



The Duke of Edinburgh's Award in Bermuda

Adventurous Journey Information - Cooking & Nutrition

Participant Outcomes | Backcountry Cooking & Nutrition - Cooking & the use of stoves, safety procedures/precautions and cooking nutritious & substantial meals under camp conditions



Expedition catering must not be confused with **camp catering**. Camp catering, especially where a vehicle is used, can include fresh produce which all add to the enjoyment of camping. Expedition catering for an unaccompanied, self-reliant expedition presents an entirely different form of challenge. Here, the task is to cram the **greatest amount of energy into the lowest weight and bulk.**

The need for a **balanced diet** becomes increasingly important as the length of an expedition increases. For journeys lasting of three or four days, normal eating habits will ensure that the diet is adequately balanced. Usually too much thought is given to achieving variety in the menu instead of paying attention to the need for an **adequate intake of food and liquids**. For three or four day expeditions, the prime need is to pack as much energy or calories into the least weight and volume. **Calories**, or to be more precise kilo calories (kcal), is the unit used in most food labelling. This is usually achieved by increasing the amount of **carbohydrates** (sugars and starches) and **fats**, and by using dehydrated food. Such advice may appear contrary to modern dietary advice, but no harm will result over the duration of an expedition as the energy will be burnt up.

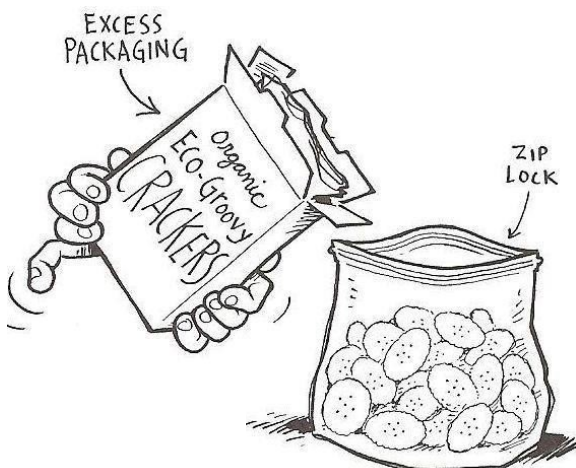
It is not so much a case of seeking additional fats, but more of not avoiding them. Eating fish in oil, luncheon meats, preserved sausages, such as salami, and butter on bread or biscuits works well and tastes great!



If too much food is carried, weight will be a handicap; too little food will result in hunger and physical efficiency may be impaired. Three, four, or five thousand calories or more may be needed each day on an Award Expedition. As a rough guide:

- ❶ **Simple Carbohydrates**, the sugars, - provide energy very quickly
- ❷ **Complex Carbohydrates** in the form of rice, pasta, bread, etc. supply energy over the medium term
- ❸ **Fats** provide energy over a longer period of time

Cakes, pastries and biscuits are a mixture of simple and complex carbohydrates providing energy in both the short and medium term. Proteins do not play an important part in three or four day expeditions as there is an ample supply in a normal expedition diet and the body prefers to derive its energy from carbohydrates and fats.



Expedition catering is usually carried out in tent groups, which usually means in pairs, though it may mean three occasionally four. The menu, the food and the planning should be based on the tent unit.

Only take foods which: ❶ contain the greatest amount of energy (kcal) in the smallest weight and volume, ❷ you and your Group members like and enjoy, ❸ are simple to prepare 'one-pot cooking', such as stews, curries and pastas, ❹ cook quickly to save fuel, ❺ will keep, especially in hot weather, ❻ are compact and not easily damaged and ❼ minimize the amount of trash that you will have to carry with you.

Grocery Stores carry a variety of **dehydrated foods** and **meals**, so there is no need to carry water around masquerading as food! The foil or plastic packaging is airtight and durable, usually waterproof, and stands up well during expeditions. Outer wrappings or cartons should be removed to reduce bulk, rubbish and weight.

By agreeing to menus which are liked by all members of the tent group, there will be: **①** less to carry, **②** food preparation will be simplified and **③** cooking times and fuel use will be lessened. Most dehydrated foods also have the advantage of being **quick and easy to prepare**, needing only the addition of water, and **cook very quickly**. The quantities will need to be increased; if the packet indicates that it will feed two, assume that it may feed one on an expedition. Take foods which are simple to prepare. You will not have the problem of trying to keep food warm if the menu is uncomplicated: **cook it – eat it!**



Make sure to keep the cooking instructions for any food items that you are repackaging!!

Remember to check how long the food takes to cook. Choose dehydrated foods which cook quickly. Some soups are 'instant', while other packet soups may require up to 15 minutes of boiling! There is a range of pre-cooked noodles, potatoes, peas, rice and pastas which only take 5 minutes to prepare. Careful selection of dehydrated foods can greatly reduce the amount of fuel used on an expedition.

Expedition foods must be chosen which will **not go bad** during the course of the expedition, especially in hot weather - **this rules out fresh meat!** Dried, cured, smoked and pre-cooked meats and sausages make ideal expedition food and normally last for the duration of an expedition. There is also a wide range of vegetarian foods available, usually based on soya, which have excellent keeping properties.

Tinned foods are not recommended for three or four day foot expeditions due to their **weight** and **trash**. There are, however, a few tinned foods which are worthy of consideration: corned beef, luncheon meat, sardines, pilchards and tuna all contain a great deal of fat or oil giving them a very high energy content and makes them a valuable addition to any expedition menu.

HELPFUL TIPS!

① Plan meals ahead & experiment with dehydrated food meals at home & on Practice Expeditions. **② Weigh & measure** food well in advance of your expedition. **③ Experiment** with the various powdered milks to see which ones can be boiled. **④ Plastic bags** provide suitable storage for most foods (*butter, jams & spreads can be messy unless kept in plastic containers or refillable plastic tubes*). **⑤ Rubber bands** are a safe way of securing all bags (*metal twist tags can puncture plastic bags*). **⑥ Pack & waterproof** all food so that it will stand up to the hammering it will receive in rucksacks or containers which are dropped, sat on & squashed during the course of an expedition. **⑦ Convert** your drinking mug into a measuring cup by scratching a few lines in the right place.

**** REMINDER ****

Total Weight
(catering element in your rucksack)

=

Weight of Food

+

Weight of Fuel



COOKING STOVES

Globally, accidents during Award Expeditions are very rare, but the few which do occur are mostly associated with stoves and cooking. In every reported instance, the accident has occurred due to a failure to appreciate the **dangers of handling highly flammable liquids/gases**. As a reminder, open fires for cooking **are not permitted** during Award Expeditions in Bermuda due to the environmental damage they cause.



There is a wide variety of stoves available for Participants to use on their Expeditions, though the choice of fuel is usually limited to either **① gel fuel (Sterno)**, **② methylated spirits (alcohol)** or **③ compressed gas cartridges**. The greatest care and discipline must be exercised at all times when using stoves as the accidents which do occur are invariably the result of carelessness and the failure to follow a few simple rules which must always be obeyed.



① Gel Fuel Stoves

This is the same **clean burning, odourless and smoke free** gel fuel used by food service professionals. It **ignites quickly** with the touch of a match and **burns steadily and intensely** until consumed. It is **safe, non-explosive** and remains solid while burning and easily available in Bermuda. Most Gel Fuel Stoves are easily converted to be able to use **fuel tablets**, as well. Their obvious downside – weight in your rucksack!

② Spirit/Alcohol Stoves

The popularity of the Spirit Stove, which serves as a stove and canteen, is easy to understand. They are **well-designed, light and compact**, with the stove and the canteen all packing together in a single unit. They are **stable** with their broad base and moderate height and do not scorch the grass. **Simple to use, clean and odourless**, they are **easy to light and use fuel efficiently** - 50g of fuel will boil around a litre of water. Stoves are easy to shield from the wind and it is possible to regulate them to a certain extent by turning them around in relation to the wind direction and using a built-in regulator ring. They are **relatively inexpensive** and the **fuel is globally available** and can be purchased at most boating stores in Bermuda. When used with care, Spirit Stoves are capable of providing years of safe and trouble-free service.



Vargo Triad



Trangia Stove

Did you know that the Vargo Triad Stove can be rented from The Award Office to use during your Expedition?



Spirit stoves are so simple to operate that training is frequently not as thorough as it should be. The dangers arise from the fuel - Methylated Spirits is **highly volatile**, has a **low flash point** and in strong sunlight burns with a **virtually invisible flame**. Many people fail to appreciate how quickly the volatile vapours can spread. **There have been instances when fuel has been added to a stove which was still too hot or the spirit has been added to a stove in strong sunlight where the practically invisible flame has not been detected.** Such action may lead to disastrous consequences with the fuel container catching fire and acting as a flame thrower. Accidents must be eliminated by **better training** and a **disciplined, responsible procedure** in the use of stoves and their fuel.



A **Safety Routine** for Spirit Stoves include: ❶ placing the Stove on a firm level surface, at least 3 feet away from the tent & in a place where it cannot be knocked over, ❷ filling the Stove from a specifically designed Fuel Bottle (as shown), ❸ carrying the fuel in a Fuel Bottle with a safety valve, ❹ carrying the Stove or the Spirit Cup downwind, away from the tents and fuelling, or refuelling it, in a place where there are no naked flames in the vicinity and ❺ never refilling a stove until you are sure that the flame is completely extinguished and the stove has cooled - **if the stove is too hot to handle, then it is too hot to be refuelled!**



Fuel Bottles



If it is necessary to refill a burner, assume it is still burning. Go through the normal procedure of putting the burner lid over the flame to extinguish and wait until the burner has gone cold before refilling.

❸ Compressed Gas Stoves



Self-sealing cartridges and improvements in design have made Gas Stoves **more stable** and have brought about a significant **increase in safety**. Modern Gas Stoves are **lower** and **easier to shield from the wind** than previous designs. Gas Stoves burn fuel that is **clean** and **reliable** and are **simple to operate**. Cartridges should be removed from the stove for travelling and partly-used cartridges should be replaced by full cartridges before embarking on an Expedition. Some downfalls to using Gas Stoves are the cost of fuel, the difficulty in knowing exactly how much fuel is left and disposing of canisters correctly.

Add this Step to Your Meal Preparations

Soak a towel or piece of clothing in water and keep it, along with a pot of water, close to your cooking area. It'll act as an Emergency Fire Blanket, if needed!



BACKCOUNTRY NUTRITION

There is progression in the catering syllabus of The Award from being able to prepare a simple meal at Bronze level, to the ability to prepare and use dehydrated foods and to make substantial meals under camp conditions at Gold level. However, it is worth reviewing in more detail the necessary **Nutrients** to include in your diet while out on an Expedition: ❶ **Complex Carbohydrates**, ❷ **Simple Carbohydrates**, ❸ **Proteins**, ❹ **Fats**, ❺ **Vitamins/Minerals** and ❻ **Water**.

❶ Complex Carbohydrates

Complex Carbohydrates contain a great number of calories per ounce, so they make the **core of most backpacker's diets**. Grits, oatmeal, pasta, corn, rice, wheat, etc. are all excellent sources of Complex Carbohydrates.

Complex carbohydrates provide vitamins, minerals, and fiber



Foods such as breads, legumes, rice, pasta, and starchy vegetables contain complex carbohydrates

❷ Simple Carbohydrates (Sugars)

Simple Carbohydrates come in the form of candy, sugar, fructose from fruits, honey, molasses, sports drinks (*mostly sugar*) and other sweet foods.

Simple carbohydrates are found in foods such as fruits, milk, and vegetables

Cake, candy, and other refined sugar products are simple sugars which also provide energy but lack vitamins, minerals, and fiber



The body turns **complex carbohydrates** into sugars for energy, but since they are more complex, the body has time to break them down and adjust. **Simple Carbohydrates** are already in 'instant energy' form, so eating them gives you an **energy rush**, but it also causes your body to produce **insulin** to equal out your

blood sugar level. The end result of eating a lot of sugar is a crash in your blood sugar level when the sugars are used up and your blood insulin level is up from the initial sugar rush. **If you combine this with mild dehydration, it can make you just as sick as a stomach bug!** Recommendation – don't over indulge on sugar during the day. Keep your sugar intake low and wait until the end of the day and have some sweets when you may not mind the sugar rush and crash.



Protein usually comes from **meats** (*jerky and tuna*)

You may be getting protein, but chances are, you aren't getting enough. **Read the labels** of the foods you plan to eat and **add up the grams** of protein in everything - then apply the 1 gram to 1 kilo rule. If you have any shortages, find a way to add protein like adding beef jerky and beans to a rice meal.

Some examples of **Nutrient Dense Proteins** to add to your Expedition Diet: Beans, Almonds, Tuna, Eggs, Ground Beef, Peanut Butter, Peanuts, Pumpkin Seeds, Salmon, Shrimp, Skinless Chicken & Turkey, Sunflower Seeds, etc.

Most dried food lacks fats and oils, so when you look on the box of many dried pastas, rice, etc., you will find that the directions will require you to add **butter, margarine** or **oil**. This is for flavour and for the essential oils.

Saturated fats are found in animal products such as butter, cheese, whole milk, ice cream, cream, and fatty meats, and oils such as coconut, palm, and palm kernel oil.



Your body needs minerals for **bones**, to aid in **digestion**, **protect you from infection** and all other sorts of bodily functions. Normally, if you eat a well balanced diet with a variety of **fresh fruits, vegetables, milk, meat**, etc., you will get all you need. However, during an Expedition, this isn't always possible.

To supplement your diet of pure carbohydrates and protein, you need to get some **dehydrated fruits**, **powdered milk** and other **fresh foods** where you can. To further supplement your vitamins, taking a multivitamin is a good idea, too!

Water is possibly **the most important part of your diet**. Hikers complaining about fatigue, sore muscles, inability to sleep or lethargy, problems going to the bathroom, joint pain, etc., may be actually experiencing the beginning signs of **DEHYDRATION**. As water is very heavy to carry, try to consume at least 2 L at breakfast, 2 L before/during lunch and 2 L at dinner.



*If your urine is dark yellow or you urinate infrequently, you are probably dehydrated.
If you have to urinate often and have clear to pale urine, you're doing well.
If you are thirsty, you have probably been dehydrated for a while already.*



BACKCOUNTRY COOKING

Once you get your stove lit, it's time to get the pot on and start boiling some water. In the interest of conserving your fuel, it's good planning to have your pot filled with water and ready to go before lighting your stove. Once the water boils, turn your stove off and have your food ready to go so that you can start working on your meal.

Most hikers begin the day with a **substantial breakfast**. This can include **cereals**, **muesli** or **porridge**, followed by **biscuits** or **bread** and jam are ideal. **It is good practice to stoke up with plenty of food and drink before setting out in the morning!**

Here are some helpful recipes for Breakfast while on an Expedition:



recipe:

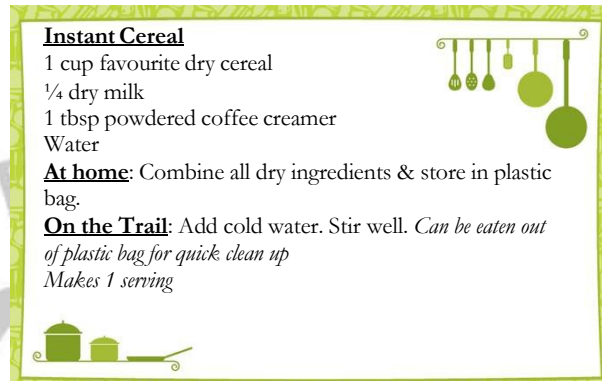
Strawberry Sensation

1 cup Strawberry Frosted Mini-Wheats
1/2 cup dried strawberries
1/4 cup yogurt covered raisins
1/4 cup chocolate chips, milk

At home: Combine all ingredients into zip lock bag.

On the trail: Eat as breakfast or a snack.

Makes 1 serving



Instant Cereal

1 cup favourite dry cereal
1/4 dry milk
1 tbsp powdered coffee creamer
Water

At home: Combine all dry ingredients & store in plastic bag.

On the Trail: Add cold water. Stir well. *Can be eaten out of plastic bag for quick clean up*

Makes 1 serving



recipe:

Trail Pancakes

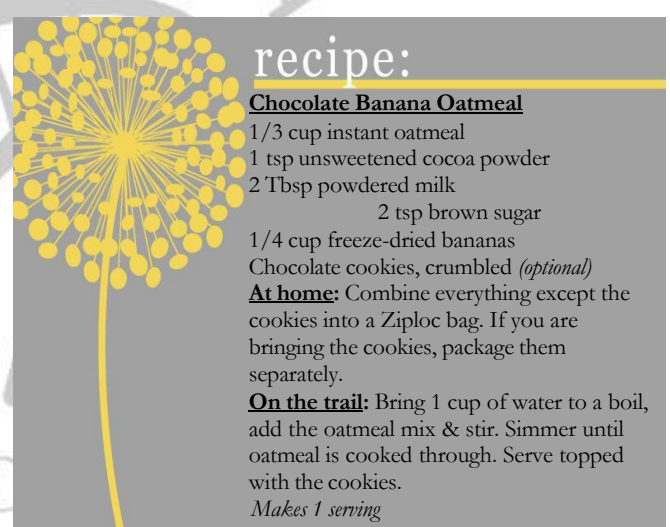
1 cup Biscuit mix
1 Tbsp dry milk
1 Tbsp sugar
2/3 cup water
1 Tbsp squeeze margarine

Note: Instead of squeeze margarine, you may substitute vegetable oil. If you do, keep 1 Tbsp of oil in a separate container and pour onto pan before cooking pancakes.

At home: Add mix, milk & sugar into a quart size Ziploc bag. Seal & shake well.

On the trail: Add water & margarine to bag, seal & squish bag with hands to mix & remove air & lumps. Cut hole in the corner of the bag & squeeze onto a hot pan. Cook until bubbles form, flip & cook till they are golden brown!

Makes approx. 6 pancakes



recipe:

Chocolate Banana Oatmeal

1/3 cup instant oatmeal
1 tsp unsweetened cocoa powder
2 Tbsp powdered milk
2 tsp brown sugar
1/4 cup freeze-dried bananas
Chocolate cookies, crumbled (*optional*)

At home: Combine everything except the cookies into a Ziploc bag. If you are bringing the cookies, package them separately.

On the trail: Bring 1 cup of water to a boil, add the oatmeal mix & stir. Simmer until oatmeal is cooked through. Serve topped with the cookies.

Makes 1 serving

Attitudes to **lunch** meals vary. Some hikers are content to have **'on-the-go' lunches**, such as pockets full of nuts, dried fruit and biscuits which they supplement with chocolate bars and boiled sweets. These are concentrated forms of energy and may be consumed while on the move, a form of 'drip feed'. It is possible to meet all the energy requirements by following this practice, which keeps blood sugar levels high over a prolonged period. Other hikers prefer having a **'lunch break'** with a hot drink and sandwiches using flat breads such as pita, wraps, naan bread or crackers instead of standard sliced bread. Cheese in tubes, packet tuna or spreads such as peanut butter, are ideal.

Some helpful recipes for Lunch while on an Expedition can be found on the next page.



recipe:

Chicken Tetrazzini
 1 cup water
 1 pkg. mushroom soup mix
 1 pkg. Ramen noodles
 1 can chicken (5 oz)
At home: Mix dry ingredients at home. (Do not include Ramen noodle sauce mix) & store in a plastic bag.
On the Trail: Boil water, add noodle mixture & stir in chicken. Cook until noodles are tender.
Makes 1 serving

www.gwenpenny.com

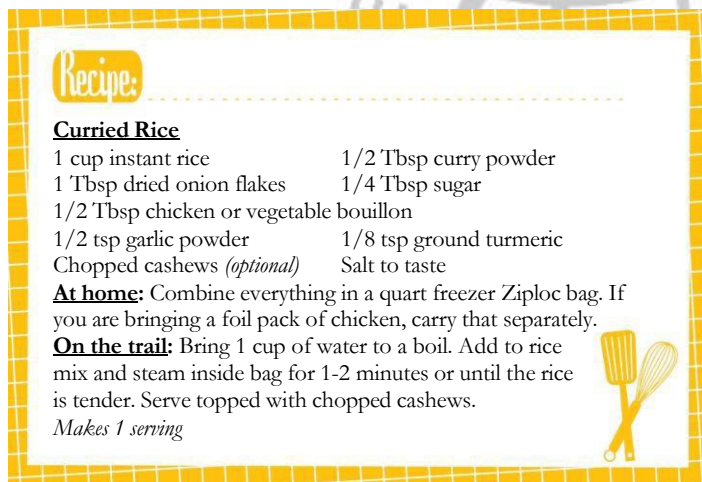


Recipe

Dish:
Italian Pasta Salad
 1 pkg. Ramen noodles
 2 oz Italian dressing
 1/2 oz Parmesan cheese
 1 oz dried mixed vegetables
 6 oz water
On the trail: Put the water in a Ziploc, break up the Ramen into little pieces & add it to the water about 30 min prior to when you want to eat. When you are ready to eat, drain off any excess water (*shouldn't be hardly any*) and add the Italian dressing. Voila! You've got Italian Pasta Salad. Save the flavour package for another meal!

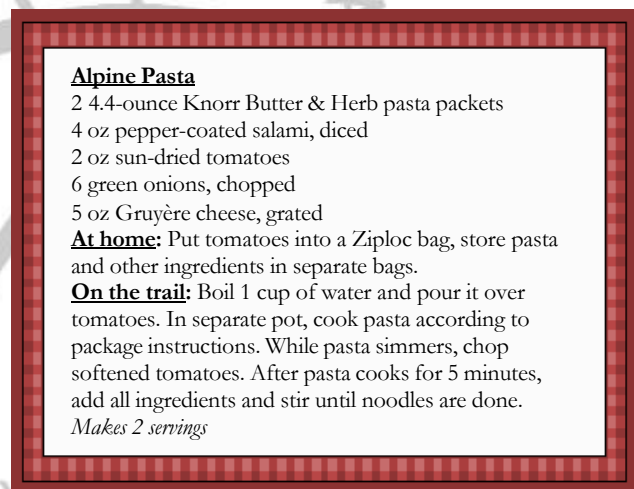
Serves:

After backpacking all day, end the night with a **Dinner** that isn't short on nutrition or taste. Award conditions require that **one substantial meal be cooked and eaten each day** and this is usually the evening meal. Even when limited by one stove and a couple of pans it is possible, with a little practice, to prepare hot, filling 3-course meals in a very short time. Such a meal might consist of **soup**, a **curry**, **stew** or **pasta** followed by a hot or cold **pudding** or **cheese** and **biscuits**. In addition to the dehydrated foods mentioned earlier, there are whips and mousses which only require the addition of water or milk, and ground rice and semolina preparations which need boiling milk to turn them into hot nourishing puddings. Here are some tasty and nutritious recipes for **Dinner** while on an Expedition:

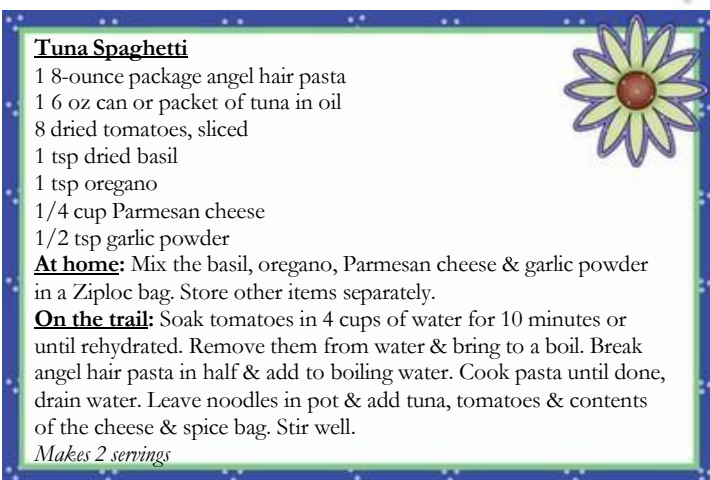


Recipe:

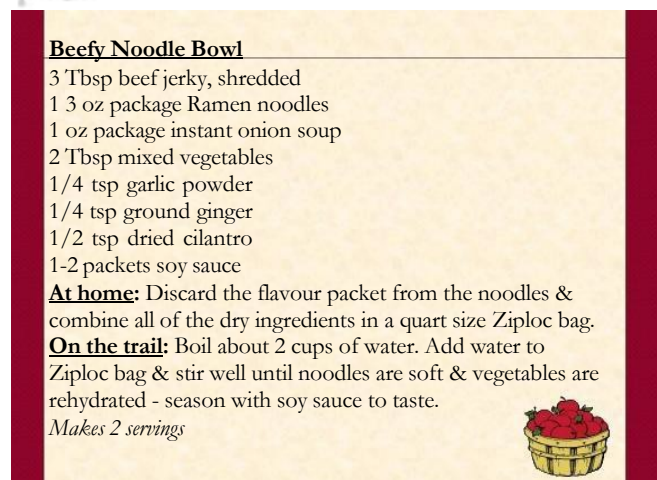
Curried Rice
 1 cup instant rice 1/2 Tbsp curry powder
 1 Tbsp dried onion flakes 1/4 Tbsp sugar
 1/2 Tbsp chicken or vegetable bouillon
 1/2 tsp garlic powder 1/8 tsp ground turmeric
 Chopped cashews (*optional*) Salt to taste
At home: Combine everything in a quart freezer Ziploc bag. If you are bringing a foil pack of chicken, carry that separately.
On the trail: Bring 1 cup of water to a boil. Add to rice mix and steam inside bag for 1-2 minutes or until the rice is tender. Serve topped with chopped cashews.
Makes 1 serving



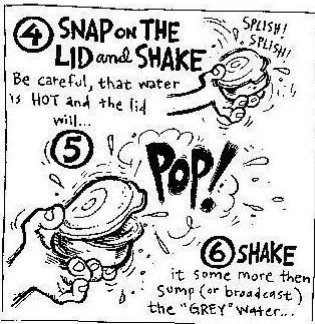
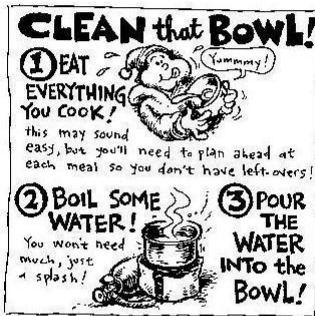
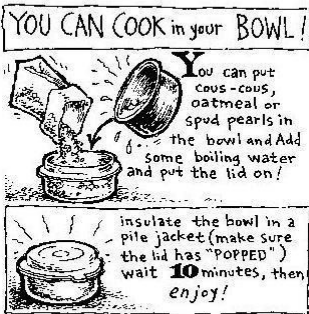
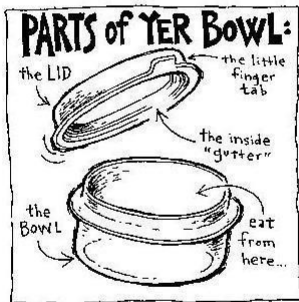
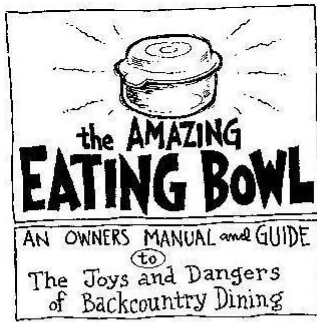
Alpine Pasta
 2 4.4-ounce Knorr Butter & Herb pasta packets
 4 oz pepper-coated salami, diced
 2 oz sun-dried tomatoes
 6 green onions, chopped
 5 oz Gruyère cheese, grated
At home: Put tomatoes into a Ziploc bag, store pasta and other ingredients in separate bags.
On the trail: Boil 1 cup of water and pour it over tomatoes. In separate pot, cook pasta according to package instructions. While pasta simmers, chop softened tomatoes. After pasta cooks for 5 minutes, add all ingredients and stir until noodles are done.
Makes 2 servings



Tuna Spaghetti
 1 8-ounce package angel hair pasta
 1 6 oz can or packet of tuna in oil
 8 dried tomatoes, sliced
 1 tsp dried basil
 1 tsp oregano
 1/4 cup Parmesan cheese
 1/2 tsp garlic powder
At home: Mix the basil, oregano, Parmesan cheese & garlic powder in a Ziploc bag. Store other items separately.
On the trail: Soak tomatoes in 4 cups of water for 10 minutes or until rehydrated. Remove them from water & bring to a boil. Break angel hair pasta in half & add to boiling water. Cook pasta until done, drain water. Leave noodles in pot & add tuna, tomatoes & contents of the cheese & spice bag. Stir well.
Makes 2 servings



Beefy Noodle Bowl
 3 Tbsp beef jerky, shredded
 1 3 oz package Ramen noodles
 1 oz package instant onion soup
 2 Tbsp mixed vegetables
 1/4 tsp garlic powder
 1/4 tsp ground ginger
 1/2 tsp dried cilantro
 1-2 packets soy sauce
At home: Discard the flavour packet from the noodles & combine all of the dry ingredients in a quart size Ziploc bag.
On the trail: Boil about 2 cups of water. Add water to Ziploc bag & stir well until noodles are soft & vegetables are rehydrated - season with soy sauce to taste.
Makes 2 servings



Snacks are an **important** part to your daily food intake as **you'll need to ingest calories throughout the day**. There are no hard and fast rules about what is best to snack or even when you should snack. A snack should include high-calorie foods that are easy to carry, can be eaten while hiking and taste good!

Some ideas for snacks can include: **Crackers** (*Ryvitas, Salada, sesame wheat*), **Bread** (*sliced and fairly solid i.e. rye, pita bread*), **Cheese** (*Dutch edam/gouda keep well*), **Salami**, **Sardines/Tuna** (*in sachets*), **Toppings** (*margarine, peanut butter, jam, honey*).

Change your snacks regularly to avoid getting bored. Some ideas for snacks include: **dehydrated fruit, jerky, hard candy, cookies, gummy bears**, etc. A very tasty and calorie-rich snack very popular with hikers is **GORP** (*Good Old Raisins & Peanuts*). Include anything you want, like **dried fruits, M&Ms, mixed nuts, pretzels, granola, breakfast cereal, chocolate chips, gold fish**, etc.



NOTES:

