# Bear Bag Hanging Techniques

By Ryan Jordan

## Introduction

The primary problem with conventional backcountry food storage systems is weight.

Bear canisters made with plastic (BearVault BV200 or Garcia Backpacker's Cache) or carbon fiber (Wild Ideas Bearikade) generally weigh two to three pounds; as such, most lightweight backpackers consider taking them only in wilderness areas that require hard-sided food storage canisters. Reinforced fabric stow bags made of Spectra or Kevlar (such as the Ursack) weigh in the range of five to ten ounces. Even with the added weight of a hanging rope, the stow-bag system weighs a lot less than a few pounds. We recommend products like the Ursack for climbers and alpine hikers who camp above the tree-line and need to protect their food from aggressive rodents and the passing bear.

Note: Bear Resistant Fabric Sack (such as the Ursack): Bears can chew on this product and can therefore chew on the food and packaging inside and bear spit can leak through fabric.

## Bear Bag Hanging Systems

Most backpackers visiting wilderness areas, and camping below the tree-line, where bears are either not particularly habituated, or where bears are habituated but bear canisters are not required, employ some sort of bear bag hanging system, that usually consists of a stuff sack and a rope. The most common method, as theoretically - and quite simply - described in many backpacking how-to books, goes something like this in real life:

1. Put your food in a stuff sack.
2. Tie one end of the rope to the stuff sack.
3. Tie the other end of the rope around a rock you find on the ground that happens to be the only rock within a three-mile radius and is perfectly spherical with a coefficient of friction akin to Body Glide.
4. Select your tree of choice, which Murphy's Law dictates is at least four miles from the nearest comfortable campsite and has only two limbs that can support your food weight: one at eye level - high enough to keep mice and beetles at bay - and one high enough that if you hung an orange stuff sack up there, it would serve as an emergency signaling device, visible by spy satellites.
5. Find another tree with a sturdy branch about 15 feet off the ground.
6. Throw the rock towards the branch. Line gets tangled around your ankle and rock makes it only six feet high before slamming back into the ground with a thud.
7. Retie your complex knot. Then, lash the rope around the slippery, spherical rock, and try your throw again. This time the rock sails successfully over the branch, but the end of the rope has slipped off and remains in a crumpled pile at your feet. Your rock ends up in the next county, never to be seen again.
8. Find a new rock.
9. Repeat Step 7 until the rope is successfully hung over the tree. This could take several hours, so have your headlamp ready, and maybe your cooking supplies, so you can take a dinner break.
10. Pull your food up over the branch, tie the other end of the rope to the tree trunk, and go to bed - exhausted - but proud of your significant accomplishment.
11. Wake up in the morning and learn that a black bear has chewed through the rope, dropped your bag, and had a feast, leaving you three days from the nearest road with a Clif Bar wrapper and some peanut butter on the inside of your now shredded stuff sack.
12. Make a commitment to learn the counterbalance method of hanging when you get home.

## The Counterbalance Method

And so, the counterbalance method solves these problems, right? Well, at least is solves the problem of having an animal untie (raccoons are quite good at this) or chew through the cord attached to the tree trunk.

The counterbalance method depends on throwing a rope over a tree branch (as in steps 1-9 above). Then, to one end of the rope, you tie one stuff sack full of food; pull it up to the branch, then tie the other stuff sack as high as possible on the other end of the line. Then, using a long, stout stick, trekking pole, or a partner standing on your shoulders, you raise the bag (letting gravity drop the other one) until the two are equal in height. Then, you admire your work: two precisely balanced food bags hanging equidistant from the limb. The counterbalance neophyte also comes to the realization that both bags are probably now hanging between the level of your waist and neck, and that once again; you have performed a hang that will only protect your food from beetles.

A proper bear bag hang requires that your food be suspended at least 10 feet above the ground, so the counterbalance method requires a branch that is as much as 25 feet above the ground, depending on how tall you are, to what extent you can tie the second food bag to the rope while holding it over your head, the degree of stretch in your rope, the weight of your food, and the sturdiness of the branch. Retrieving your food involves reversing the process by pushing one of the stuff sacks (again, with a stick, trekking pole, or shoulder-standing partner) to the height of the branch, so you can retrieve the other bag (now hanging lower), remove it from the cord, release the cord, and let the first bag fall to the ground. Elegant in theory, but in practice is not always that easy, especially towards the end of your trip, when your food bags are lighter and gravity can't overcome the friction of the rope on the tree branch.

An effective counterbalance system requires two stuff sacks, no less than 50 feet of rope, and a method for counterbalancing - and retrieving - your food. Of all the bear bagging techniques, counterbalancing requires the most judicious branch selection, more careful distribution of food between two sacks, and more complexity involved retrieving and hanging your food. Bottom line: counterbalancing is not exactly favored by the "fast and light" crowd seeking simplicity in their backcountry experience.

## Additional Complexity

If you really want to add time, complexity, and weight to your bear bag system, check out the Marrison Bear Bag haul system, which uses the mechanical advantage of a trucker's hitch with two carabineers or pulleys to make "pulling your food up" a little easier. In reality, however, unless you are hauling up the group supply of food for a NOLS course, pulling the bag up is the least of your worries as an ultra-light backpacker out for a weekend or weeklong backpacking trip.

## A Better Way: The PCT Method

A system that combines the "bear" essentials for hanging a bear bag using the PCT method: here, an ultra-light 600 ci food storage sack made with noseeum mesh and sub-one-ounce silicone coated nylon (lined with an odor proof zip closure bag) and a rock sack of the same material, combined with 40 feet of Spectra rope, and a micro wire-gate carabineer can weigh as little as three ounces.

(Photo: Bozeman Mountain Works UrsaLite Bear Bag Hanging System)

Affectionately known by the lightweight hiking underground as the "PCT Method" (presumably because it was first used by long distance hikers on the Pacific Crest Trail), a bear bag hanging method exists that is lighter, requires less rope, offers the benefits of counterbalancing, is easier to set up, and offers simple and quick hanging and retrieval of your food.

You can make your own system quite easily by assembling the following components:

- Food storage bag
- 40 feet of hanging rope
- Keychain carabineer
- Small stuff sack for a rock ("rock sack")
- Pencil-sized twig about 4-6 inches long.

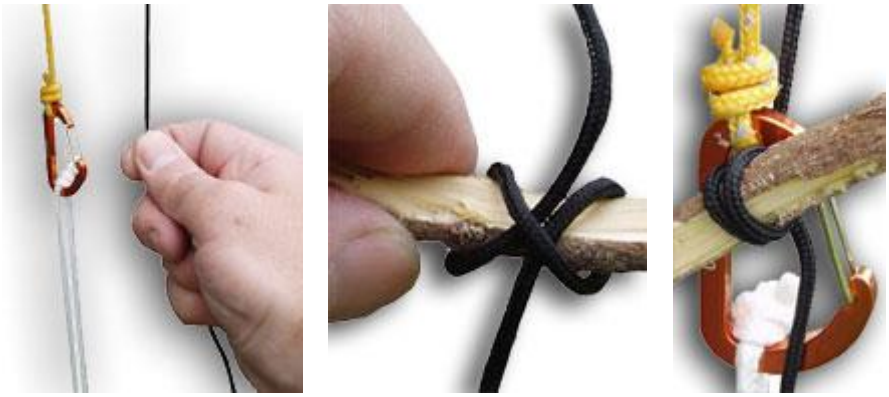
Using 1.4-oz silicone-coated nylon waterproof stuff sacks for the rock sack and food storage bag, 1/8" parachute cord for the hanging rope, and a two-inch carabineer from Wal-Mart, you can achieve a system weight of about five or six ounces.

The system is used as follows:

1. Tie one end of the rope to the draw-cord of the rock sack.
2. Tie a loop (e.g., bowline) into the other end of the rope and clip the carabineer through it.
3. Insert a rock into the rock sack, cinch it closed, and throw it over a branch that is 15-20 feet high.
4. Remove the rock from the rock sack.
5. Attach the food sack draw-cord to the carabineer.
6. Clip the rock sack end of the rope through the carabineer so that it can run freely.
7. Pull the rock sack end of the rope until the food bag is at the height of the branch.
8. Take the twig and reach as far as possible up the rock sack end of the rope (for the average man, this is about seven feet) and tie a clove hitch around the twig.
9. Let the rock sack end of the rope go, until the twig catches on the carabineer and keeps the food sack in place, at least 10 feet above the ground.

This system leaves extra rope hanging freely below the food bag, and unlike conventional hanging systems where the spare end of the rope is tied to a tree trunk, eliminates the possibility of an animal untying or chewing the rope in efforts to bring the food bag down.

In addition, the PCT Method requires less skill, and thus, is faster to deploy than the counterbalance method. Finally, the PCT Method requires a system of equipment that is lighter than the counterbalance method because it uses less rope and only one food storage sack.



This three-panel image set (using different colored cords for clarity only) shows the process of hanging a food bag using the PCT Method:

(LEFT) The rope is thrown over a tree limb at least 15 feet high (with the aid of the rock sack, which in this panel, is tied to the bottom of the black cord). The food sack drawstring (white cord) is then clipped into the carabineer, and the food raised by pulling on the rock sack end of the cord until the carabineer reaches the top of the limb.

(CENTER) The hiker reaches as high up the rock sack end of the rope, and ties a two-loop clove hitch (see Steps 1-3 http://www.chockstone.org/TechTips/CloveHitch.htm ) and inserts a pencil-sized twig into the loops, then tightens the knot.

(RIGHT) The rock sack end of the rope (now containing a twig tied in as high up as possible) is then slackened, allowing the twig to come to rest against the carabineer, stopping the sack high enough above the ground for a good bear hang (at least 10 feet). To retrieve your food, simply pull the rock sack end of the cord and reverse the process.

A bear bag system using the PCT Method can be easily assembled from readily available components: existing stuff sacks, rope, and a keychain carabineer. Using 1.4-oz silicone coated nylon stuff sacks (e.g., 600 cubic inches for the food storage bag and 50 cubic inches for the rock sack), combined with thirty five feet of cord such as paracord (3/16 inch minimum so as not to dig into the branches of softwood trees such as pine, spruce, or fir), and a typical keychain carabineer, the system can weigh as little as five ounces. Adding or subtracting weight from this system can be accomplished simply by altering the cost (which buys you higher strength materials for less weight) and durability of the materials used.

## Summary

Table 1 compares the function and performance of the primary bear-resistant food storage systems using a subjective grading scale of A (most applicable) to C (least applicable). The information provided in the table is not intended to constitute a product review or an endorsement of a particular system for a particular application.

| Type | Weight | Complexity | Speed | Alpine Use | Cost |
|---|---|---|---|---|---|
| Bear Canister | C | A | A | A | C |
| Bear Resistant Fabric Sack | B | A | A | B | B |
| Counterbalance Method | A | B | C | C | A |
| PCT Method | A | B | B | C | A |

Table Notes:

1. Complexity is defined as the technical ability (motor skills) required to activate the system (e.g., ready it for food storage), as well as store (e.g., hang) and retrieve food.
2. Speed is defined as the time required to ready the system, store food, and retrieve food.
3. Alpine Use is defined as the system's ability to resist attack by rodents, bears, and other mammals when lying on the ground (the typical mode of deployment above tree-line).

## Note: *Bear Resistant Fabric Sack*: Bears can chew on this product and can therefore chew on the food and packaging inside and bear spit can leak through fabric.

## References: Traditional and Counterbalance Bear Bag Hanging How-To

*The Backpacker's Field Manual: A Comprehensive Guide to Mastering Backcountry Skills,* by Rick Curtis. Random House, 1998. ISBN 0-517-88783-5.

## Links to Knots on the Web

- Clove Hitch
- Bowline & Figure 8

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