.

This lesson shall be instructed by a guest speaker with specialist knowledge in preparing remedies.

PRE-LESSON ASSIGNMENT

Nil.

APPROACH

A practical activity was chosen for this lesson as it is an interactive way to allow the cadet to prepare a remedy using medicinal plants in a safe and controlled environment. This activity contributes to the development of survival skills and knowledge in a fun and challenging setting.

INTRODUCTION

REVIEW

Nil.

OBJECTIVES

By the end of this lesson the cadet shall have prepared a remedy using a medicinal plant.

IMPORTANCE

It is important for cadets to know how to identify medicinal plants that are safe and some that may be poisonous. In a survival situation, some plants can be prepared to make a remedy for a common ailment that may aid in the overall health and survival of a person.

Teaching Point 1 **Have the cadets, in pairs, prepare a remedy.**

Time: 50 min Method: Practical Activity

BACKGROUND KNOWLEDGE

This TP is intended to describe the many common ailments that may be treated with medicinal plants.

Ensure the cadets exercise extreme caution when identifying and preparing medicinal plants as some plants are poisonous.

Refer to the approved reference book that is specific to the local area for further information on identifying plants, preparing remedies and treating common ailments.

DESCRIBE MEDICINAL PLANTS

Natural Remedies

When it comes to medicine, natural medications and remedies can be better for the human body than their synthetic counterparts, which may cause side effects.

Natural plant remedies are available for treating many human illnesses and ailments; however, it is important to know what medicinal plant to look for, as well as where to find it. Although many plants grow in abundance across the country, there are some areas where a particular plant will not flourish.

Historical Practices

For thousands of years, drugs and treatments have been derived from various herbs, plants and natural substances. Many of the drugs still in use today are derived from plant sources. However, extracting the required remedy from some plants is not very easy.

Ancient herbalists did not just randomly mix a concoction and give it to patient—herbology is an exact science. The gathering, preparing and storing of medicinal plants had to be precise and the mixing of the final remedy had to be exact. Herbology science is exactly matched to the patient's lifestyle, body condition, size and need.

Herbalist. A person who specializes in the use of medicinal herbs to treat disease.

Herbology. The use of herbs to treat disease.

DESCRIBE HOW TO TREAT COMMON AILMENTS USING MEDICINAL PLANTS

Infuse. Steep herbs in liquid to extract the content.

Decoction. A process of boiling down so as to extract some essence.

Poultice. A soft medicated heated mass applied to the body and kept in place for relieving soreness and inflammation.

Express. Squeeze out liquid.

Consider the following when preparing medicinal plants for a common illness or ailment:

- To make an infusion, cut and crush the specific part of the plant so that the juices and oils are readily available. Mix with boiling water, stir, let cool and either drink or apply to the affected area.
- To make a decoction, cut, scrape and mash the specific parts of the plant, soak them in water and then boil. Consume as a hot drink.
- To make a poultice, mash the roots or leaves into a flat pad. Apply to the affected area and bind in position.
- To express juice, reduce the plant into a juicy mush. Squeeze the juice into the wound, spread the pulp around the infected area and keep it in place with a leaf and bind.

The following is a list of some of the medicinal plants and treatment(s) for common ailments.

Cold and Flu

Fever. These plants will induce perspiration to break a fever:

- camomile: Infusion of leaves and flowers.
- elder: Infusion of flowers and fruit.
- elm: Decoction of bark.
- feverfew: Infusion of whole plant, except bark.

Headache. These plants can be taken internally:

- willow: Leaves and bark make a decoction containing Salicin, an ingredient in Aspirin.
- elderberry: Infusion of flowers.
- wintergreen: Help with treating headaches.

Aches and pains. These plants can be taken internally:

- balm: Infusion of leaves.
- birch: Infusion of leaves.
- Borage: Infusion of whole plant, except roots.
- burdock: Decoction of roots.
- cattail: Infusion of leaves.
- chickweed: Infusion of whole plant, except roots.
- cowberry: Infusion of leaves and fruits.
- elm: Infusion of bark.
- horsehound: Expressed juice or leaves applied to earache.
- poplar: Infusion of leaf buds.

- solomon's seal: Decoction of roots, to be used externally.
- willow: Decoction of bark.

An example of preparing a cattail for a toothache is to rub the sticky juice between the leaves on the gums.

Colds and sore throats. These plants can be taken internally:

- agrimony: Infusion of whole plant, except roots.
- bilberry: Infusion of leaves and fruits.
- bistort: Infusion of whole plant, except roots.
- borage: Infusion of whole plant, except roots.
- burdock: Decoction of roots.
- camomile: Infusion of flower, to be used as a gargle.
- colt's foot: Infusion of leaves and flowers.
- comfrey: Infusion of whole plant.
- great mullein: Infusion of whole plant, except roots and decoction of roots as a gargle.
- horsehound: Infusion of whole plant, except roots.
- lungwort: Infusion of whole plant, except roots.
- mallow: Infusion of flowers and leaves.
- marsh mallow: Decoction of roots and infusion of leaves and flowers.
- mint: Infusion of whole plant, except roots.
- mountain avens: Infusion of whole plant, to be used as a gargle.
- nettle: Infusion of leaves.
- oak: Decoction of bark, to be used as a gargle.
- plantain: Infusion of leaves and stems.
- poplars: Infusion of leaf buds.
- roses: Decoction of hips.
- sanicle: Infusion of whole plant, except roots.
- self-heal: Infusion of whole plant, except roots, to be used as a gargle.
- St. John's wort: Infusion of flowers and shoots.
- thyme: Infusion of leaves and flowers.
- willow: Decoction of bark.
- yarrow: Infusion of whole plant, except roots, to be used as an inhalant.

Skin Ailments

Bleeding. These plants are to be used externally:

- dove's foot crane's bill: Expressed juice.
- giant puffball: Packed as poultice.
- periwinkle: Expressed juice of leaves.
- plantains: Pounded leaves as poultice.
- self-heal: Expressed juice.
- stork's bill: Expressed juice of leaves.
- woundwort: Expressed juice.

Sores and wounds. These plants can be used externally to bathe the skin or taken internally:

- bulrush: Pounded acorns as poultice.
- camomile: Expressed juice of flowers or as poultice, applied to swelling.
- cattail: Pounded flowers as poultice.
- chickweed: Expressed juice of leaves.
- cleavers: Infusion of whole plant, except roots.
- comfrey: Decoction of roots or as poultice, applied to swelling.
- dead-nettle: Infusion of flowers and roots.
- dock: Crushed leaves applied to bruises.
- dove's foot crane's bill: Infusion of whole plant, except roots, applied to swelling.
- elder: Expressed juice of leaves.
- elm: Infusion of bark.
- figwort: Decoction of whole plant, except roots, to be used externally to draw bruises.
- garlic: Expressed juice applied to swelling.
- horsehound: Infusion of whole plant, except roots.
- horseradish: Decoction of roots.
- mallow: Infusion of leaves and flowers or decoction of leaves and flowers as poultice.
- marsh mallow: Decoction of roots and infusion of flowers and leaves as poultice.
- oak: Decoction of bark.
- plantain: Pounded leaves as poultice.
- sanicle: Infusion of whole plant, except roots.
- scurvey grass: Crushed leaves.

- shepard's purse: Infusion of whole plant, except roots, as poultice.
- spicebrush: Pounded as a poultice.
- solomon's seal: Decoction of roots as poultice.
- sorrel: Crushed leaves applied to bruises.
- St. John's wort: Infusion of flowers and shoots applied to bruises.
- tansy: Crushed leaves applied to bruises.
- thyme: Infusion of leaves and flowers.
- watercress: Expressed juice.
- woundwort: Infusion of whole plant, except roots.
- yarrow: Infusion of whole plant, except roots.

An example of preparing a cattail for cuts and burns is to mash ripe cattail flowers and apply to the skin to soothe cuts and burns.

Itching and stings. These plants are to be used externally:

- amaranth: Infusion of leaves.
- birch: Infusion of twigs and applied to area.
- black alder: Infusion of bark and applied to area.
- bunchberry: Pounded berries as poultice.
- burdock: Decoction of roots crushed raw and salt for some animal bites.
- cattail: Pasty starch of the root has a soothing effect on poison ivy.
- chicory: Pounded leaves and flowers as poultice.
- colt's foot: Infusion of leaves and applied to area.
- goldenrod: Infusion of flowers and applied to area.
- jewelweed: Pounded leaves and stems as poultice.
- reed: Pounded roots as poultice.
- sumac: Pounded seed heads and leaves as poultice.
- thistle: Pounded roots as poultice.

Digestive Ailments

Constipation. These plants can be used externally or internally:

- agrimony: Infusion of whole plant, except roots.
- barberry: Expressed juice of fruit.
- common cleavers: Infusion of whole plant, except roots.

- couch grass: Decoction of root.
- dandelion: Infusion of whole plant.
- elder: Expressed juice of fruit.
- feverfew: Infusion of leaves and flowers.
- rowan: Expressed juice of fruit.
- roses: Decoction of hips.
- walnut: Decoction of bark.

Diarrhea. Most remedies are to be taken two or three times daily, until symptoms subside.

- amaranth: Infusion of leaves.
- bilberry: Decoction of fruit.
- bistort: Infusion of whole plant, except roots.
- bramble: Infusion of leaves or decoction of fruit.
- cattail: Infusion of root.
- cowberry: Decoction of fruit.
- elm: Infusion of bark.
- elderberry: Infusion of flowers
- great burnet: Infusion of leaves and shoots.
- hazel: Infusion of leaves.
- hemlock: Infusion of inner bark.
- marsh mallow: Infusion of leaves and flowers or decoction of roots.
- mint: Infusion of whole plant, except roots.
- mountain avens: Infusion of whole plant, except roots.
- mulberry: Infusion of rootbark.
- oak: Decoction of bark.
- plantain: Infusion of leaves and stems.
- periwinkle: Infusion of leaves.
- silverweed: Infusion of whole plant, except roots.
- sweet fern: Infusion of leaves.

Gas and cramps. These plants can be used externally or internally:

- balm: Infusion of leaves.
- bilberry: Decoction of fruit.

- bracken: Infusion of leaves.
- bramble: Infusion of leaves.
- comfrey: Infusion of roots.
- dandelion: Decoction of whole plant.
- evening primrose: Infusion of leaves.
- horseradish: Infusion of root.
- mint: Infusion of whole plant, except roots, with crushed charcoal.
- mullein: Infusion of flowers.
- solomon's seal: Decoction of root.
- sanicle: Infusion of root.
- yarrow: Infusion of leaves and flowers.

An example of preparing a dandelion for stomach cramps is to steep a small amount of the plant into a cup of hot water. One-half cup in the morning and one-half cup in the evening will aid in digestion and the relieving of stomach cramps.

ACTIVITY

Time: 50 min

OBJECTIVE

The objective of this activity is to have the cadets, in pairs, prepare a remedy by locating and processing a medicinal plant.

RESOURCES

- Survival knife (one per cadet),
- Pots (one per group),
- Bowls (one per group),
- Stone mortar and pestle (one per group),
- Fire safety equipment, and
- Approved reference book for resources required.

ACTIVITY LAYOUT

Nil.

ACTIVITY INSTRUCTIONS

1. Conduct a safety briefing.
2. Divide the cadets into pairs.

3. Describe ways to treat common ailments using medicinal plants.
4. Have the cadets, in pairs, locate one medicinal plant.
5. Inspect the chosen plant(s).
6. Issue each pair resources required to process their plant.
7. Have the cadets process the medicinal plant by:
    a. making an infusion;
    b. making a decoction;
    c. making a poultice; or
    d. expressing juice.
8. Ensure each pair refers to the approved reference book when preparing their remedy.
9. Circulate and assist the cadets as necessary, offering suggestions and advice.
10. Conduct a debriefing.

The cadets shall not use their remedy.

SAFETY

As some remedies call for boiling water, ensure the local fire regulations are followed when constructing a fire.

CONFIRMATION OF TEACHING POINT 1

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

END OF LESSON CONFIRMATION

The cadets' preparation of a remedy using a medicinal plant will serve as the confirmation of this lesson.

CONCLUSION

HOMEWORK / READING / PRACTICE

Nil.

METHOD OF EVALUATION

Nil.

CLOSING STATEMENT

Being able to prepare medicinal plants within the surrounding environment is essential when looking for a remedy for an illness or ailment in a survival situation. This knowledge will provide a better understanding of the many remedies that can be prepared and how to prepare each plant.

INSTRUCTOR NOTES / REMARKS

This lesson shall be instructed by a guest speaker with specialist knowledge in preparing remedies using medicinal plants.

Select an area where the natural resources required are easily accessible.

When locating and processing medicinal plants, a reference book specific to the area shall be used. This book shall be approved by the Regional Cadet Support Unit.

Fire safety equipment to prepare, light, maintain and extinguish a fire includes the following:

1. 4-lb axe (36-inch handle),
2. 24-inch bow saw,
3. shovel,
4. pail filled with sand or water,
5. tinder, and
6. kindling.

REFERENCES

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C2-226 ISBN 0-425-10063-4 Brown, T., Jr., & Morgan, B. (1985). *Tom Brown's field guide: Wild edible and medicinal plants*. New York, NY: The Berkley Publishing Group.