

NUTRITION AND COOKING IN COLD WEATHER

Food, Water, and Sanitation are important considerations for cold-weather camping. Food should be easy to prepare and provide the calories and bulk necessary to provide you with heat and energy, as well as supply needed nutrients. Plans should be made to collect and purify water as needed. Finally, eating and drinking necessitates plans for sanitary waste elimination.

NUTRITION

Except under survival conditions, well-clothed, sheltered, and trained campers use little more food in the cold than in moderate temperatures. However, caloric intake in cold weather increases for two reasons. First, the extra-activity required by dressing and the hampering effect and weight of that clothing increases energy needs. Second, the stimulus of the cold gives you ravenous appetite. However, because the body "fires" burn somewhat hotter in cold weather and because food affects morale, you will want to supply your group well. Foods come from animal and vegetable sources, and serve three functions in the body:

- Serve as fuel to provide heat energy or calories
- Provide materials for building repairing, or maintaining body tissues
- Help regulate body processes.

Calories measure the amount of energy in the food you eat. They are furnished by carbohydrates, fats, and proteins.

CARBOHYDRATES - These are usually the main source of food energy. They are grouped together as starches, sugars, and celluloses. Starches and sugars are quick-energy foods because they provide only energy. Starches are found in bread, cereals, flour, and potatoes. Sources of sugar in the diet include ordinary white or brown sugar, milk, and fruit. During digestion, starches and sugars are turned into simple sugars which are then oxidized to give energy. The body does not digest cellulose (dietary fiber), but fiber helps move food wastes through the digestive tract, making them easier to pass. The best sources of fiber are whole grain cereals and breads, nuts, seeds, fruits, and vegetables.

FATS – the highest energy food, provides about 9 calories per gram. Carbohydrates and proteins each provide about 4 calories per gram in metabolism. They also furnish the natural sources for the fat-soluble vitamins A, D, E, and K. Fats can be either animal or vegetable in origin. Fats give a diet its "staying" qualities, helping to satisfy your appetite. Fats and carbohydrates are called "protein spacers" since their presence prevents the body from having to burn its protein (blood and muscle) to give energy. The body selects carbohydrates to burn first, then fat, then protein, because of their relative ease of metabolism. A diet consisting of 40 percent fat, 40 percent carbohydrates, and 20 percent protein appears to be best in cold weather, for a number of reasons.

PROTEIN – is the most common substance, other than water, in your body. Its main function is the growth and maintenance of body structures. Supplying energy is a backup function for proteins. Carbohydrates and fats have the primary responsibility for supplying energy. Protein serves this function only if not enough of these nutrients are available to meet the body's energy needs. Protein can either be of animal or vegetable origin. Proteins are made of building blocks called amino acids. Most of the amino acids can be manufactured in your body but some cannot, so these essential amino acids must be supplied by the foods you eat. Protein from animal sources (meat, fish, poultry, milk, and eggs) supplies all of the essential amino acids. Protein from vegetable

sources (Beans, peas, whole grains, and nuts) may have several of the essential amino acids, but rarely all of them. Protein has another remarkable property; the specific dynamic action by which protein, in its own digestion and oxidation, increases body metabolism by 30 percent. This is a source of heat in addition to that normally produced by the muscles and the liver. In the cold, protein is an additionally protective food. Because the byproducts of protein metabolism are dependent on the kidney for excretion, water intake must be kept up to prevent damaging hard-working kidneys when increased protein is eaten. This liquid can be in almost any form (water, fruit drinks, hot thin soups), except coffee. Not only does coffee increase nervous tension in cold climates, but it also causes excess dehydration by stimulating kidney function. This decreases the body's ability to handle protein excretion.

PROVISIONING

Using "Best and Taylor's Physiological Basis of Medical Practice" as a reference, the best average temperature-climate diet follows, along with a recommended cold-weather diet.

Food Element	Temperate Climate	Cold Weather
Carbohydrates (4.1 calories/gram)	53%	40%
Fats (9.2 calories/gram)	35%	40%
Proteins (4.1 calories/gram) (first-class proteins: meat milk, eggs)	12%	20%

The number of calories required per day is based on many factors and should be matched to the individual and the circumstances. The quality of calories utilized in winter programs depends on many factors; weather, temperature, type of activity, etc. The following example of a day's ration is designed to be adjusted from between 3,000 and 4,000-plus calories per day. This ration should be consumed along with 2-1/2 to 3 quarts of water per day. The amount of water can be increased depending upon the amount of work, the temperature, etc.

BREAKFAST

This meal should provide a moderate amount of energy but enough fat to satisfy your appetite. A good breakfast might include:

- Hot cereals – oat, wheat, rice, corn, grits, etc.
- Cake bar or granola bars.
- Fruit – single item like raisins or mixed fruit; sauce can be added to make a fruit soup.
- Fruit juice – a pure fruit juice, not a fruit-flavored drink as is used for lunch and dinner. The primary purpose of this juice is to provide liquid, sugar for energy, and vitamin C.
- Hot drink--can be cocoa, but should not be limited to this product alone.

Other good hot breakfast drinks include tea, eggnog, and spiced hot cider.

LUNCH

This meal should provide high-carbohydrate energy. A good lunch will include:

- Hard, fortified crackers or Hudson Bay Bread.

- Spread for crackers – peanut butter, honey, jelly, etc.
- Fruit drink, hot or cold.
- Hot soup or other hot dish – baked beans, etc.
- Fruit – applesauce, etc.
- Trail snack.

DINNER

This meal should provide adequate calories and the highest amount of protein of the day. This provides warmth and promotes tissue repair during the night's rest. A dinner menu should include the following:

- Hot main dish – can be a one-dish meal, a retort meal, or a freeze-dried dinner, and should include a starch (rice, noodles, or potatoes), a sauce (meat broth, gravies, etc.), and a meat (chicken, beef, or ham).
- Freeze-dried or fresh vegetables – served separately or added to the main dish.
- Crackers – can be less "durable" than those eaten at lunch, but should still be high in nutritional value.
- Fruit drink – same as lunch item; 8 ounce serving.
- Hot drink – same as at breakfast; a 1-cup serving.
- Dessert – can be one that requires preparation and cooling, such as pudding, or an already prepared item. A hot sauce goes well with either.
- Extras – sugar or sweetener, milk powder, cream powder, salt, pepper, and your own favorite spices. Butter or margarine, honey, maple sugar, fruit soup mixes, flavored teas, instant hot soups and bouillons, special soups.

COLD-WEATHER FOOD PREPARATION TIPS

- Use stainless steel containers for cooking whenever possible. They are easy to cook with and to clean.
- Use insulated plastic cups, bowls, and spoons, if possible. Wooden cups and spoons are also good for winter camping as there is much less heat loss than with metal.
- A small camp stove is usually a great help.
- Rice is one of the best items in your 'cupboard' for any camp menu. It can be used in many different ways for main dishes, breakfasts, or desserts, takes a small amount of space, and is easily prepared.
- Fats are important in the winter to release heat and energy slowly. A good source of vegetable fat is corn oil margarine, which can be used in almost anything. Fats give energy of about 9 calories per gram, compared to carbohydrates and protein, which yield about 4 per gram.
- In provisioning for winter camping, use 40 percent carbohydrates, 20 percent protein, and 40 percent fats. This is not a hard-and-fast rule but a guide in choosing your foods. Half of the protein should be from high quality proteins; meat, milk, and eggs.
- Substituting caffeine-free coffee or tea for those containing caffeine helps to combat dehydration and prevent headache.
- When making trail biscuits, use whole-wheat flour, which provides more protein, nutrients, and fiber than white flour.
- Peanut butter and honey make a very good spread. Mix them together at home and package the mixture in individual servings.

SAMPLE RECIPES

Hudson Bay Bread

Hudson Bay Bread is a year-round favorite, serving as the basis of a high-energy lunch or snack. Start by mixing together the following ingredients:

11/2 lbs. margarine or butter	2 tsp. maple flavoring
4 cups sugar	Then mix in:
2/3 cup corn syrup	11/2 cups ground nuts
2/3 cup honey	19 cups oatmeal

Spread the mixture in a large sheet pan. Press it down into the pan. Bake at 325°F in a wind oven for 15 to 18 minutes. As soon as the bread is taken from the oven, use a spatula to press it down (to keep it from crumbling). Cut the bread while it is still warm.

For home preparation, cut the recipe at least in half. A conventional oven requires a longer baking time.

Old Fashion Dumplings

1 scant cup water
1/4 lb. butter or margarine salt
1 cup flour
2 eggs

Bring water, butter and salt to a boil. Remove from heat and beat in flour till smooth. Beat in eggs one at a time mixing each in thoroughly. Drop by **teaspoon** in boiling soup. Lower heat a little and cook till dumplings rise to top of **soup**.

A great addition to most soups.



Rick's Dutch Oven Stew (12 inch Dutch oven)

1 lb. lean hamburger 12
sliced potatoes 12 sliced
carrots
1 large chopped onion 1
large green pepper
1 cup sliced mushrooms Salt and
pepper to taste
8 to 10 slices Velveeta cheese

Brown meat. Add remaining ingredients except mushrooms and cheese. Cover with water and cook until vegetables are tender. Add mushrooms. Cover with cheese

Continue cooking until cheese is melted. Serve hot. 12 coals top and bottom. Rick Bybee, Famous Chef's Apprentice

Cream Of Broccoli Soup

(12 inch Dutch oven)

3 strips bacon fried and crumbled
1 cup butter
1/2 cup flour
1/4 cup chopped celery
1 small onion minced
2 cups half and half
2 cups finely chopped fresh broccoli
salt and pepper to taste
1/4 tsp. thyme

1/4 tsp. nutmeg

Use same Dutch oven as bacon was cooked in, using bacon grease. Melt butter in frying pan or Dutch oven. Saute onions and celery and butter. Add flour to make a roux. Cool 2-3 minutes until you have a stiff paste. Slowly add half and half and water to desired thickness. Add salt, pepper and spices. Add broccoli last. Simmer until tender. Stir occasionally to keep from burning. Coals: Bottom 8-10, Top 12-14.

Surprise Stew

(12 or 14 inch Dutch oven)

Ask each person coming to dinner to bring 1 or 2 cans of meat or vegetables with the labels removed. Open the cans and pour into the Dutch oven. Cook to boiling point. Cover with biscuits made from a mix or from refrigerator can. Replace lid and remove from heat. Let stand 15 to 20 minutes or until biscuits are done. 12 coals top and bottom.

Oxtail Soup

(12 inch Dutch oven)

1 1/2 - 2 lbs. ox joints
2 carrots sliced
2 stalks celery chopped 2 medium onions
6 leeks chopped
1 tsp. Worcestershire
1 2 1/2 can tomato sauce

Place oxtail in Dutch oven. Cover with water and simmer until tender. (Approx. 1 1/2 hrs). Cool and skim off fat. Add chopped vegetables and continue cooking until done, about 45 minutes. Add 1 tsp. Worcestershire sauce, tomato sauce and salt and pepper to taste. Coals: Bottom 10 top 12.

NOTES: