

Throwing Stick

Variations of the throwing stick or rabbit stick can be found in many cultures all over the world, also known as a throwing club, throwing wood, baton, kylie, or the well known returning and non-returning boomerangs of the Australian aborigine's. Used for hunting small mammals and birds, typically made from medium or hardwood, 12 to 24 inches in length with one end either weighted by a thicker heavier section or a curve. This extra weight or curve imparts momentum to the stick when thrown, increasing flight stability. I don't fully understand the physics and subtleties of the various different designs, but there seems to be four basic styles: club, equal single bend (a stretched 'V' shape, less than 45 degrees), unequal single bend (a stretched 'L' shape) and double bend (a stretched 'Z' shape), examples are shown in figure 9.1.1. From reading around and searching the web, you don't normally see a straight, constant diameter throwing stick, the exception to this is when metal, typically lead is used weight one end. Throwing sticks having a bend are normally thinned down flat i.e. a bi-convex or thin oval, improving their aerodynamic profile, reducing weight, therefore, allowing them to travel greater distances. This profile is optimised for the returning boomerang, forming an aerofoil profile i.e. a flat bottom and a curved top, allowing the boomerang to generate lift. A common characteristic of these throwing sticks is that their edges are thinned down to a point, concentrating the kinetic energy on impact. Club type throwing sticks have a solid bulge, protuberance e.g. circular or oval, at one end and tend to be shorter than curved throwing sticks. Again the club end may be pointed to concentrating the kinetic energy on impact e.g. pointed, forked, tear drop or conical.



Figure 9.1.1 : Throwing Sticks

Throwing sticks with a bend are thrown using an overhand, sideways throwing action, imparting a spinning motion on the stick. This sideways spinning flight path increases the probability of making contact with the target. Some quotes on using throwing sticks:

“No deviation normal throwing sidearm motion, distal wing curved inward, projectile low to the ground was indicated. The throwing arm moved with a broad sweep using the whole arm but with some degree of wrist snap at the end of the action” Koerper, Pinkstopn and Wilken

“First, align the target by extending the non-throwing arm in line with the mid to lower section of the target. Slowly and repeatedly raise the throwing arm up and back until the throwing stick crosses the back at about a 45-degree angle or is in line with the non-throwing hip. Bring the throwing arm forward until it is just slightly above and parallel to the non-throwing arm. This will be the throwing stick's release point.” The Web

“The throwing wood is a crooked piece of wood, which is able to fly with or without having a grip. Generally it is thrown and then rotates in the air, but occasionally it also can be used as a club. Unlike the throwing club, the throwing wood does not concentrate on the effect of hitting. Only the variant which returns to the thrower is called a boomerang.” Lench

“Such a basic club can be thrown either overhand (when, for instance, you're trying to hit the side of a tree) or sidearm (when you're in an open area, where brush won't interfere with the stick's flight). In using the first method, point your left foot at the target (if you're a right-hander southpaws can simply reverse these directions). Then, holding the smaller end of the stick loosely in your right hand, bring the weapon back over your shoulder and hurl it, with good end-over-end spin, straight at the mark. At the moment of release, your shoulders should face the target squarely. The sidearm throw is similar to the motion used in stroking a tennis ball with the racket. Point the left toe at the target, bring the stick to a cocked position at your side, and throw it, squaring your shoulders and snapping the club as if you were cracking a whip to give it spin.” Brown

Club type throwing sticks can be thrown using a more targeted throwing action. Again, thrown using an overhand throwing motion, however, this time no sideways spin is used i.e. the club is thrown straight, heavy end first, this end making contact with the target. The handle increasing leverage and speed allowing the club to be thrown further and faster. Some books suggest that a twisting flick should be added just before release i.e. rotating the club inline with the directions of travel, improving its stability in flight.



Figure 9.1.2 : Equal single bend throwing sticks



Figure 9.1.2.1 : Club throwing sticks



Figure 9.1.2.2 : Double bend throwing sticks



Figure 9.1.2.3 : Long single bend throwing sticks



Figure 9.1.2.4 : Weighted throwing sticks

To make a throwing stick that contains a bend the simplest solution is find a piece of wood with a suitable natural bend, although this is sometimes easier said than done. However, as this type of throwing stick is normally thinned down to a flat profile, any unwanted bends or bumps can be minimised or removed completely with a bit of judicious trimming. When a suitable piece of wood cannot be found the wood can be formed into a curve by heating and bending. One technique I've read about is to heat green wood over hot coals to make it pliable, then placed it between two rocks, placing a heavy pressure rock on top to form the bend. Alternatively the wood could be steamed to make it more flexible, removed from the rocks when cooled.

The equal length single bend throwing stick shown in figure 9.1.2 is made from Beech, cut down and shaped using an axe to give a more aerodynamic profile. The club throwing stick shown in figure 9.1.2.1 is made from an evergreen shrub, not sure what species, a medium hardwood. Using a saw, stop cuts are made around the head, an axe is then used to form the handle (the stop cuts preventing the splits progressing to far). The double bend throwing stick shown in figure 9.1.2.2 is made from Ash, simply cut down and shaped using an axe. Ideally the top and bottom bends need to be a little longer and more angled, but this was the best of the wood available. The long single bend throwing stick shown in figure 9.1.2.3 is made from Birch. The bend is naturally formed, again shaped to improve its aerodynamic profile. Comparing these throwing sticks with some traditional non-returning Australian aboriginal boomerangs from the central desert they

may need to be thinned down a little more. However, some examples from Tasmania and eastern Australia are of a similar size (or a little bigger) i.e. approx 2.5 feet long and 1 inch wide tapering at the ends slightly. Not sure what the best balance between weight, width and aerodynamic profile is. Note, its common to have scratches, groves carved into one end, to form a non-slip grip. The weighted throwing stick shown in figure 9.1.2.4 is made from Pittosporum with a flit head. The stone has a naturally formed hole allowing it to be easily mounted on the wooden handle. The handle is shaped to fit this hole, initially roughed out, the stone is then placed on the spike and tapped into position and then removed i.e. held upright and the bottom of the handle knocked on the ground. The compacted, marked areas are then trimmed away and the process repeated until the stone sits securely on the wooded handle. This is important as the spike will not be sufficient to hold the stone in position if the club lands awkwardly (not even a hardwood). Finally the stone is lashed in position through a hole within the handle.



Figure 9.1.3 : Thinned down single bend throwing stick with improved grip



CAVEMAN THROWING STAR

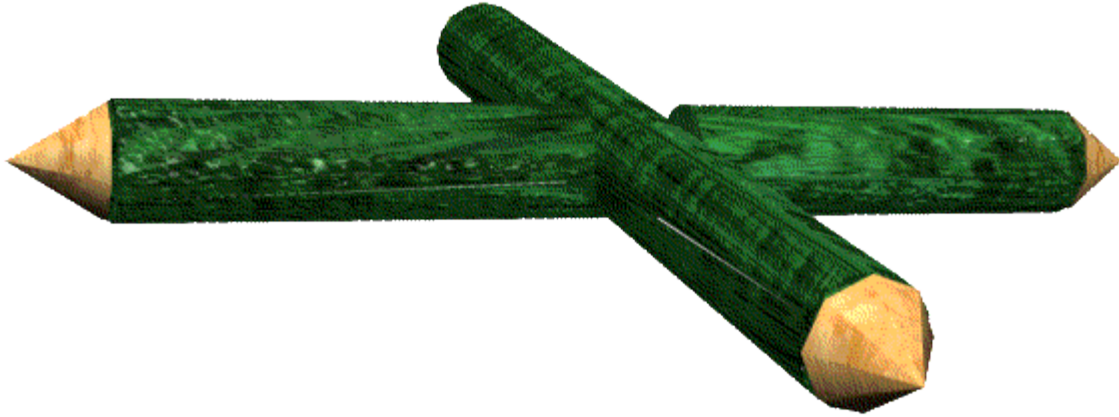
An ancient, yet effective tool for hunting small game is the throwing stick. An improvement on that tool is to effectively double it up for a heavier tool with more points. It probably had a name (something like Grunt, Ugh), but I call it the Caveman Throwing Star. Like the throwing stick, the Caveman Throwing Star is thrown sidearm so that it spins as shown below (animation may take several seconds to load).

HOW TO MAKE IT

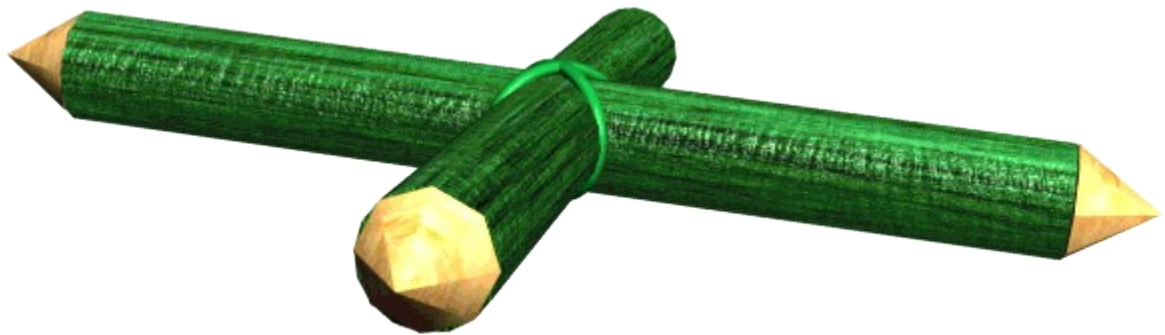
This tool is constructed of two halves, each constructed as shown. The notch is carved in the middle to allow the two halves to be mated. Each half is typically 2 to 3 feet long depending on the size and strength of the user. It is also very thick (about as big around as the wrist of the user) and heavy (typically made of hardwood). The ends can be either blunt or sharpened. I prefer to put a very slight point (a skull crusher or pommel point, as it is known).



The two halves are fit together as shown here, and then bound with Para Cord, fishing line, strips of inner bark or whatever is handy.



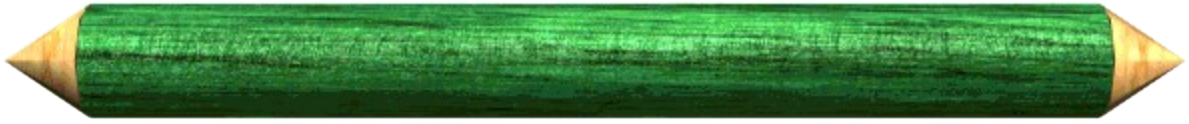
The tool is thrown sidearm to induce a spin like that shown below.



The whole point to the Caveman Throwing Star is that you only have to be within 2 or 3 feet of your target to actually hit it. You have 4 bone crushing tips, and the chances of one hitting it's target is high. This is a very effective tool for hunting rabbits and other small ground critters.

THROWING STICK

One of the most ancient, yet effective tools for hunting small game is the throwing stick. A throwing stick is thrown sidearm so that it spins as shown (animation may take several seconds to load). The stick is typically 2 to 3 feet long depending on the size and strength of the user. It is also very thick (about as big around as the wrist of the user) and heavy (typically made of hardwood). The ends can be either blunt or sharpened. I prefer to put a very slight point (a skull crusher or pommel point, as it is known). This point is shown in the animation below.



The whole point to the throwing stick is that (thrown sideways) you only have to be within 2 or 3 feet of your target to actually hit it. This is a very effective tool for hunting rabbits and other small ground critters.

SPEARS

Spears are what you typically think of when you consider primitive weapons. They are very primitive as far as weapons go, but they do have the unique advantage over a knife of allowing you to keep a distance from quarry or as a defense against predators. A good spear might be a something to consider making if you are lost in bear country!

HEAVY SPEAR

As far as using a spear as a survival tool for hunting, I would strongly recommend against it unless you are lost with a bunch of your friends, and plan to drive bison over cliffs with spears and torches... not bloody likely. As I mentioned above, it might not be a bad idea to have a spear/walking stick as a defensive tool depending on where you are, and what critters may be about. In that case, do not make it super long. About as tall as you and heavy hardwood is what I'd recommend. A nice fire hardened tip is fine. Don't waste your time trying to whittle flint spearheads, unless you are part of the aforementioned bison crew.



BARBED FISHING SPEAR

A really useful tool for survival would be a fish spear. This is typically a much thinner tool (about 1" in diameter), and has a very sharp tip with barbs to hold on to your catch. These barbs are relatively easy to whittle into the tip, and are well worth putting there. A survival situation is not the time that you want to experience that, "one that got away" story!! This can be used as a Hawaiian Fishing Spear (shown below) if you have a set of slingshot bands.



HAWAIIAN FISHING SPEAR

I include a set of slingshot bands in my [Survival Kit](#), which can be used to make a Hawaiian Fishing Spear. A Hawaiian Fishing Spear is used for fishing or for small game like frogs and other creatures that you can get close to. By tying some ParaCord to the ends of the Slingshot bands as shown below, you can make a hook for your thumb. The blunt end of the spear can now be placed in the pouch, and with your thumb hooked in the ParaCord loop, the spear can be drawn back stretching the bands. The spear can now be gripped near the tip. Once aimed at the target, just release, and the bands produce a quick jab. Whereas these produce such a quick thrust, they are ideal for small game that would otherwise be too fast.



The Bola or Boleadora

The bola, or boleadora is a primitive hunting tool that was originally used by the Chinese, Eskimos and South American Indians. Bolas are a throwing device made of weights on the ends of interconnected cords, designed to capture animals by entangling their appendages (legs, wings).

They are most famously used by the South American gauchos. Gauchos use bolas to capture running cattle or game. Depending on the exact design, the thrower grasps the bolas either by one of the weights or in the nexus of the cords. He gives the balls momentum by swinging them and then he releases the bolas. The bola is usually used to entangle the animal's legs, but if thrown with enough force, they have been known to break bones. There is no unique design. Most bolas have two or three balls, but there are versions of up to 8 balls. Some bolas have balls of equal weight, others vary the knot and cord. Bolas with three weights are usually designed with two shorter cords with heavier weights, and one longer cord with a light weight. The heavier weights flying at the front parallel to each other, hit either side of the legs, and the lighter weight going around, wrapping up the legs. Gauchos use bolas made of braided leather cords with wooden balls or small leather sacks filled with stones in the ends of the cords. Bolas can be named depending on the amount of weights used:

- Bola Perdida or Bola Loca (Crazy or Lost Ball ,1 weight)
- Avestrucera o nanducera (2 weights)
- Boleadora or Tres Marias or Tres Potreadoras (3 weights)
- Ka-Lum-Ik-Toun (Eskimo name for bolas with 4 or more weights)

The bola perdida was primarily used against humans. The boleadoras is a tool for hunting Rheas (large flightless birds) or cimarrón (wild cattle). The bola perdida is an invention posterior to the arrival of horses, and it is used mainly in the Pampas and northern Patagonia. Tres Marias (Three Marys) or Tres Potreadoras (Three Tamers) usually had ropes of different lengths and weights of different mass so when thrown they would separate as much as possible. These were used for heavy animals like cattle. The Patagonian, Charruan, Araucan and the indians from las Pampas were the first to develop these tools and the gauchos promptly adopted them. Earliest examples were usually made of stone. The weights were usually covered in fresh leather that when dried would shrink to cover the weight snugly. In Tres Marias the smallest weight is called the "Manija". This is usually also hung on the shortest rope and is used to sling the boleadoras. The most luxurious boleadoras are made of ivory and covered in precious metals. The work on them may be so fine that they are actually considered works of art.

Generally, there are three types of boleadoras weights:

- an iron ball with a handle
- a stone with a groove carved around the circumference and with a rope tied at the groove
- a stone or wood ball wrapped with leather (like in a pouch) and with the rope tied to the pouch



The following information was provided by contributors who live in South America:

From Lee Tonkasila:

The ones I use to catch emus on my friends ranch have 3 leather bags full of steel shot and soft nylon braided 3/8 inch rope tied an equal distance (38 inches) from a central knot. I hold one ball in my left hand, swing the other two horizontal to the ground, and let the bola fly a little in front of the running bird. Just as I release the 2, I release the third with a slight flip to the right. They fly like a helicopter and will wrap up a 45 kg emu instantly. I don't know if I'm doing this right as I have never seen a Gaucho demonstrate, but I can catch a 35 mph emu without hurting him. Of course they aren't thrilled with the procedure.

From Mariano Nucci:

*In Argentina we call it "boleadora" (in Spanish language "bola" means "ball"). Our gauchos called it "las tres Marías" which means "the three Marys". Obviously, because there are three balls... And here, "the three Marys" are the three stars which make Orion's belt in the Orion Constellation. Beautiful stars and a beautiful name for a beautiful device. The gauchos learned to use the bolas from the indians. The gauchos used to use the bolas as a tool until the beginning of the 20th Century. Nowadays you can see the bolas only in museums or in traditional meetings where the gauchos wear their old clothes and the bolas are just an ornament. But in Patagonia, it is still possible to find ancient bolas spread on the field if you know where to look for them. Of course, picking them up is prohibited by Argentine laws.

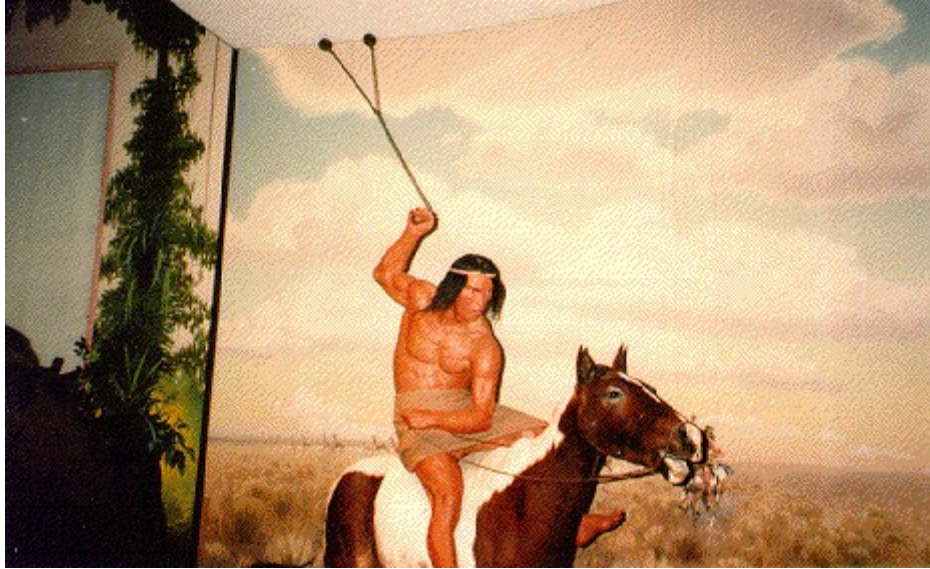
*The boleadora was not only a throwing weapon, but the Indians use them as well as a fencing weapon. And in that sense it was a really fearful, horrific one. In order to use the boleadora as a fencing weapon, they had to be standing. They held one of the balls between the big toe and the "index finger" of the foot; the other two balls were held on each hand from the chord. Then, they moved forward, slowly, step by step, moving the balls in his hand in a fast revolving motion. If you were attacked in this way, you were in trouble.

* When our Indians from the plains domesticated the horse, they left the bow and they specialized in the use of two main devices: the boleadoras and the "chuza". The "chuza" is a gigantic spear, between 5 meters and 7 meters (16 ft to 23ft) made of a very flexible, massive, light kind of cane which grow up in Patagonia ("colihue" cane). The chuza is useful only if you are riding a horse. Indians from the plains taught their horses to run with their hind legs "boleadas"; it mean, with their hind legs tangled up by the bolas. Then, although they were attacked with bolas, they were able to escape. Those Indians included the "Patagonian", "Charruan", "Pampas", "Tehuelches", "Ranqueles" "Araucanos" and "Mapuches". The photo you show on your web site [Smithsonian display], is a good representation of a "Pampa" or "Ranquel". They were brave warriors, but the Argentine Army destroyed them in 1878 or 1880, similar to the sad story you had in North America.

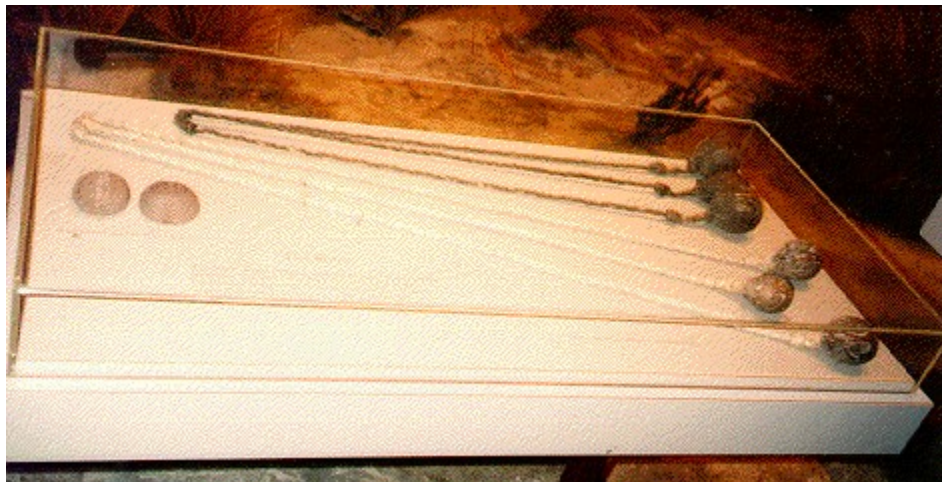
From Jesus Vega Hernandez of Argentina:

Boleadoras is the more common expression for these devices, but the terms are more or less interchangeable. Anything with two or more weights is called a boleadora, or occasionally bola. Occasionally, each of the weights on a boleadora is called a bola. Using boleadoras (or bolas) is called 'bolear', and what you catch is 'boleado'. I have seen boleadoras of two and three weights. The two weights model was generally used to play, but have seen in museums too. The indians and matberos (outlaws) used the two weights type to break the telegraph lines. I passed many summers in the field with a cousin. The field keeper (the puestero) used part of a discarded grain sac to make two bags (roughly rectangles of 10 x 20 cm), filled them with gravel and tied with 1.5 metres of rope. It's a very simple boleadora, and it can be used to play with little risk (if you can avoid impacts on the head of your cousin, everything will be OK :-). If used near the house, you can put some grass inside the bag to soften the impact a little, or fill with grain. After the bags broke and without the possibility of repair (they lasted two weeks), I acquired a true boleadoras. It had three weights, made of stone wrapped in leather, each approximately 6 cm in diameter. Each cord was braided with 4 strips of cuero crudo (untanned leather), cured with horse manure, and roughly 1 metre in length each. I threw while riding, keeping one weight on the right hand and rolling the other two over the head. You must be cautious to synchronize and not touch the head of the horse (if the rope tangles around the horse's head, a bola can explode an eye, or your own head! I used these 4 or 5 summers (mostly for play. I've never been allowed to throw them at cattle), and keep them rolled on a wall while in city. Eventually, the leather broke when I tried to unroll it. The bola perdida has only one weight. It is a historic artifact. I have seen them only in museums and not in use. The first time I heard about the bola perdida was in a chapter of the TV series 'El Zorro', when a visiting gaucho used one to kill a neighbor in Los Angeles. It is said that the bola perdida was a later invention than the boleadora and was coincident with the arrival of horses. Before that, it is said that slings were used (simpler to make and carry, and were equally effective).

The Natural History Museum at the Smithsonian Institution has a wonderful display of bolas from South America. The two photos below were taken at the museum during one of my visits in the mid 1990s. The first photo shows a South American Aborigine in the Pampas, on horseback and about to release a boleadora.



The second photo shows some of the bolas that are on display under glass.



Gauchos use boleadoras to capture running **cattle** or game. Depending on the exact design, the thrower grasps the boleadoras either by one of the weights or by the nexus of the cords. He gives the balls momentum by swinging them and then releases the boleadoras. The weapon is usually used to entangle the animal's legs, but when thrown with enough force might even inflict damage (e.g. breaking a bone). There is no uniform design; most bolas have two or three balls, but there are versions of up to 8 or 9 balls. Some bolas have balls of equal weight, others vary the knot and cord. Gauchos use bolas made of **braided leather** cords with **wooden** balls or small leather sacks full of stones in the ends of the cords.

Bolas can be named depending on the amount of weights used:

- Perdida (1 weight)
- Avestrucera or ñanducera (2 weights)
- Boleadora (3 weights)
- Ka-Lum-Ik-Toun (Inuit name for bolas with 4 or more weights)

Bolas of three weights are usually designed with two shorter cords with heavier weights, and one longer cord with a light weight. The heavier weights fly at the front parallel to each other, hit either side of the legs, and the lighter weight goes around, wrapping up the legs.

South American Bola with Leather Covered Balls

This bola is a very nice example of a real functional bola with braided leather cords and a leather pouch surrounding a stone or solid sand interior for each of the balls. One of the balls is smaller than the other two balls as expected. The leather is dry and stiff and is fine for display. There are leather softeners that can be used to soften the cords if you plan to throw this bola. The age of this bola is approximately 25 years. This is not an antique, but is one of the nicer bolas that you will find for sale and is functional, rather than a decorative collectable. Cord length = 70 -> 74 cm ; Ball diameters = 5 -> 6 cm ; Weight = 542 gm

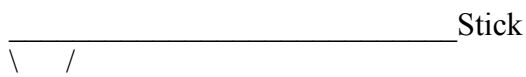


PRIMITIVE SURVIVAL HUNTING Hunting With Slings

Subject: The Staff Sling: Guidelines for Construction and Use

Still looking forward to hearing more about staff slings. Here in Quebec, Indians had a historic game called "Lacrosse" which is still played in some communities. I played it myself as a kid. Sounds to me like a staff sling is like a lacrosse stick: a pouch made of rawhide netting on the end of a 3 ft stick.

A staff sling is not quite like a lacrosse stick. On a lacrosse stick, the pouch on the end is fixed in place. On a staff sling, the pouch is only attached on one end, and it hangs below the stick when held horizontally. The other end is just hooked over the end of the stick, and it comes off when thrown.



The Staff Sling: Guidelines for Construction and Use

This article is intended as an introduction to a missile weapon which was extensively used from antiquity until the high middle ages, notably by the Carthaginian, Vandal, Roman, Byzantine and other armies of the continent. This weapon was called the fustibalus (in Latin). To the right may be seen an illustration (cut) from a manuscript in the Bodleian Library in Britain, which shows maritime combat with the fustibalus. It is also mentioned in the Codex Antlanticus of Leonardo da Vinci, who experimented with various forms of it as an exercise in martial engineering.

The Fustibalus was about one meter in length, and boasted a range of some 550 feet! Accuracy with this weapon comes only with practice, and its use among the Romans was restricted to auxiliary troops for this reason. The trebuchet, a siege weapon much beloved by medieval engineers, was nothing more than an enormous staff sling that employed a counterweight for achieving torque instead of arm and shoulder. The missiles launched were, in antiquity, referred to as glans. These were clay and/or lead pellets, oval in shape and generally flattened. They often had the names of enemies, pictures of scorpions and other martial graffiti inscribed or molded on them. Those samples remaining today are about 1 1/2 to 2 1/2 inches in length and 1/2 to 1 1/2 inches in width. These glans weigh around two ounces, though examples exist weighing up to five.

So how do I make one? Take a rattan stick about 30-40 inches long and make a leather 'pocket' as shown in the diagram (cut). By securing one end some 6-8 inches from the tip (with the thonging), you'll set the range of your particular sling. Remember, you're going to lay a slightly flattened, never round, missile in this pocket and swing the staff 180 degrees. The point of release, and thus the range, will depend on the length of the thonging holding the pocket. Only trial and error will help you set your range. The other end of the pocket MUST slip off the tip of the rattan smoothly - it may be necessary to smooth the place where it clears the end with some sandpaper.

Always use tennis balls for SCA combat which have been slit on four of their sides. You could even attach red/yellow streamers to represent the clay incendiary grenades the Carthaginians threw from theirs. Of course, you'll need to duct tape before slitting. Hope to see you at the Siege!!!

Subject: Those Staff Slings

The Kurds teach their kids to use a sling for small game. They use a thing "staff sling" to give the kids the right timing and arm motion. The only difference between the staff sling and a regular traditional sling is that one of the cords is replaced with a stick. The sticks are roughly oval in cross section and 2 to 3 feet long. Naturally they release the string and not the stick when they throw.

I tried this method and it is really quite easy to use. Later I found out that Assyrians used it and some ancient seafaring nations used it because it wouldn't foul the rigging. There is basically no windup. It's used something like an atlatl and can be attached to a walking stick.

Another thought. When I teach the sling in our advanced courses. I've learned that some folks can be accurate with a horizontal overhead swing, others take to the vertical swing which may be easier underhanded or over handed. I let them try all of the positions and choose the one most comfortable for them. Up on the Cordelierra in Chile, the Indians showed me how they teach their kids the overhead swing.

They start with a short string.... about 1 foot long, until the kids learn the release points and coordination. Oddly the adults carry one of these short slings almost everywhere. The little slings don't have much range but they don't require a windup, can be used in brush and trees and will kill easily out to 20 yards or so. They're even good at the "fast draw".

Subject: Re: Realistic sling possibilities

a) Am I the only one who uses the "shotgun" sling approach?

I have never heard of this being done. I have heard many anecdotes of shepherds using the sling to kill marauding foxes and coyotes. In each story, only one rock was slung at a time and the slinger had sufficient accuracy to kill, not merely frighten, the animal. Perhaps you, like I, took up the sling late in life, while the shepherds have been developing their skill since childhood and can use a sling as naturally as you or I can walk.

a) Am I the only one who uses the "shotgun" sling approach?

I have also used this method to bring down an occasional rabbit or squirrel. Not often. The only other times I use this method is when slinging out over water to watch the splashes.

b) When realistic food gathering is the only concern, what are your preferences?

snare, bow, sling in that order, assuming primitive technology only, slingshot between bow and sling if a slingshot is available

c) Any literature you know of which addresses these concerns?

Only what has been mentioned on this list. While a long-time user of the sling, I've never really done any research into it, all my replies are based on experience.

b) What's the current thinking on the various throwing weapon

hmmmm. b) was up above. but if this is D, I'd go with spear, atlatl, dart, throwing sticks, rocks in that order

Subject: Re: Realistic sling possibilities

Since I've been researching realistic wilderness survival for the last 25 years, I have given a good deal of thought to using the sling as a food gathering method in an emergency situation. My conclusions thus far:

1- Like Jim Merlini, I too have preferred the single vertical turn and immediate release. My thinking is that no animal that I know of will stand around while some primitive human being is busy spinning a stone for several seconds over his/her head.

Even a single vertical move is quite noticeable to some animal you are hunting. I think the sling is more practical as a weapon of defense against animal aggressors, rather than for food acquisition. For example, chasing wolves away from sheep, or foxes from chickens.

As for accuracy, talent is as much a factor as skill I'm sure. I seem to be able to achieve relatively good horizontal or vertical accuracy, but not both at the same time :-). Yet I'm told there are people who can repeatedly hit a target the size of a small melon at 60 yards.

b) When realistic food gathering is the only concern, what are your preferences?

As you said... First for very small game at relatively close ranges (20 meters or less, squirrel, rabbit, etc.) I would say the slingshot (a good one), or a light crossbow with small game points. For somewhat larger game, the crossbow or longbow if ranges can be kept under about 50 meters, a rifle otherwise. Remember where food gathering is the aim, there is also trapping to be considered...

Subject: Sling projectile weights

Oops! I've been meaning to comment on a post of a week or so ago regarding projectile

weights. Someone had spoken of ammunition in the 30 gram range, that's a little over 1 ounce. Personally I do not throw ammunition so light. I like something minimally about twice that, and my preferred weight is anywhere from 4 to 6 ounces.

As for throwing styles, I have experimented with underhand, which tends to lob the projectile. I had read that this throw was primarily for heavy weights meant to be dropped into a crowd (ancient advancing troops for example). I can also throw with a single overhand motion. Sort of like throwing a grenade (stiff arm). This works very well, but my favorite is still the helicopter whirl, where the sling spins overhead in a horizontal plane and, in the last 1/2 turn, the arm extends to provide kinesthetic sense of where to release - but still in a horizontal plane above the head.

Like knife throwing or anything else, accuracy is as much a matter of innate talent as practiced skill. I know there are people who can hit an 8 inch target consistently at 60 yards!

Subject: Re: Sling Bullet Weights

Steve Krom wrote: I found this article too, and what I found most interesting about it are the weights of the bullets and the method of throwing shown. It says that most of the sling bullets found weighed only about 25-30 grams! Does anybody on this list throw things that light? I love to throw Buckeye Seeds which are about the same weight.

Subject: Re: Sling Design & Technique

Chris Smith mentioned an article the other day that he wished he had entitled, Slings As A Weapon, from an old Scientific American, Oct. 1973. I went to our public library and found it! Great article on slings and their use worldwide. Mostly, Neolithic and historic periods, but some mention of them being used at end of Paleolithic.

I found this article too, and what I found most interesting about it are the weights of the bullets and the method of throwing shown. It says that most of the sling bullets found weighed only about 25-30 grams! Does anybody on this list throw things that light? I usually throw a chunk of lead that must weigh at least a pound. The method of throwing they show is an underhand throw, like a softball pitcher. I tried it and it seems to work quite well, except with my large sling, which would run into the ground if I tried it. Anybody else try an underhand throw?

Yes, I started with the underhand throw. The main problem I find with it is that I tend to side arm it a bit and my throw will go off to one side of the target. I really think it is the throw of choice for long distance slinging, but it has a high looping trajectory. I've read that it was the throw of choice for teaching Roman troops to sling with only one movement and no wind up swings.

I am working on the pocket section of my fiber sling, Instead of wool yarns I used #18 nylon seine cord in yellow and white. I'm afraid that it's much too slick to use the 16

strand braid worked up as mentioned in the book on sling braiding. So, after making the finger loop, I separated my strands into 4 bundles of four strands each and did a 4 strand braid worked down until I had a length long enough for the retention cord. For making the pocket I'm using a separate length of yellow seine twine and the finger weaving pattern copied from the article on a sling pocket of the Paleo-Indian found in Lovelock cave here in Nevada. I'll let you know when I'm done.

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I use a different method of throwing a sling, at least I haven't yet heard of anyone throwing this way, unless they were one of mine or Robert Likas' students. I swing the sling in a circle around my head, line up with my target as it passes in front of my eyes. I then turn the circular path into a quick whip and overhand throw at the target. This is more natural, if you think about it, you are usually used to throwing overhand without a sling, so the sling becomes an extension of your arm. ---Benjamin (benjamin@perigee.net)

Subject: Re: Sling Design & Technique

I have one question for other slingers on the list; How did you determine the length of your sling cords?

By expediency. I'm an overhead slinger, i.e. I swing the sling horizontally overhead when I shoot. However, my prep is to put the stone in the pouch, let it hang loose, then bring it up to firing/moving mode by swinging it back once and on the forward return up and around. Thus, my maximum sling cord must allow me to clear the ground when my hand is at about waist level.

Subject: Re: Sling Design & Technique

I'm sure you're right Bill, guess I'll have to keep on practicing. What are your thoughts (or anyone else) on the ease with which a beginner can become accurate as compared to a

bow, for instance?

Well, this depends, as on all other feats of accuracy, on what the beginner 1) has a "talent" for and 2) has a desire to apply himself/herself to.

That said, I use both bow and sling, so think I can compare the two somewhat. I think that a raw beginner, with no knowledge other than that from watching movies, and with a serious interest in mastering both would find both to be of the same difficulty. The reason I say this is that the arrow is a little more stable, and the bow is quite easily applicable to repetition. That is, I can pick up the bow, put my feet just so, hold the bow just so, draw to an anchor point just so, align the target against the bow just so, and shoot. BUT...I can only shoot so many times before I get tired, and the minute I get tired, my aim and form will suffer. Now with the sling, it is NOT an easily repeated situation BUT the ammo is more plentiful and the areas where you can shoot are far more plentiful AND you can carry the sling with you all the time and so shoot whenever you have a moment free and a good site. With the bow is the ease of repetition, with the sling is the abundance of practice.

If one had to learn alone, just pick up the equipment and try to work it out, then I'd say the beginner would have better luck with the bow, at least at first, simply because of the ease of repetition. The difficulty of the sling lies primarily with not being able to recall as accurately as with the bow exactly where your hand was, what angle your wrist was at, how fast you were slinging, where was your arm, etc., etc., when you release the stone. This is without anyone to provide comments, assistance, or instruction, as if you were out in the middle of the plains all by yourself, the nearest town 100 miles away and there on the ground lie a bow, arrows, and a sling.

With assistance and instruction, I'll stand by my second paragraph, that they are equally easy to become accurate with, for someone who really wants to learn.

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Generally, I measure the sling folded in ready to load position from my heart to the end of my arm stretched out to my side. However, close range or long range shooting also dictates the length of a sling.

Subject: Re: Sling Design & Technique

I'm still learning the sling. I've made my first fiber sling from yellow and white nylon #18 sein twine(or what we would have called trotline cord in Oklahoma) It turned out very nicely and I'm proud of it. My only problem is that the socket is rather small in comparison to my leather sling 2.5 x 3.5 inches fiber as opposed to 4x6 inches leather. On the other hand, the fiber socket seems to grip projectiles fairly securely in comparison to the leather socket. This allows me to throw some smaller projectiles fairly well and continues to hurl golf ball sized rocks fairly well too. It does balk at the larger tennis ball sized rocks. Now as to accuracy and hunting ability, I do not feel that I have enough accuracy to even start hunting.

I figure that when I can knock off soft drink cans 4 out of maybe 6 hurls, then I'll know that I am good enough to consider hunting. I need to start on another sling soon, and try to split the socket, like the Andean slings. I figure that will allow for larger projectiles. I also need to practice more.

Subject: Re: Sling Design & Technique

When I was a wee lad, my dad made a sling for me. The pouch was from leather that you get in the harness repair bundles at the co-op. The strings were woven nylon parachute cord. The pouch was elliptical in shape - around 4.5" major axis and about 2.5 " on minor axis. A small hole about the size of a dime or nickel was cut into the center of the pouch. The length of the strings were the length of my arm. A loop for the middle finger and a large knot that was held between the thumb and index. As I recall, the hole helped hold rocks in place and made it a little easier to load. Must have been something he learned as a kid (born in 1897).

Subject: Re: Sling Design & Technique

When I was a kid, up until I was about 16, had a car and could go fishing on my own, I did a lot of messing around (a good way to characterize what I was doing) with throwing stuff (sticks, spears, knives, and slings) and made my first slings. I never thought of the heart to hand measuring system but that does come out at about 30-36 inches which is where I ended up. At that time I would buy leather shoelaces for the straps and use soft waste leather from my Dad's leather projects for the pouch. Have used it to harass a friend in a canoe on a lake so I know that you can heave a good size rock quite a long way. I never got very good for accuracy but I could heave a rock a pretty good distance, 60-70 yards. I used to think it was closer to 200 yards :). I used the thing to scare game towards me by throwing the rock to the other side of brush piles, cedar clumps, etc. We have tried heaving grenades this way but the damn spoon keeps popping off (like it is supposed to) and when you are fumbling around with a sling that isn't a good thing. Yes, yes,... we are experimenting with practice grenades not the real thing. We go that idea from a movie we saw which title I cannot remember for the life of me. I think that you would have to start using one of these at a young age (darn my over protective mother ;)) to acquire a high level of skill and that at this point in my life I just don't have the time to become proficient.

I tend to like staff slings, you can get pretty accurate, pretty fast, with these things. And they work good for grenades. They have been used in few wars for this.

Subject: RE: Split sling pouches

When we kids made slingshot pouches out of leather (invariably castoff shoe leather and hence a bit stiff) we cut two slits in them, about one-half of the distance between the center of the pouch and the attachment points for the rubbers. This made the pouch fit more closely around the rocks or marbles we used for ammunition. Sometimes we connected the two slits with a third slit, creating an H-shaped slit in the middle of the pouch, to allow a rock, especially an irregular pebble, to settle even deeper into the pouch.

The split pouches on traditional slings undoubtedly are meant to do the same thing: contain a missile snugly and securely until the instant of release. (I can imagine an ancient hunter being seriously irritated when dinner got away because the stone fell out of his sling.) You could even gauge the size of missile the slingmaker customarily used by measuring the gap in the pouch.

Subject: Re: Split sling pouches

Bill Blohm wrote: What keeps the stone from going thru the slit? Simple placement of the two pieces of the pouch? If so, then wouldn't it take longer to place the stone than for a simple, non-slitted pouch? What's the advantage over a "regular" pouch? I really can't see what the advantage is of a slitted pouch that would make someone go to the effort and time of making it, as opposed to a non-slitted pouch. For the ancients to go to that time and expense, there theoretically should be SOME advantage, but what?

The slit or hole helps the stone nestle in the same spot in the pouch throw after throw. Without the slit, the stone can end up to the left or right of the pouch's center line and make the throw a little less consistent. What keeps the stone from falling out of the slit is the size of the stone. If the stone is too small for the slit, or you make the slit too big for the ammo you will throw, then it will fall out!

Subject: Trebuchet

Folks are talking about staff slings and how they might be made. A Trebuchet is, well, kind of a staff sling. Well, maybe a pivoted staff sling on a support of some kind weighted at the end away from the sling...

Subject: grenade slinging

I guess a black powder grenade would be a primitive type weapon, but I suspect that it would be best used to drive another creature or group of creatures toward another area. In that case the best way to use a grenade is to unscrew the fuse assembly from the body,

remove the striker and replace with a simple strike a light fuse and cap assembly. Remember friendly fire isn't - and the only thing more accurate than enemy fire is friendly fire. Actually having used both the modern baseball type and the older pineapple grenades, I'll leave using grenades as sling projectiles for the braver guys out there, and "never get into a foxhole with anyone braver than you are".

Personally the whole thing gives me the shivers. :-0 ;-)

Subject: Re: grenade slinging

Personally the whole thing gives me the shivers. :-0 ;-)

You bet Jim. The problem was if you can toss a grenade a certain distance, so can they. The stronger arm wins. We tried a number of variations on the grenade sling and finally settled on a three foot paracord tied to the fuse body. We tied a large knot in the middle of the cord and one at the end. Pop the spoon, two rotations and that death grogin was on it's way. No fuss no muss. It had nothing to do with being brave and everything to do with keeping those buggers out of the fire base. I hate fixed positions.

We even made a catapult out of a captured Chinese 82mm mortar. With a number one charge it could toss 30 gallons of jellied gas about 250 yards (fused with an in-air arming contact detonator, natch). Awesome. Sometimes we'd just fire one up to watch the flash. Ancient weapons are so much fun!

BTW. the mason jar, grenade delivery is something we adapted from Huey eggs.

Subject: Re: grenade slinging

We have tried heaving grenades this way but the damn spoon keeps popping off (like it is supposed to) and when you are fumbling around with a sling that isn't a good thing. Yes, yes, we are experimenting with practice grenades not the real thing.

Pull pin - Put the grenade in a glass bottle or heat a test tube and stretch it most of the way around the spoon and grenade - then pull pin. Or, put a rubber band around the base of the spoon, away from the detonator assembly, tie the band to the sling cup. Have fun

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Try using a straight loop: put the grenade in the pouch, wrap the thong around once, then sling. The release, if smooth, should send the grenade on it's way, the spoon coming off

after the thong unwinds from it. If it doesn't work, oh, well, back to the drawing board....

Subject: staff sling for grenade launching

Actually this might just work with the available grenade technology without much jimmying around. Holding that single tether down firmly would keep the spoon from flying off, I think this would still be best as a crew served weapon, one to sling and one to pull the pin. As I understand it, the fustibal only took one swing to launch. To me that says fewer chances for the dangerous projectile to fall free or head in any direction but the one you want. I'll attach the one article I was able to find at a SCA site about the fustibal. So many things to try and so little time.

The Staff Sling: Guidelines for Construction and Use

This article is intended as an introduction to a missile weapon which was extensively used from antiquity until the high middle ages, notably by the Carthaginian, Vandal, Roman, Byzantine and other armies of the continent. This weapon was called the fustibalus (in Latin). To the right may be seen an illustration from a manuscript in the Bodleian Library in Britain, which shows maritime combat with the fustibalus. It is also mentioned in the Codex Atlanticus of Leonardo da Vinci, who experimented with various forms of it as an exercise in martial engineering.

The Fustibalus was about one meter in length, and boasted a range of some 550 feet! Accuracy with this weapon comes only with practice, and its use among the Romans was restricted to auxiliary troops for this reason. The trebuchet, a siege weapon much beloved by medieval engineers, was nothing more than an enormous staff sling that employed a counterweight for achieving torque instead of arm and shoulder. The missiles launched were, in antiquity, referred to as glans. These were clay and/or lead pellets, oval in shape and generally flattened. They often had the names of enemies, pictures of scorpions and other martial graffiti inscribed or molded on them. Those samples remaining today are about 1 1/2 to 2 1/2 inches in length and 1/2 to 1 1/2 inches in width. These glans weigh around two ounces, though examples exist weighing up to five.

So how do I make one? Take a rattan stick about 30-40 inches long and make a leather 'pocket' as shown in the diagram. By securing one end some 6-8 inches from the tip (with the thonging), you'll set the range of your particular sling. Remember, you're going to lay a slightly flattened, never round, missile in this pocket and swing the staff 180 degrees. The point of release, and thus the range, will depend on the length of the thonging holding the pocket. Only trial and error will help you set your range. The other end of the pocket MUST slip off the tip of the rattan smoothly - it may be necessary to smooth the place where it clears the end with some sandpaper.

Always use tennis balls for SCA combat which have been slit on four of their sides. You could even attach red/yellow streamers to represent the clay incendiary grenades the Carthaginians threw from theirs. Of course, you'll need to duct tape before slitting. Hope

to see you at the Siege!!!

Subject: Slings As Hunting Weapons

I would be interested in anyone's input that has had experience with using a sling to hunt with and/or target practice with. By sling, I mean the type David killed Goliath with not the wrist rocket type. Specifically, topics I suggest: What materials do you make your sling from? What length do you prefer (folded)? What technique do you use for throwing a projectile? Have you killed anything with it for food? Is it a weapon, in your opinion, that is hard to master? What are the pros and cons of it as a survival weapon, in your opinion?

Here is some of my experience with the sling. It is a weapon that is hard to master. I'm still not consistently accurate with it. It is an extremely powerful weapon, though. Once a friend of mine and myself were throwing spark plugs into the pines for distance (sorry, I know that's not that environmentally conscious. I don't do it as a habit.). I know we were watching them soar 50-75 yards or better. This was on an uncle of mine's property. I was there one day when he was cutting up a pine he had downed with his chainsaw. The chain broke while he was sawing it up. He rolled it over and a spark plug was imbedded up to the glass insulator! I have also split 1 inch thick pine boards with a stone a little smaller than a golf ball from 35 yards.

As far as length I like measuring my sling on the average from the heart to the end of my arm held out to my side (folded). I credit my friend, Robert Likas, with this measuring system. He is also who got me started with slings. Historically, for warfare, slingers carried a short sling for close range, a medium length for medium range and a longer one for distance.

For ammo, I choose stones that are round-ish, sort of egg-shaped with a flattish side. I lay the stone with the flat side flat in my sling pouch, not on its side as it would seem more natural to do. I have found the projectile to fly more predictably when loaded in this manner. Too flat of a stone will take all manner of unpredictable paths. I have seen flat stones take a 90 degree turn in mid-flight. I have also experimented with sun hardened clay. Robert Likas has experimented with fragmentation projectiles. He has loaded a piece of clay with buckshot and thrown it. When released the force of firing it from the sling it goes to pieces and has the effect of a shotgun blast.

Subject: Re: Slings As Hunting Weapons

I'm still catching up on this list after being out for a couple days. As a result, some of this may well have been covered by others already. However, I can speak from experience on slings, so finally something I feel I can contribute to. Matter of fact, Benjamin, you've probably read most of this over in the Thrower's list anyway. FWIW...

Been slinging, on and off, since the age of 7. In general, my slings (after the first one my dad made me) are made out of any material that will work. I like the thongs to be flexible

enough to roll up, but have used stiff thongs with success. Folded, I like my slings to be of a length to clear the ground when my elbow is at my side and bent 90 degrees. The reason is that my preferred throwing method is to load, lower the loaded pouch while keeping the thongs reasonably tensioned, then drop it so it swings back and on the forward swing whip it up and around my head. I may use only one swing, I may use several. I can keep it spinning around my head as I move for a better shot or as I wait for the target to get into view. Then I whip it hard around, and when my hand is beside my head, I continue forward to point at the target. The pointing releases the free end of the sling, and the projectile speeds to the target. The other end of the sling has a loop that I wear around my middle finger. The free end is held between my first finger and thumb as I whirl it.

My current slings use leather boot thongs and a piece of leather 2" x 3" for the pouch, with the thongs tied snug against the 2" sides. I've used both rectangular and oval pouches without noticing enough difference in performance to worry about it. I'm not sure, as I'm deaf, but I think that the ovaled pouches are quieter. Sometimes the rectangular ones seem to vibrate as I whirl them. I like the leather for durability, mainly.

I've hunted small game with it, birds, rabbit and squirrel mostly. I've had limited success, but haven't been using it with the aim of using it to specifically hunt with. If I were to do that, then I imagine I'd be able to bag game OK, up to the level of a fox. Beyond that, I don't know.

Of course, this depends on the range as well. However, I have sent a steel ball 1" diameter humming into a tree trunk some 80 yards away and had it hit with a very solid thud, so obviously the size of the ammo affects the range. (Sound effects courtesy of a very impressed group of people I was demonstrating to.)

It's not any more difficult to master than a bow, IMHO. I've said elsewhere that both the bow and sling are as easy to master, for one main reason: the bow allows repetition, but you tire after tens of shots while the sling isn't as easy to repeat the exact same motions with but you can practice so many more shots with it, and most anywhere.

As a survival weapon...only if you've spent time getting good with it. As with bowhunting, spearing, and other ilk, you need good stalking skills as well. If you work on your accuracy, then birds would be good game for this. However, other methods should be worked on first, as using a sling can expend a lot of energy that you might not be wise to spend yet. One reason I carry three slings with me in my emergency pouch is that they're fun to play with, roll up small, weigh nothing, and have multiple survival and emergency use. For example, I can untie the thongs and use them for snares, lashings, tourniquets, fishing, and so on as well as as a sling. (That's why I like to take more than one in my pouch.) Also good for keeping kids amused.

There are several ways to sling the stone, vertically vs. horizontally, or a combination. One or more rotations before release. What position is best for your release? There are a few variables, but if you work on one style and get good at it, then add an alternative

backup style, using a sling might be a good survival weapon. But it's not one of those weapons that is hard to learn, it just takes a lot of practice, which can be a lot of fun. Plus, it's easily made in the survival situation, usually.

As you say, they are immensely powerful. However, I challenge your statement that it's hard to master. I would counter that with the fact that I've taught several people to use a sling with reasonable accuracy (not hunting accuracy, though). Without seeing how you shoot it, I can't offer any tips, but I would suggest that perhaps you're trying too hard to control several variables. Your length seems a little long to me, and if you are slinging vertically, this could well be a part of your problem as you try to keep it from hitting the ground. I'd suggest shortening it to maybe fingertip to armpit and trying that for a while. Then gradually increase it back to the original size if you want to. You're splitting boards with it and all, so you do have some accuracy. Forget the accuracy, just get the movements down smoothly. Keep shooting like that until you can do it without any effort and still pay attention to just the placement of your first finger and thumb, or the angle of your elbow throughout the whole thing. Once you can do that and still hit within a 15 to 25 degree angle in front of you, then start paying attention to the various variables and work on accuracy.

As they say, learn the form first, then apply power. I also found that either horizontal spin or vertical spin have greater accuracy than a spin out of these axis. That is, a spin that goes by the ground beside you to over your opposite shoulder, for example, is going to be less accurate.

For height I'll go vertical, for left/right accuracy I'll go horizontal.

I've used ammo ranging from spherical to eggish, smooth to rough. I only avoid jagged ends that might cut my pouch from the force. I much, much prefer spherical ammo, I find it's much more accurate. Like you, if there is a flat side, I'll put that flat side against the pouch. But I would much rather shoot spheres and if I have to shoot one with flats, I'll try to find one with as many flats as possible on it. I have two gallon jugs left of my favorite ammo: steel balls, 1" dia., then after that I'll either get more bearings or start making clay balls to sling. But in the field, I'll pass up stones to find those that are as spherical as possible. I also like to put several small stones in the pouch and shoot them all at once for the shotgun effect. This is particularly good with birds and small game, but does need a little larger pouch than my usual one. I've not experienced the erratic flight paths you describe, but this may be due to my avoiding if at all possible ammo with flat sides. The release from the pouch imparts a spin of sorts to the stone, and this may account for your erratic flights. This spin isn't much, but with a flat side that could rotate towards the path of flight, that might make it plane off. Oh, and for size, I like them to be about 1" diameter, but no more than 1 1/2" diameter or less than 1/2" diameter, unless I'm "shotgunning." I think the smallest I've used, even when shotgunning, is 1/8".

Probably the most erratic flight I ever had was when I first started. I was shooting stones out into the lake, watching the splashes. I was working on getting the stone way, way up there so I could get a bigger splash. After a couple throws, I did one without any splash. Puzzled, I figured I'd missed seeing it and continued. In a couple minutes, my dad came

up to me and told me to move on down the lake or put the sling away. That stone I'd not seen the splash for had gone through one of his friend's windshield, about 80-90 yards...behind me.

The funniest flight I ever saw was my brother's first throw. My dad carefully explained to him how to use the sling. He put in a stone, whirled it around his head, and let fly, and hit the piece of wood floating on the lake dead on. Only one problem, he'd misunderstood something and had let go completely so the sling went with that stone. The look on my dad's face was comical.

I've also seen people shoot the sling, release it completely, and it gets tangled in a branch, hanging there with the stone still in the pouch!

Well, this is probably long enough. I can go into details if there are any other questions, either here on the list or via e-mail

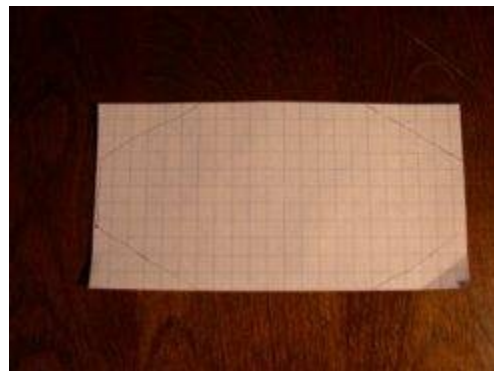
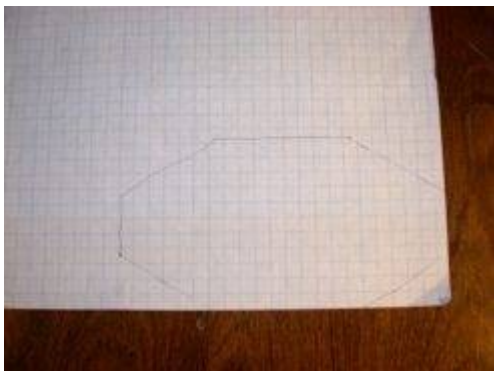
Making a Simple Sling: An Illustrated Guide

I get emails all the time from people wanting to know how to make a sling. Other people have submitted articles on braided slings, staff slings, and all sorts, but not specifically on a simple sling that anyone could make. This site has grown to be the definitive source of sling-related news, discussion, and information, but it lacked a straightforward sling making guide, until now hopefully. Enjoy.

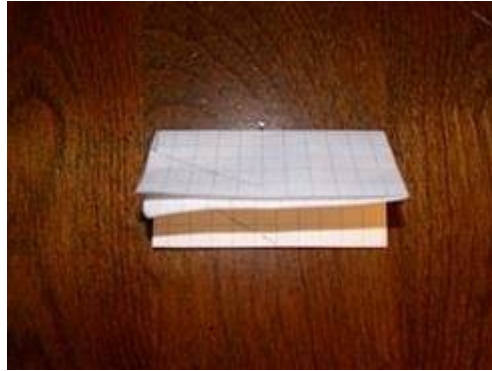
First off, you will need some material for a pouch. I prefer Leather. It's got a good feel, it's durable, and readily available. I'll be using a piece of scrap leather. You can use fabric, like jeans, but they tend to rip around the hole the cords go through unless you reinforce them.



To get a nice symmetrical pouch, I recommend making a paper template. I recommend using a piece of graph paper. First, I sketch out a rough pouch shape on the paper in the dimensions I want. Don't worry; it doesn't have to be perfectly symmetrical. Because it is on graph paper, follow the pattern and cut out a very crisp rectangle (keeping the sketch in it). I suggest people aim for a pouch about 5 inches wide and 2.5 inches tall.



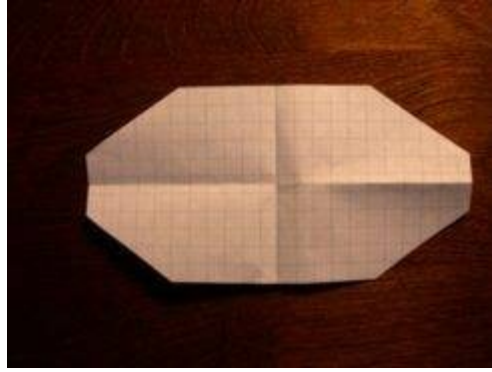
If you try and cut the edges off individually, it won't look as good and take far more time. The easiest way is to fold your paper in half twice, once one way and once the other way, much like how you make those paper snowflakes. You should be looking at one quarter of your sling.



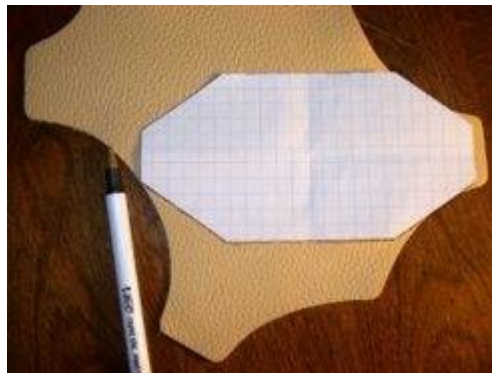
It should look like a rectangle. Find the corner that has four separate layers, each with their own corner. If you cut it in half diagonally (leaving a triangle), you'll have a diamond-shaped pouch. I recommend you cut off a triangle shaped piece from the midpoints of each side. Depending on how you folded it, you might still be able to see your original sketch, which can give you additional visual clues. Study the pictures if you are confused. It's an illustrated guide for a reason.



Unfold the paper. You should have cut off the four corners of your rectangle. You should have a great looking pouch template in front of you!



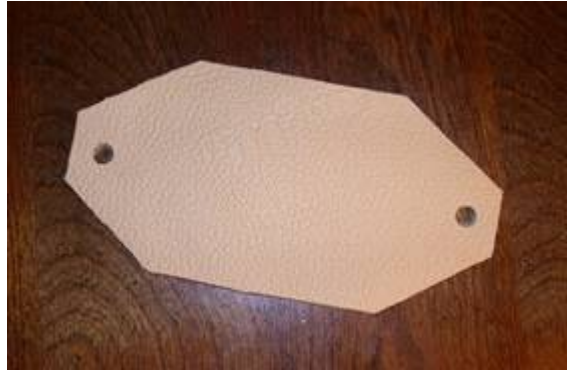
Take your paper template and lay it over your pouch material. Get a pen or marker and draw around the template. Don't get sloppy here. Take your time and make sure you keep the template in place. You should be able to draw all the way around to your initial point and match up exactly.



Remove the template. Voila! You're ready to cut out your pouch. I use regular scissors, but a box cutter would probably work too. You drew those lines on for a reason, so follow them precisely.



Now, we need to make holes for your cords to go through. You can use a leather punch or even a hole punch (for leather and other tougher materials, it will need to be pretty heavy duty). If you have neither, you can try making a hole with scissors. You want a nice, clean, round hole. The hole should be about a quarter inch in diameter and be at least a half-inch from the sides of the pouch. If you make the hole too close to the sides of the pouch, it might be too weak and rip. If you are using a weaker material, you might want to consider strengthening the hole by doubling over the material or reinforcing it with layers of duck tape. I'll let you be inventive.



Ok, we've got a very hansom pouch ready for cords. You can use lots of things for cords: Leather works well and looks traditional. Shoelaces are durable and you might have some old ones kicking around. Nylon rope is nice and strong. You can get appropriate cord from a hardware store very cheap. I like military surplus parachute cord. It's strong, flexible, and has a good feel. As for length, the general rule of thumb is the distance from your heart to your left hand (extended outwards). You need to cut two pieces of that length.



If your going with a synthetic cord, like parachute cord or nylon, I strongly recommend you melt the ends. This gives it strength, a better finish, and stops it fraying (it acts like those little plastic things on the ends of shoelaces). You can do this by exposing the ends to a flame (lighter, match, etc). You should see the material melt into a little ball. If it

catches on fire, blow it out quickly. Be very careful!! The liquidized material is very hot and will burn you and/or work surfaces. Also, the fumes are very toxic, so if you're going to do this, make sure the area is well ventilated. I take no responsibility for your actions. If you can't handle it, don't do it. This step is not necessary, just a nice finishing touch.



Ok, so we've got the cords ready too now. You're almost done. I like using a special type of knot pictured below to tie the cords onto the pouch. Study the picture a bit, and you'll figure it out. For people who've picked which side of their pouch is for the projectile and which is for looks, the picture below shows the inside of the pouch. You will need to poke the cord from the outside of the pouch into the interior (where the projectile sits). If your confused, or don't care which side is which, just thread it anyway you like.



You will need a loop on the retention cord. You can use something similar to a yo-yo's slipknot, or even a regular knot (like I have). Ideally, you want to be able to adjust it to provide a snug fit. When I sling, the retention cord is anchored on my middle finger. Some people use their index or ring fingers. Others have a big loop so they can tie it around their wrist. I urge you to experiment and see what feels natural for you.



Lastly, I recommend you put a knot on the release cord. Hold the sling in your hand, pinching the release cord between your thumb and index finger. Find the point where the pouch becomes level. Mark that spot with your finger and tie a regular old knot in that place. This lets you quickly slide the release cord to the correct level, rather than having to keep adjusting it so the rocks don't fall out.



And there you have it... your very own simple sling. This design has served me well for years and I hope it will for you too. I'd love to hear how you get on with it. Drop me a line in the forum.

La Honda Manchega (Sling in La Mancha)

Encouraged by the posts in the forum, I was trying to find what type of sling was used by sheperds to hit Don Quixote de La Mancha, in the inmortal book written by Miguel de Cervantes.

It's not easy. Nowadays, slings aren't almost in use neither in my country nor in my region. Shepherds lead cattle with the help of dogs and, in fact, most of them are not Spanish but immigrants: it's difficult to find the tradition on the slings in times of Don Quijote, or how shepherds usedthem.

I have found a good information in Montiel (Ciudad Real, Spain), a small village with a lot of history: many famous battles took place in it, one of which allowed Elisabeth to rise to the throne of Castile. This Queen, Isabel la Católica financed Christopher Colón's voyage to America.

Finally, I found D. Fernando. He is not like the well known Apache Grandfather, but old enough to remember the way shepherds used to sling when he was young, and gentle enough as to make one for me, to present it in this site. Here it is:



I see notable differences between all the usual slings I have seen and those of La Mancha:

- Slings “manchegas” are really big (long and broad): on handling one, one has the feeling of a weapon in the hand, not a more or less dangerous toy like mines.
- The material for the braiding was very varied, what they had near by, but fundamentally plant fibers like hemp or sisal, better “esparto” or “pita.”
- The retention cord is longer (120 cm) than the release one (100 cm), with no finger loop. The retention cord is hold rolled around the hand, as the picture shows.



- The missiles were rounded stones bigger then a tennis ball.
- The pouch (called “buttonhole”) is aprox. 17 cm long.

Some details:

- The shot is horizontal, helicopter, "because it is the form with which a major scope is obtained."
- Shepherds were taking their sling around the body, from the right shoulder down to the left hip, with a knot in the chest that could be released quickly.



- The one that I present in the photographs is done with plastic fibers, because D. Fernando had not esparto at home.
- The sling was used as a defensive weapon against beasts or people, more than to direct the cattle. Their principal aim wasn't hitting, but to scare the enemy and to dissuade from approaching the sheeps or cows.
- This kind of sling is reliable and shoots strongly. Although shepherds of the past have much more capacity in slinging than me, in my first shot I succeeded hitting in the center of an olive tree more than 80m away. I had heard in another village, El Robledo, that somebody had killed a cow with a sling ... now I think that it could be
- possible.

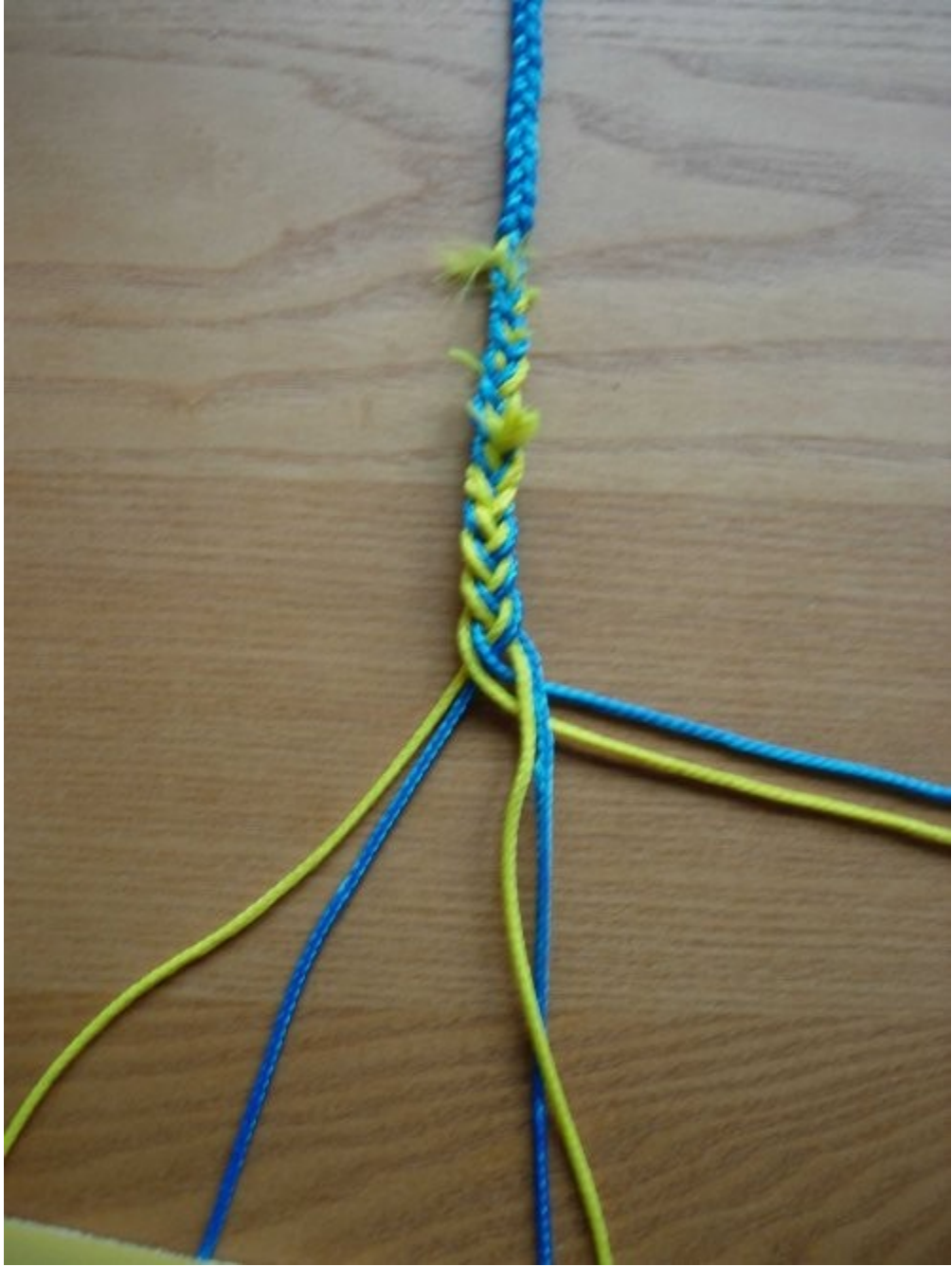
How they made slings:

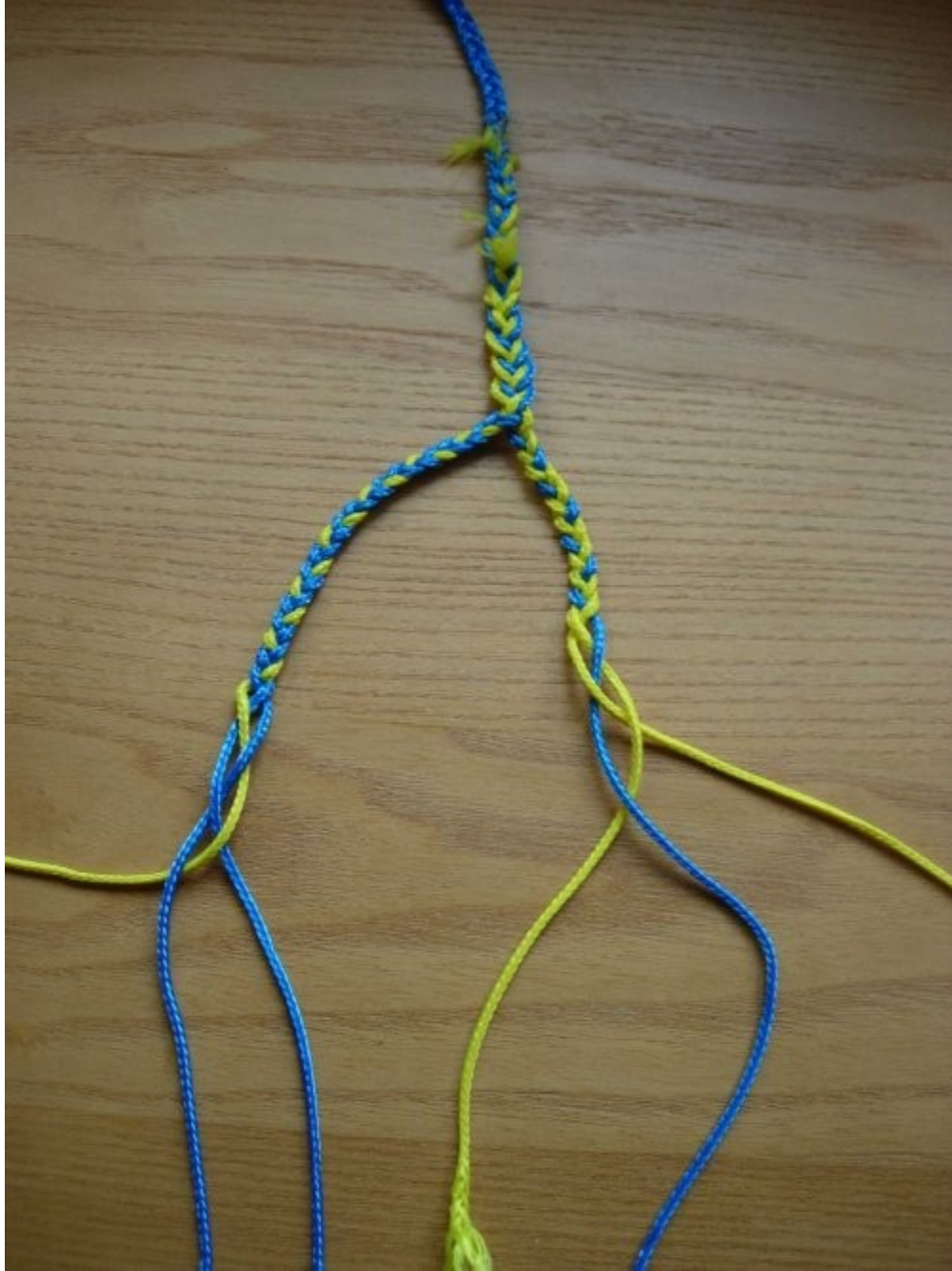
A picture is better than a thousand words. I'll illustrate the process with one made by me in two colours for better understanding (I hope). It's smaller than D.Fernando's, for my usual stones, less than a golf ball.

- Slings were braided. Usually they began knotting three strings (better, groups of plant fibers), and go ahead braiding. I have used 3x3m cords.
- On having come to the wished size for starting the "buttonhole", they added three short strings more (aprox. 30cm), to complete the pouch, so that each cord of it have the same width than the retention and the release ones.

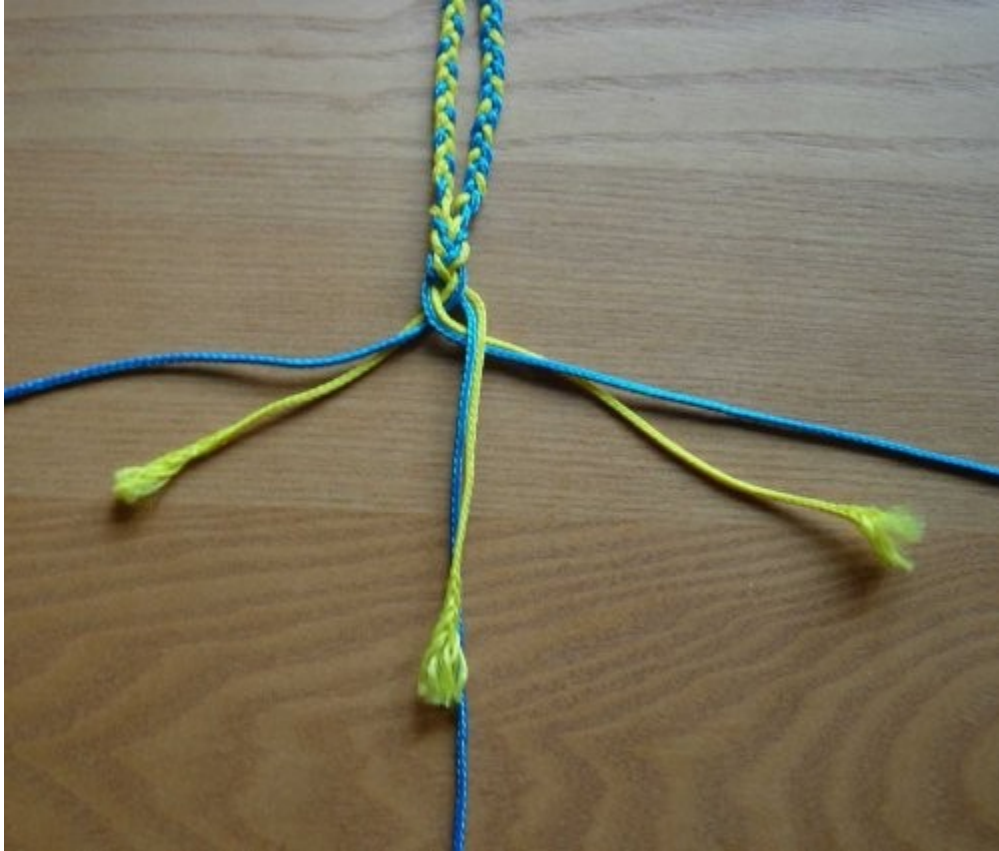








- Finished the buttonhole (aprox. 8cm), they continue as in the beginning.



- The release cord also ended with a big knot, as the first one.



Conclusion:

I have tried both (D. Fernando's and mine). Both are very comfortable and the retention cord never slides, and there is some difference between one and the other..



It seems to me that I am going to change the way I make my slings. With smaller slings as mine, I feel better grasping the cord in this other way:



Slinging Advice for Beginners

This article is intended to be a beginning guide to slinging. However, I will discuss not only slinging, but also sizing and ammunition. There may also be information here of interest to the non-beginning slingers as well as to beginners just starting out or seeking to improve their slinging.

The very first thing I want to say is that slinging style and sling lengths are very much a personal preference. You may like a longer or shorter sling than I, and you might find that you prefer slinging vertically rather than horizontally. That's absolutely great, I have absolutely no problems or issues with that. What's expressed here in this article is my preference, and I present it merely to help you with your slinging. I want you to take what I say here and adapt it to the way you discover you prefer to sling. My goal is to get you started in this fun and cheap sport.

I have been slinging, on and off, since I was about 11. As a result, what you read here works for me. That it also works for others is indicated by the following e-mail I received several years ago:

I tried your way of throwing a rock with my sling. I have a Goliath shepherd's sling made by Mr. Gudmundsen. He makes nice slings, and I thought that it was my homemade sling that kept ruining me, so I bought one of his. Well, your way worked fine, and the pointing release works great!! It should be a prized secret! I mean it was almost as accurate as my bow, and when a person slings, it looks like they're going to miss for sure. But the accuracy is surprising., and I'm hooked. Well, thank you again, and good bye!!

So, if you're having trouble with accuracy or consistency, or just getting started, this article may well be what you need. If nothing else works, give it a try.

There are several release styles that I've seen and discussed with others. Each style has its proponents, and each style, undoubtedly including mine, has both detractors and those for whom it doesn't work. The basic styles are underhand vertical, overhand vertical, and horizontal. Any slinging style can be placed in one of those three categories. Some people have mentioned a 45 degree plane they swing their sling in. I honestly believe that you should use either a vertical or horizontal plane, especially if you are striving for accuracy. I believe these are easier to gain consistency with, and consistency is the key to accuracy as you will see. As will become evident, I prefer the horizontal style, so all references to my way of doing it will be in reference to a horizontal, overhead plane unless I specify otherwise.

Before going into the release itself, let me describe the sling I favor. Some would say I'm cheap, but I've never seen the point of spending much money for custom braided slings. Some of these are works of art as well as being quite functional and I'd love to own one, but when I can quickly make a sling for under one dollar I just don't see the need. Especially with the constant wear and tear I subject them to and the fact that I'll give them away to people that are interested in maybe taking up slinging.

The materials for the thong can be just about anything and work. Either from always having used them or just because the idea of leather appeals to me, I favor leather bootlaces for my thongs. For the pouch, I prefer a leather rectangle. Two cuts in the narrow ends of the rectangle, tie on a bootlace to each end, tie a loop in the other end of one bootlace, and you've got a sling. It's as simple as that. Regardless, the criteria are that the thongs be flexible and comfortable to hand. The criteria for the pouch is that it be flexible, like the leather tongue of a boot, and not stiff like rawhide. Again, my preference is some material for the pouch that you can form a pocket in, either over time or deliberately shaping it to the typical ammunition you'll be using. This can be accomplished by finding a similarly sized ball, bearing, rock, or whatever, and storing the sling with that object in the pouch. Over time, the pouch will take on a dimple or pocket, of that size. Even if you use stiff leather for the pouch, an application of mink oil and wrapping it tightly around the ball over a night or three will result in a nice pouch with a pocket ready to receive your ammunition.

The length of the sling's thongs varies from person to person, mainly due to personal preference. However, there are situations where a particular length might be better, just as with guns where you have the pistol, rifle, or cannon. Keep this in mind as you make your slings.

My preference for sling length is that when standing with my arm hanging by my side and the elbow bent 90 degrees so that my forearm is parallel to the ground and my loop is around my middle finger with the other thong held between pointer and thumb, my pouch is just above the ground, maybe an inch or two. Sorry for that long sentence!

Like I keep repeating, this is a matter of personal preference, but consider that the longer sling means that when it spins around you, the pouch is going faster further out than if it were in closer. The speed of the missile when it leaves the pouch obviously has an impact on both hitting power and range. You'll have to learn whether you prefer a longer or shorter sling. They're easy enough to make, so you can have at least one of each size. ;-)

As mentioned, others have used both shorter and longer slings. Indeed, there is reference in antiquity to slingers having to get up on a stand of some kind to get their slings to clear the ground. There's mention of slings hanging 6' to 15' down from the hand when held like this. I'll provide some more information on this later, in the section on ammunition.

Ok, we've got a sling made. It's nothing more than two leather bootlaces tied onto an old boot tongue. One of the leather bootlaces has a loop in the free end. Now what? Let's start slinging, of course!

So, here's how I do it. With practice, you can easily put all your shots in a tight group on a target you select. I'd suggest starting with a close target, ideally a large paper sheet so you can see just where your shots are going through the paper. A piece of butcher paper 4 feet long, for example, should do well. Start at 50 yards, move in to 25 yards if you aren't hitting the paper at 50, then work your way back as your accuracy improves.

I start with my middle finger in the loop at the end of one thong, and grasp the other thong between thumb and index. I adjust the thong between thumb and index finger so that the pouch hangs down centered. I put in a ball and let it hang down by the weight of the ball, holding it up slightly to clear the ground. I whip it forward 45 degrees across my front and into an overhead, horizontal plane. At this point I'm twirling it around easily enough, maybe just a little faster than needed to keep it horizontal. I look at my target, then after 3 to 5 turns overhead, I suddenly whip it around one last time as fast as I can. As my hand comes around the side, I point my index finger at the target in front of me, at the same time releasing my thumb. It's pretty much automatic to release the thumb when you point forward at a target. You're pointing normally here, with the index finger pointing at the target and the other fingers curled shut under it.

Remember, your hand leads the pouch. For the length of sling I use, as mentioned above, when my hand comes in front of me, I point and move my hand at the target, pointing, as if I was going to poke it in the chest. That releases the thong at the right point for me that the vector is correct and the ball goes home. This is the crux of your slinging accuracy. Releasing when the pouch is moving past in front of you means it is going to leave the pouch on a path off towards your left (assuming it passes from right to left in front of you). The ball will leave the pouch in a straight line from where you release, off a tangent from the circle the pouch makes, not directly away from you. Thus, you have to release the thong before the pouch gets in front of you, not after it's already there.

Follow through, of course. Thus, as your hand reaches the end of its forward motion, you continue it on to the side, letting the sling fall to earth on its own momentum. Obviously, you never let go of the loop. :-)

Try that and see how it works for you. Most people I know that use slings and strive for accuracy seem to use some variant of that release. A lot has to do with the length of the sling. The shorter the sling, the smaller the distance the pouch lags your hand. So, with the short sling, releasing like this might be releasing past the point at which you need to release. This will result in the ball tearing through the paper to the left of the center (I swing right to left across the front of me). If the ball tears through the paper to the right of center, you're releasing too soon.

I hope this helps you get started and/or work out your accuracy. Like I said, there's no need to change the length unless you want longer range or are slinging in more confined space than, say, an open field or beach. Find out where you need to release, get consistent with that, and work your way back from the target. Eventually you'll find that point where you shoot best.

Now, I've used the horizontal style since I was a kid, a bazillion years ago. I found that for me, that gave me the accuracy I wanted so that I could hunt with it if I desired. I have not hunted with a sling, but in an emergency situation, I could easily make a sling and should be able to bring in some food if I couldn't locate any edible plants. It's a handy skill to have to fall back on. I have tried this method in the vertical plane, both overhand and underhand. Swinging in the vertical plane is, to me, awkward enough that I will do so only for amusement, such as seeing how high I can get a stone to go out over a lake. That is not to say that horizontal is the only way to go. I know slingers that use the vertical plane and also have good accuracy. As I keep saying, it's a matter of preference and what you are most comfortable with. If you're just starting out, try both horizontal and vertical planes and see which you prefer.

Ok, so what's next? Ammunition, of course. What's a sling without good ammunition?

Slinging is a personal sport, and the choice of ammunition can vary just as much as anything else here. There is no right or wrong choice, unless you're trying something too large or heavy for your pouch. Size can matter here, with my preference in size ranging from 1/2" to 3/4", but I also enjoy shooting up to 1" diameter balls. The type of ammunition ranges from steel bearings when I can get them, otherwise ceramic or clay balls or paintballs. Of course, smooth rocks in this size also work well. Yep, I did say paintballs. Admittedly they don't have the same mass as clay balls, ceramic balls or steel bearings or even rocks, but they do work and it's kind of neat to see them hit. I caution, though, that you not start with them, but rather start with more solid ammunition such as rocks or ball bearings. Paintballs do have some quirks when used in a sling, mainly due to their lighter weight.

While I don't recommend it, some ancients used to mix the brains of their enemies with clay and make their ammunition that way. There were various reasons for this, one being that it made the balls more lethal to the enemy and less so to friendlies. Regardless of the reason, clay balls have been shown to be quite lethal in antiquity, and therefore is indeed a good ammunition choice. They're also quite cheap to make and much easier to obtain than trying to find a good rock in the field. In addition, they're quite environmentally friendly if you tend that way.

Of course, you've noticed the possible difference in the ammunition weight in my listed preference above. It should be quite obvious to anyone that has been around clay and metal that a 1/2" diameter steel ball bearing and a 1/2" clay ball will have one significant difference: weight. Weight does have a vital role when it comes to selecting the ammunition to use.

When I refer to weight here, keep in mind that I've not used scales to weigh my ammo, but rather I pick up a stone, decide that's too light or heavy, and go from there. By this I mean I am going from feel, admittedly based on experience. That said, here's some comments based on my experience.

I'll definitely second the idea that there is probably no optimum weight for sling ammo, unless you qualify that by two things: range and personal taste. Ok, three things if you include the sling itself, but that's a given.

I don't think there is one optimal ammo weight per sling length since I could perhaps get better accuracy and range out of a larger or smaller weight than someone else of the same height, sling size, etc.. Rather, I tend to the idea that a sling of x length has an optimum ammo weight range of y to z grams/ounces/whatever. A lot of it has to do with my being able to shoot a range of ammo weight with comparable accuracy. This range doesn't vary over a large amount, granted, but it doesn't seem to be tied to any one weight being any more accurate than another in that range, either.

I do think that the weight does have some correlation to sling size. While I've had reasonable success using the same weight in either a long or short sling, I've found that as I reduce the sling's length, there comes a point where I need to switch to a lighter ammo weight. It seems to be a matter of being able to control the stone while spinning it and releasing it. Too heavy a weight can pull the sling forward and produce some slack when you try to catch up.

Obviously, the larger the sling, the greater the pouch and the more sturdily the entire sling can be constructed. There are, as I've briefly mentioned before, slings in a wide range of size, doubled and ready to load measuring anywhere from the length of the slinger's forearm from elbow to fingertip, all the way up to tens of feet in length. I've seen some reference to even larger slings, but have never really followed up on them. Let's call the larger ones over, say, 6 feet mega-slings, a term used on the slinger list years ago.

As to the mega-sling... I can imagine the damage ammo could do from a sling of this size, especially if it's on the order of:

"Sir, what's my target?" queries the slinger.

"Oh, anyone in that group there." the Officer says, pointing.

"Aye, sir." The slinger nods to his loader, then grunts, gets going with the help of his loader, visually grabs pre-determined landmarks while he spins around, takes one last look, spins really fast, and lets fly. He watches the 2+ pound lead ball sail into the enemy group.

"Good shot! Carry on." applauds the officer as he walks off.

"Damn! I only got 4, and those were 20 feet to the left! Grumble." mutters the slinger inaudibly as he dizzily signals and the loader loads up the next ball.

That picture aside, I wonder just how long a sling can get before it becomes unmanageable. This has got to be a correlation between the slinger's height, his build/fitness, and his skill. With me being 73" tall, I should be able to handle a mega-

sling, either on the ground or on a stand, but only with a weight up to some top value right now. Later on, maybe a heavier weight will be just as accurate as I gain greater control through experience.

Now, if I increase ammo weight and sling length gradually so not to lose control, what is the theoretical maximum sling size? At some point, the weight of the ammo can't be increased if only because I won't be able to stand against it. Just like the hammer or ball and chain throws, you can only control up to a certain weight before it pulls you around.

Also, at what point will the length of the sling cause loss of control? At some point, you will be unable to launch the pouch into the spin. Even assuming you have a loader and starter, there comes some point where you just can't get momentum to get the pouch going. One possible way to handle Extreme Mega Slings might be to use a sling of the maximum size you can keep twirling, and start short on the thongs. As you get it spinning, you gradually feed out the thongs until you reach the end of the thongs and the maximum sling you can keep airborne. Of course, something like this will cut down on the maximum ammo weight you can handle otherwise. Would there be any advantage to this over a starter, possibly a shorter sling and heavier ammo?

Now, think about this: historians argue that Alexander's slingers had a 1/4 mile range. I know where I'll have to practice then! And with my truck parked in a gulley or some cave until I learn to aim that sucker! :-)

Hmmmmm. If I stand on the edge of a cliff, and by rocking the sling back and forth...nah, there's that over the head part. "Look out below!!!!" Thunk. "Oops." ;-)

Getting back on topic and off experimenting, I don't really have anything tied to measured weight, only to size. Now, let's get back to examining ammunition. How does shape come into play?

The one thing I will say about accuracy is that after a few shots, ball shaped ammunition is consistently accurate. This seems more a result of technique and aerodynamics than weight.

Weight comes into play more, in my opinion, only with respect to hitting power. Of course, weight does come into play when it comes to range, as well: more mass, greater distance. The counter, though, is that the greater the distance, the more difficult spot-on accuracy is to attain. At extreme ranges, the heavier ammunition is more effective, providing more mass for the longer flight. Remember, once in motion, mass prefers to remain in motion and the more mass, the harder it is to stop. Heavier ammunition typically also does more damage when it hits than lighter ammunition.

With that background, as mentioned above, my preferred ammunition is spherical with a diameter of 1/2" to 1" (inches). I have shot larger and smaller items, and non-spherical items, but find that for me this range seems to work best. My accuracy is consistent when

using spherical ammunition, and degrades the further from spherical I get. That is, of course, to be expected.

I have shot assorted items that might give you some idea of the weights involved to tie into the ranges (I'll that cover next). I like the ceramics and the ball bearings best, when I can get them. Of those two, I like the ball bearings better. I have made some clay balls and shot them with quite satisfactory results. I have also shot mouse balls (US computer mouse balls, I understand European mouse balls have a lighter weight but have not had the opportunity to verify that).

As to range, as should be expected, it varies. When going for distance, I have shot 1" steel ball bearings 128 feet consistently. This was without any attempts at accuracy, just to see how far I could shoot them. They were probably landing in a 6 foot diameter circle, if you want to group for accuracy. In general, I've not really tried to shoot any targets beyond 64 feet. At that range, when trying to be accurate, I would estimate that my accuracy would be a grouping about 1 to 1 1/2 foot diameter. At 32 feet I usually generate 6" groupings.

A word on safety, now. As with anything, when you first start slinging, you want to be in an area where it doesn't matter where the stone goes, so it's not going to damage anything. You also want to practice at first in an area where it won't matter if you lose sight of where you're hitting. Take it from me: early on, around 11 years old, I was happily slinging on the beach and wondering why I wasn't seeing any splashes out in the lake. My dad finally came up to me and told me to quit. Why? I'd busted a windshield in a truck in the parking lot some 30 yards away, behind me.

I hope this is of some use and helps to answer the questions you as a beginning slinger might have getting started in this sport. As I continually reiterate, much of the selection of materials, sling length, style, and release is simply a matter of taking physics and your preferences and mixing them. The idea is to find what's comfortable for you, what works for you, and to find what applications of the variables best suit your style and needs.

Slinging Styles

A picture paints a thousand words and a video helps save a lot of typing!! I hope this helps a lot of people, new to slinging, find it easier to learn this somewhat challenging art. My motto since taking up the sling is: "I'll bet you can't sling just one!" Many a time I have said, "Just one more", only to miss the mark and have to try again.

I make no claims of being an expert since I slung my first stone just six months ago in August of 2003. After reading many descriptions of different styles, I decided to make some videos not only to help new slingers, but to also allow some of the more experienced people critique my slinging.

As most will admit, the best thing to do is to get out there and sling a lot of stones. After doing so, the comments made here will make more sense. You will all find a style that "feels the most comfortable" for you but, if you sling enough, you will also learn that some styles work better than others for specific applications. Just as an example: if you are slinging at a close target near the ground, you will probably find the underhand release more difficult due to the fact that the rotation of the stone is from a low point moving upward. This will make your shots tend to rise from the point of release and thus, if your target is on the ground, the stone will tend to go high. However, if you used the overhand release, your shots will be coming down onto the target, making it easier to hit.

Keeping in mind that these are my "non-expert" comments, let's mention a few beginning pointers and then look at some videos.

Helpful Hints

Before you put a stone in the pouch, try a "dry run" first. Go through the motion of slinging in slow speed to get the feel.

Use a stone that has some weight to it. I find that billiard ball size stones work very well to give you a good "feel" for the stone and where the pouch is during the spin. Lightweight stones make it hard to sense where the pouch is, and when you should make your release.

Throw lightly at first for the sake of safety and your arm muscles.

1 - Greek Style Overhand Release

The term "Greek style" comes from the discovery of a Greek coin bearing the image of a slinger. The hand holding the pouch is pointed at the target in a stationary position. The hand holding the sling is near the slinger's head. The stance and hand positions look similar to an archer ready to shoot.

Since this style uses no rotations to build up momentum, you will notice the movement of the left arm to the right and then back to the left. This movement gets the pouch started in the direction of the swing. Notice that as the pouch comes back to the left and is pointed at the target, the wrist slightly turns and "flicks" the stone to the left. From there, the throwing arm begins to move and keeps tension on the cords. You always want the cords under tension for a smooth motion.

Think about what it is like if you get a lot of slack in the tow line when water skiing. You lose momentum, and when the line snaps tight it is either ripped out of your hands or you end up on your face. Keeping tension on the cords helps to insure a smooth motion and also keeps the stone securely in place.

The motion of the right arm will vary from person to person, but keep these thoughts in mind:

1. The more you come straight down over your head, the less variation from left to right your shots will have. In other words, you will tend to miss high and low rather than left or right. I find that the more "over the head" I throw, the more accurate I am, however; it puts a bit more strain on the shoulder and I do not have as much power for long shots. (50+ yards)
2. The more you go off to the side of your head, the more variation you will have left and right of the target since that is the path of your throwing arm.
3. Leg motion. I used to pitch in baseball so the leg motion I use feels natural and adds to the power. You can vary the leg motion or keep them fixed but it will affect your power.

One last point: stepping straight at the target helps my accuracy.

Oh yes, do remember to let go of the release knot!! A few slow practice slings will best explain when to let go.

Also remember, the speed you are throwing at will effect when you need to let go. Only practice can teach you that. I find that I am more accurate when I sling at a slower speed. Slowly speed up your motion as you learn.

2 - 3/4 To Side-armed Release

This video is very similar to video # 1. The difference being that this is more side-armed. It may take several viewings in slow motion to see. The throwing arm goes out more to the right and may be a more natural feeling motion. You may even want to try going totally side-armed or horizontal with the arm motion. I have more power using the 3/4 motion. Remember, your shots will have more left or right variation than the motion in video #1

3 - Greek style: Underhand Release

You will notice that I bring the pouch down and then up in this motion rather than from right to left. The reason I do this is because, with the underhand release, you want the swing to be more vertical. This motion starts the pouch in the right direction.

As the left hand comes back upward, you lightly toss the pouch up and the throwing hand takes over from there. Most likely, you cannot come straight down without swinging the sling into the ground. You will have to swing it out to the side somewhat, especially with longer slings. You will probably sling the fist few stones straight up in the air until you get the feel for it. As in the overhand release, you can also swing your arm out to the side more. Try different angles to see what works best for you.

4 - 45 Degree Rotations with Overhand Release

Here you have the throwing arm gently rotating the sling at a 45 degree angle and off to the right side. From what I have read and experienced, the last rotation is where the power comes from. The purpose of the first 2-3 rotations is only to set the sling in motion and to give your mind a feel for the weight of the stone. You do not need to spin the sling very fast except on the last rotation.

On the last rotation, your arm will make a wider sweep back to set up the throw. If you watch the video in slow motion you will see this. For me personally, I find that the added motion is more difficult to control as compared to the stationary style.

I use this rotation style when I sling heavy, fist size stones a long distance, or if the sling length is too long to stretch out between my arms. Any sling longer than 37" is too long for me to use the "no rotation" style. I cannot get enough momentum going without 2-3 rotations.

5 - Straight Back, Vertical Ration, Overhand Release

I included this video just to see if anyone else has tried it and to make an observation. Rather than rotating the arm off to the side as in video 4, the arm is held straight back,

and the rotation is completely vertical to the ground.

The last rotation must swing back and out to the side exactly as the 45 degree rotation style in video4. You have to do this in order to make the transition into the overhand release. It feels a bit awkward, but I have noticed that it causes the sling path to be more "over the top" and thus I have less right and left variation. Has anyone else tried this?

How to Sling Underarm and Overarm

How do you use a sling?

Two common and easy ways will be briefly discussed here, although there are many other styles.

- 1) Slip the loop onto your middle finger and place the release cord between your thumb and index finger. The sling should be hanging down, but your palm should be facing up.
- 2) Now you've got the sling ready to go, place a rock in the pouch. The rock should be of a dense material and be no bigger than golf ball generally.

Underhand Method:

3) This method is basically a softball-like pitch. Swing the sling back and forth until you feel there is enough momentum to complete an entire loop. In the underhand method the rotation should come from your knees, up in front of you, then over your head, then behind you. When the sling has rotated back to your knees, lift up your thumb and the rock will fly out.

Overhand Method:

3) This method is basically a baseball-like pitch. It is a rotation of the shoulder and elbow. Swing the sling back and forth until you feel there is enough momentum to complete an entire loop. In the overhand method the rotation should come from your knees, up behind you, then over your head. When the pouch circles over your head, lift up your thumb and the rock will fly out.

- 4) The projectile will fly out tangentially from where it was released.

It takes practice to learn the correct release time, but once you have consistency, it is easy to master the sling. Underhand is good for distance, but you lose accuracy. People can throw rocks 400+ feet underhand with little effort. Overhand is generally better for close range, sub 150 feet. As for rock sizes, people use different things. Golf ball-sized rocks feel good as the additional weight allow you to feel the force on your hand and therefore have a better understanding of where it is going to "fly". Often slingers make up for the lack of weight by doing grapeshot. Slinging grapeshot basically means piling in as many pebbles as the pouch can hold and launching that. This way, your target area is littered with a spray of rocks, making it highly effective for "light" targets.

Blowguns



Demo of Blow Gun in Ocanaluftee Indian village, Cherokee, NC

A **blowgun** (also called a **blowpipe** or **blow tube**) is a simple weapon consisting of a small tube for firing light projectiles, or darts. The wielder blows into one end, forcing the dart out the other. Its propulsive power is its user's respiratory muscles.

Sometimes, for increased effectiveness, the dart is tipped with a poison, most famously curare.

Many cultures have used this weapon, but various indigenous rain forest tribes in South America and South East Asia are the best known wielders. Blowguns are very rarely used by these tribes as antipersonnel weapons, but primarily to hunt small game such as monkeys.

North American Cherokees were known for making blowguns out of river cane to supplement their diet with rabbits and other small creatures.

Today's modern man uses the lung-powered blowgun with tranquilizer darts to capture wildlife or to stun caged dangerous animals. Herpetologists find the blowgun extremely useful in capturing elusive lizards with stun darts. Today, many people are finding that blowguns offer quite a challenging sport. With different darts to choose from, blowguns are finding their way into everyday society. With the introduction of paintballs and stun darts, the blowgun offers a wide variety of sporting activities.

Some modern blowguns have removable sections, and as a result, paintball adaptors have been made so that people can use blowguns as back up weapons. Some may even play it similarly to slingshot paintball.

In the beginning blowguns were made from bamboo or other hollowed out sticks of wood. North American Cherokees were known for making blowguns out of river cane to hunt for rabbits and other small creatures. As crude as these primitive weapons were, they were also extremely accurate.

No one knows exactly where blowguns originated; however, it is generally believed that they appeared simultaneously throughout many parts of the world. The earliest evidence of blowguns dates back thousands of years to parts of Africa and Asia.

In the America's, blowguns have been used for several thousand years by Native Americans as survival weapons. They were also used as far back as the year 1500 by the Ninja in Japan, for silent assassinations.

As a primitive weapon, there were no set dimensions for a blowgun's length and diameter. However today, most modern blowguns typically come in two sizes:

The .40 caliber blowgun measures 3/8" in diameter, and
The .50 caliber blowgun measures 1/2" in diameter.

These measurements are based on the "inside" diameter of the blowgun tube.

In recent years, **blowguns** have seen a resurgence of popularity here in the US as well as other parts of the world.

Blowguns are used to help maintain wildlife by delivering tranquilizer darts in complete silence. The animals can then be studied and released back into the wild.

Many people are also finding that **blowguns can offer quite a challenging sport.** With different darts to choose from such as soft-tip darts, stun darts, and even paintballs, the blowgun offers a wide variety of sporting activities.

There are several competition styles of blowgun practiced around the world. A standardization of competition is being pursued by the International Fukiyado Association, and has high hopes of becoming an Olympic event. It is a 10-meter target shoot, using a standardized barrel caliber and length, and a standardized dart, as outlined by IFA.

Two other styles are also being pursued to make up the Olympic blowgun event. The Field Style competition is where the shooter runs from a starting line to a target lane, shoots, and retrieves the darts, and then continues to the next station. The course length varies from 1/4 mile to 1/2 mile or longer, with a number of targets at various heights and shooting distances.

The final style is the Long Distance target shoot. The target is a circle that is 24 cm in diameter, and the firing line is 20 meters away. Each shooter fires three darts, and at least one dart must stick in the target. All successful shooters move to the next round, moving back 2 meters each time.

AVERAGE LENGTH ACCURACY AND VELOCITY FOR MODERN BLOWGUNS: (these are averages based on an adult shooter with normal lung capacity)

To make this blow gun you will need.
a 4-5 foot piece of 1/2" copper water pipe
Some coat hangers or thin brazing rod(brazing rod preferred)
a role of 1/2 inch masking tape
Sand paper and a round file
some graphite powder(optional)
a set of good lungs

- 1) First take your pipe and cut to desired length that is manageable to shoot with.
- 2) Clean of the burs on the ends with a round file and sand paper.
- 3) Cut coat hangers or brazing rods into 4" pieces and file one end of each to a point.
- 4) Take masking tape and turn it on to the dull end of each piece of rod until it barely fits into the copper pipe, a little loose is better.
- 5) You can put graphite into the pipe to make the dart slide better but check your lips afterwards to make sure you don't have a ring left over afterwards. :0)

If you practice with these you get very accurate and the power depends on how hard you blow. They are hard to pull out of a wooden target and will be perfect for taking out small birds,grouse or squirrels at under 10 paces.

Hunting With Blowguns

Do you or anyone know what poisons were used by primitive people and how the heck it was manufactured?

I've read about various toxins used by aboriginal peoples for various purposes, such as the strychnos toxifera plant that is the source for curare, and using certain plants as fish toxins in fairly sluggish pools of water(I believe it was walnut hulls), but as for having actual experience in using them I have to say no. If I were to use a poison for hunting larger game I would probably turn to the most readily available vegetable toxins or nicotine sulfate from a concentrated tobacco slurry. Nicotine attacks the nervous system of the animal and would cause death after a short time from a fairly minor wound. I would have to really work on my tracking skills though. I would also cut out the meat immediately around the dart wound to reduce the amount of toxin ingested

Subject: Re: Blowgun poisons

In Panama, we have many species of small brightly colored flogs called: "Dedrobates" (sp?). They are also called "Poison Arrow Frogs" They exude toxins from their skin when they get upset. You can play with them in your hands if you do not crush them or eat

them. The natives put them on a hot stone to make them mad, then, they rub their darts on the skin to make really potent darts.

The natives in Panama also boil a vine that grows at the edge of the rivers and dump the "tea" into a slow stream. For some reason, the "tea" is a toxin that prevents the fish from getting oxygen to their gills and they float belly up. I found that M-80s and hand grenades were more effective means to catch fish and were probably more environmentally friendly as well.

Subject: Re: Frog blowgun poisons

I know that the common northern toad, *Bufo americanus*, also has poison glands on it's back, although much less toxic. Does anyone know about this poison and how potent it is? I don't think it's strong enough for blowdarts, but I would like this confirmed.

Subject: Blowguns: Construction & Usage

To continue the discussion from the thrower list, I've used blowguns for some time. My favorite blowgun is a short 4 feet long and .625 interior diameter. After reading Laubin's book and reading a few other sources I tried to recreate the Cherokee darts. I don't quite have the wind to send a two foot dart enough distance to be useful, but a 10 to 12 inch dart works out just fine. I also like paper cones as a bore seal. Mostly, other than target work

The .625 blowgun is sold by J.W. Mcfarlin Co.; P.O. Box 209; Lake Havasu City, Az 96405-0209. It is supplied with nail and fairly thick wire darts with plastic cones and injection molded stun darts that work very well to chase pests and can be very interesting for games of bug tag. They hit hard enough to create an inch wide welt, or stun/kill birds up to the size of a starling. For those not of the techno-primitive bent it would be fairly easy to cobble up darts of dogwood shoots, dowling, or splits from suitable wood (with a froe or other similar tool) Birchbark would indeed make an adequate replacement for paper with pitch for glue. Still if I were to turn to gathered materials, I would probably make them much as the Cherokee, and Creek Indians did with thistle down tied on with sinew or fiber cordage. If you are lucky enough to live in the Southeast there is river cane.

Elsewhere you might turn to a straight sapling of another type of about one inch or so in diameter at its narrowest point. With the cane you bore your way through or grave and split then scrape out the sections, and then glue and bind together. With the sapling you will have to split lengthwise through the center and then scrape out your channel through the center in whatever diameter you want. I would advise about .50 inch inner diameter or perhaps slightly bigger. I have no local sources of cane, and so rely on neo-primitive sources such as the hardware shop for sources of hard copper, steel, or aluminum tubing.

For a mouthpiece I use either cane tips or stool leg tips and hot glue them into place. I rely on dowling or bamboo skewers in about 1/8 inch in diameter and either tied on cotton or acrylic yarn to fletch the dart. The tips are scraped to a point, and will penetrate card board or other fairly soft targets.

My sources of information for my blowgun studies are

A SPORTING CHANCE by Daniel P Mannix (1967)

AMERICAN INDIAN ARCHERY by Reginald and Gladys Laubin(1980)

AIRGUN DIGEST both the first and second editions

WOODSMOKE compiled by Richard and Linda Jamison(1994) has an article by Steve Watts titled "The Ultimate Weapon-The Southeastern Indian Rivercane Blowgun" They also have an article on the fire piston.

BLOWGUNS THE BREATH OF DEATH by Michael D. Janich(1993 Paladin press) with a dramatic title but actually has a pretty solid description for the neo-primitive that wants to make a blowgun.

I've seen Laubin's book at local bookstores as a new release paper back. Neo-primitive is my own label for people using primitive techniques today but not necessarily with traditional materials.

Subject: Re: Blowguns: Construction & Usage

A short passage on Amazon blowgun construction from a travel diary-like book by a college professor from Ohio ("Don't Drink The Water," by Ida May Sonntag - 1980). She details her experiences during vacations and sabbatical leaves:

"The people along the river are largely of Indian descent. I was able to barter for a Zarabatana (blowgun) with a member of the Maku tribe. This weapon is a simple yet precise hunting instrument. Only small game is hunted and contrary to popular belief is not used for warfare. The shaft is made of pachuiba (palmwood) while the mouthpiece is made of Brazilwood attached with a tree resin. Dart cases are made of woven palm strips and the darts are made of palmwood with wild kapok cotton stabilizers. With practice the Indians can hit small birds at 100 ft."

Note: The site, about 11 mi. from the Amazon, along the Rio Negro river, near Manaus, Brazil. From the books cover jacket photo: Three Indians wearing long red-orange and yellow feathered headdresses. A man and boy shoot at some target with their blowguns, while a second man sits with his blowgun over his shoulder, watching them and the photographer. The blowguns are blackened, of large caliber and appear to be approx. 6-7 feet in length. Each has a cylindrical woven dart case, appearing much like an archers quiver and hung around their neck by a tripled section of medium weight cordage. The dart cases hang down in front to their waists. The darts are approx. 18-24 inches in length and are about as thick as pencils. The darts extend above the top of their cases about half their length exposed. Each appear to have about 10 or 12 darts. They are gathered in a

rain forest village in a forest clearing with a thatched open air long-hut (with hammocks hung inside) behind them, next to a stand of banana trees.

Subject: Re: Blowguns: Construction & Usage

OK, since blowguns have been ruled acceptable as a topic, here is my blowgun recipe. Go to your friendly neighborhood hardware store and buy a 5 foot length of aluminum electrical conduit with an inner diameter of 3/4 inch (I use 1/2 inch and it works just fine.) File the ends smooth so you don't cut your mouth. A mouthpiece isn't necessary but feel free to improvise. For darts, I use music wire (thin steel rods) from the hobby shop, although finishing nails will work too. Cut 4 inch lengths and sharpen. For fletching, wrap a piece of paper into a 45 degree cone and tape. Stick the dart through the apex of the cone and tape in place so that the cone is at the back of the dart. Drop the dart point first into the tube and mark with a pencil where the tube meets the paper cone. Remove the dart and cut off the excess paper so that the dart just barely fills the tube. The paper fletching will tear apart after a few shots. Try using a disc or cone made of nylon or some other sturdy yet flexible material.

There's not much to technique, point and blow. One variation is to push the dart a few inches into the tube, block the tube with your tongue and build up pressure by blowing with the tube blocked.

Use your chest muscles to pressurize the air in your lungs then quickly pull back your tongue, releasing the trapped air at once. I haven't had much luck with that technique. It causes a jump which spoils my aim although it does seem to increase power if you can manage to pull back your tongue quickly enough.

With little practice, you will be amazed at how accurate this primitive weapon is. I would practice indoors by putting an empty coke can in one room of my apartment and shooting at it from another room, as far as I could get away from it in my small apartment. I rarely missed and my shots usually penetrated both walls of the can, being stopped only by the paper cone being dragged into the entrance wound.

Feel free to edit this and stick it on a webpage.

Thanks Ralph, for such a great post. Perhaps others could continue on the same subject?

On a camping trip, I once made a blowgun from an old ski pole I found in an abandoned

hunting camp, with a wooden mouthpiece fixed in place with melted spruce gum and lard. Darts were made from the wooden skewers I was carrying for shish-kabobs, the ends being wrapped with cotton swabbing from the first aid kit which I dipped in flour/water glue from the bannock bag. Worked great!

I have also made one shot darts with cotton balls by only licking the dart shaft and then wrapping the cotton around the dart shaft. Many types of wood slivers will work as darts. And if you have cordage, even lightweight cotton string, then there are many fletching materials you can use. I have used many plant fluffs, small bird feathers (fluffs or tiny feathers that have to be spiral tied in layering each row from the bottom up where they lay over each other tied at the top and loose and overlapping toward the bottom of the dart. My favorites are thistle down and turkey leg feathers.

I bought what I thought was an old South American blowgun two years ago. The blowgun was only 5 foot long and the central hole was quite large compared to other blowguns in my collection. It came with a beautiful primitive woven bag that was full of clay pellets about the size of a large pea. I guess the South American Indians must have shot and stunned small birds with the clay pellets to obtain feathers for their arrows, headdress, etc.

That's true, I've done it with a plastic stun dart that is essentially a ball ended dart. It will knock a bird the size of a starling or Black bird out a tree, and stun it enough to allow you to pick it up. "four and twenty blackbirds singing in the pie"

I've had some experience with this. A properly made wooden dart is just as effective as any other projectile for hunting small game and some medium game, such as opossum, raccoon, fox, (though I would probably only go after medium game under true survival conditions) A wooden dart made like the Southeast Indians did is what I'm talking about with the darts about 1 foot to 21 inches long and about 1/8 up to 3/16 inch in diameter. A complete description can be found in AMERICAN INDIAN ARCHERY by Reginald and Gladys Laubin. I believe that Benjamin Pressley also has some material on these sort of darts. The steel wire darts are great for practice, and familiarization and will also kill game, but they make a narrow wound channel and sure take their time killing. One guy I read about got around this by making his steel darts about 10 inches long and would pin his game to the trunk of a tree. The ball stopper kept the game from getting away until he could get in close to finish it off. I'm a bit more squeamish than that and prefer wooden darts for a quicker finish. Poison is another avenue, but really not necessary for small game use. Read also A SPORTING

And there was a tale going on during Viet Nam about some of the folks in the area tying a piece of yarn to their darts. It seems that they were bagging monkeys with a poison that wasn't quite instant acting. They needed to slow the monkey down or it would run off into the brush. The dart would be shot at the monkey's abdomen and at the pain the monkey would look down, see something poking out of its tummy and try to poke it back in. Seemed to occupy the monkey while the poison did it's job. I'm not at all sure of how true the story is, but it was kinda fun.

The blowgun, at least the primitive one I have made and used from cane like the Cherokee used, is used mainly for hunting small game. I have hunted squirrels and birds mainly. Darts 6 inches long fletched with thistle down or feathers are more than adequate for going through a small animal's body. There are accounts of the Cherokee hunting deer, though by going for the deer's eyes, blinding him, chasing him down and finishing him off. North American primitive peoples have used blowguns for thousands of years for hunting small game successfully without poison tips. Now, in South America they use poison tips for hunting monkeys, but that is because the monkey has a more complex nervous system and requires the addition of poison to the tip.

I can send you some info on making and using blowguns, if you like, just let me know your snail mail address and help me out with whatever copy and mailing costs I have. I also will be teaching a class on making them next year in the Charlotte, NC area, if you're interested. Get on our mailing list to keep posted of when our classes are, if you like.

My wife's tribe(Creek/Seminoles) used blow guns until Indian removal around 1830's. Some kept up the usage in Oklahoma but it is pretty well gone now. The key was the poison you put on the tip. Lots of other aboriginal groups in central and south America also used blow guns.

Subject: Re: blowgun Construction

Go to your friendly neighborhood hardware store and buy a 5 foot length of aluminum electrical conduit with an inner diameter of 3/4 inch (I use 1/2 inch and it works just fine.)

That was one of my favorite diversions while on mid watches. You know, with a 1/2" piece of conduit 8 feet long, I can curl a seven inch piece of 10 gauge copper wire into a tight spiral by blowing it into a piece of sheet steel!

The darts were made as above except for copper wire instead of steel. I did use a piece of tool steel once, just too damn dangerous for play. It penetrated 1/8" particle board backed

by 1/16" copper, and traveled on into a 2x4 behind that. (The penetration depth was 3/8" with an 8' tube and 20' of flight beyond the tube.)

There's not much to technique, point and blow. One variation is to push the dart a few inches into the tube, block the tube with your tongue and build up pressure by blowing with the tube blocked.

For the blow, it's almost a cough. Dump every bit of air on your lungs before the dart leaves the tube.

I would practice indoors by putting an empty coke can in one room of my apartment and shooting at it from another room, as far as I could get away from it in my small apartment.

Heh, use a warm full coke can...outside...much more satisfying. Fun to roll down the road and shoot on the roll too! I'd still use copper wire darts though as the steel just ricochets too good.

Subject: Re: Hunting w/ a blowgun

Harmon Seaver said You have to use poison, that's what the indigs use.

Not true, The South American Indians used a combination of poisons with the main ingredient being curare. The natives of Southeast Asia, like the Dayaks used Antarias toxicara or Strychnos tieute. The Cherokee and the other peoples of North America that used blowguns used no poison on their darts relying instead on penetration and shock, or at least there is no recorded information of poison use on blowgun darts. Poisons have been used on arrows for warfare as recorded by Laubin and mainly consist of snake venom in putrid meat. Since their recorded use was for small game, there was no need for poisons on blowgun darts in N. Am. Also there are few plants that such venom's can be extracted. I suppose nicotine poisons could have been extracted from tobacco and milkweed, but I've not seen any recorded proof. The few Cherokee sources I've heard from say no such venom's were used or necessary.

Simple Atlatl



To throw your dart using the atlatl, insert the hollowed out end of the dart (near the fletching) onto the tip of the atlatl. Hold the atlatl in the palm of your hand and the dart with your fingertips.



Three different styles of atlatls.



Both ends of the atlatl are made from a split willow. Note carved point that fits into the

hollow end of the dart, on the above, left hand photo. The above, right hand photo is the handle in which the thumb and fingers are inserted into the leather loops.



Split feathers are lashed to one end of the dart. The two feathers are from the same wing of a bird. The end tip is hollowed out.

Making an Atlatl From a Branch

The atlatl was used for thousands of years almost worldwide. It had the advantage of lengthening the throwing arm of the hunter, thus more leverage to increase the speed of the dart. Despite the worldwide variations in the design of the atlatl, the basic components are still the same. They all incorporate a handle connected to a shaft with a spur.

A simple atlatl can be made from a tree branch. Look for a straight branch with a smaller side branch extending out at an angle. An ideal angle for the smaller side branch would be 40 to 45 degrees from the main branch. Less than 40 degrees would work, but the smaller branch should not be parallel and lay flat to the main branch. The diameter of the smaller branch, which will become the spur, should fit the size of the notch hole on your dart. Also, be sure that the main branch is large and comfortable enough to fit in your hand. Too small of a size will be unstable during the throwing of the dart. The length of your simple atlatl is subjective, although I would not go smaller than 11 inches. Various type of woods may be used for your atlatl. Try not to get a branch that is too soft and too flexible.



This branch from the Toyon tree (also called Christmas Berry) has the potential for becoming an atlatl.



A completed atlatl made from an oak branch. The handle may be wrapped to provide a better grip. The handle of the oak atlatl was wrapped with split pine root. You may also use buckskin or willow bark for the handle wrapping. Experiment with different materials.

Another alternative for the handle, besides wrapping, would be to shave or cut the top side of the handle flat. Leave the bottom side in its natural rounded shape. The flat surface will provide a better gripping surface than a rounded surface.



The dart ready to be launched using the oak atlatl.

How to Throw With an Atlatl

The throwing motion with an atlatl is the same as in throwing a ball or rock. The main difference is that when you snap your wrist at the end of a pitch, your wrist provides a short lever arm, while the same snap of the wrist while holding an atlatl gives you a long lever, like adding another arm joint.

To throw with an atlatl, grasp the atlatl firmly and set the the hook in the hollow nock on the end of the dart. Raise your index finger and thumb to hold the dart in place, or rest it on the forked dart rest used on some modern atlatls. I describe the throw as going through 4 phases. The motion should be smooth and comfortable, as normal as throwing a snowball.

From a balanced aiming posture, a throw begins with 1) a step, then 2) the body rotates and the arm and shoulder begin to move the atlatl and dart, 3) the wrist snaps to provide the leverage of the atlatl, and 4) you follow through.



1) The step.

I start with a standing posture, feet close together, and left foot forward, leaning back very slightly with my arm cocked back, body turned not quite 90 degrees from target so that my left arm can be raised and pointed at it. The dart is level or a bit above horizontal, at or above eye level depending on range. I visually align it with the target, even though I can't actually sight down it like a gun barrel.



The throw begins visibly with a slight bend of the left knee as I rock back fractionally (first photo), then bring the left foot forward in a full step, which brings body, arm, and dart forward, but without moving arm or rotating torso until the full step is complete, with the left foot flat or almost on the ground.



2) Arm and body.

As the step is completed, the torso begins to rotate and the upper arm to flex at the shoulder, bringing the hand and the atlatl forward until it is about even with the back of the head.

The atlatl throughout this remains horizontal. The shoulder flexion seems to me to be small at this point, and the wrist must be rotating to keep the dart pointed at the target.



3) The Wrist Snap. Slightly before the hand reaches the back of the head, the hand and forearm begin to rise.

Then as the hand passes the head, give a vigorous snap of the wrist, swinging the atlatl up to vertical and flicking the dart away.

The dart will flex as the point remains aimed at target, while the nock is rapidly raised by the atlatl.



At the same time, the arm is extended straight out. [The wrist motion seems essentially the same as that in cocking and throwing a ball, with the only real difference being that the fingers remain closed to grip the atlatl.] Note how high above the head the dart is as it is just about to leave the atlatl.



With the atlatl in vertical position, the dart has recovered from its initial flexing, and is about to fly away from the atlatl while flexing in the opposite direction.



4) Follow-through.

As the dart leaves the atlatl with the atlatl vertical or slightly past, continue the throw with a nice easy follow-through. I lean slightly forward and swing the right arm and atlatl down and across my body, ending outside my left leg.



My chin remains up, and my head at almost the same level throughout the throw, with my eyes fixed on the target. This is conscious “good form - if you drop your shoulder, bend over, or start with your arm low, the dart will go low.

ATLATL WEIGHTS Function and Classification

INTRODUCTION

Atlatl weights, both known and suspected, are a fascinating and frustrating subject. Based solely on the misinterpretation and lack of understanding surrounding them, and their occurrence in the archaeological record, debate and confusion as to their purpose has set them apart from most other artifacts.

There are a variety of atlatl weight types and suspected types found, interestingly enough, mainly in the United States. Their distribution seems to be contained within the forty-eight states with a little overlap North into Canada, and south of the Rio Grand River into Mexico. But generally, the political boundaries of the lower 48 United States hold most of the world's atlatl weights. As far as I am aware, atlatl weights do not occur outside North America, although atlatls most certainly do. Atlatls in a variety of styles are found more or less world wide. The earliest examples date to well over 20,000 BP in Europe, and the atlatl is still used today by natives of Papua, New Guinea and the Australian aborigines. But regardless of where atlatls are found, nowhere other than North American are they found with weights attached to them.

The confusion surrounding atlatl weights begins with the many theories as to their purpose. The most popular of these seems to be that they are a counter balance. This theory suggests that the weight acts as an adjustment to balance the atlatl and dart in the palm of the hand. Many other theories have been put forth, mainly based on the idea that the attachment of the weight would propel the dart a greater distance.

Experimentation with many of these theories tended to show opposite results until finally the theory of last resort, "hunting magic" was applied. When all else fails, its a charm, the owner believed the atlatl weight possessed "hunting magic." No doubt about it, some weights are quite beautiful and finely polished, and I am sure their owners even believed that they possessed magical power. That's just the way we humans are. We're weird like that. However, not all atlatl weights are beautiful. Many are rather crudely finished and some are merely rounded river rock. Even these could hold some special meaning to someone, but the "charm theory" just doesn't hold. Atlatl weights have a function, and that function has to do with their mass.

WEIGHT THEORIES

This brings us to the contradiction in the term "atlatl weight". More often than not atlatl weights are referred to in every descriptive term imaginable except - mass. To apply the term 'weight' to an object and neglect to report its mass would seem illogical to a thinking human.

There is also the confusion of what is an atlatl weight. This is more of a word game than a question of function. Several descriptive and functional names have been applied to known and suspected atlatl weights. Depending upon where you live or how you became

familiar with atlatl weights you might refer to all weights in general as Banner Stones, boat stones, counter weights, bird stones, etc. This causes a great deal of confusion. Not long ago I was asking a friend of mine who lives in the East some questions on Banner Stones. Our discussion became quite confused until we realized that I was talking about a very particular type of atlatl weight and he was trying to give me answers for atlatl weights in general.

The center of all this confusion lies with the dispute over the true purpose of the atlatl weight. In my studies of the atlatl and dart I have found that they possess a deceptively advanced technology. The basic technology, the mechanical foundation of the system, is the flexible dart. Over time, humans have tinkered and toyed with the system improving and refining it to a very high degree. There are many levels of technology which have evolved from the basic mechanical foundation. Just as modern rifles evolved from muzzleloaders, to breach loaders, to lever actions to automatics, atlatl weights in general represent one very advanced level of atlatl and dart system technology. In fact, some weight types represent a higher degree of technology than others, a technology within a technology.

So how is the system improved by the application of a weight? Atlatl weights possess mass and when attached to an atlatl that mass affects the system. But contrary to popular experimentation you just can't strap a weight onto any old atlatl and expect a miracle. Atlatl weights do not possess a sufficient enough mass to significantly influence the speed at which an atlatl is swung in order to affect some degree of timing based on velocity. The fact that a weight increases the moment of inertia of an atlatl is just that, a fact. What good does it do? Why not make a thicker atlatl? And as far as a counter balance is concerned, that theory only applies when the atlatl and dart are at rest and not being used. The total system of atlatl and dart, with or without a weight, is fairly light, considerably less than one pound. The presence or absence of an atlatl weight makes no difference whatsoever as to how long or how steady an atlatl and dart can be held. A person can hold the system steadily, with or without the weight, for as long as that person can hold it steady. Which is about 6 minutes the last time I tried. After that, your arm cramps and falls asleep, making any attempted throw ridiculously ineffective. So forget about it!

The purpose of the atlatl weights mass is to resist acceleration. In order to understand its function of resisting acceleration a review of the technological evolution of the atlatl and dart must come first.

ACCELERATION

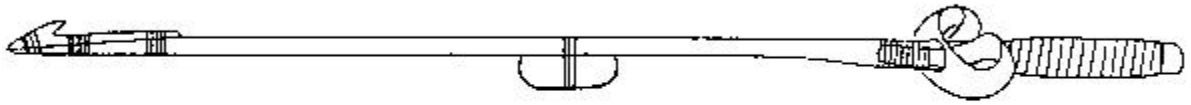
The basic mechanics of the system depend exclusively on the flexibility of the dart. When the dart is accelerated by the atlatl it flexes and stores energy like a spring. At some point during the swing, after the atlatl is no longer accelerating sufficiently to cause further compression of the dart, the dart then uses its stored energy to push itself away from the atlatl. This allows the dart a smooth separation between itself and the atlatl, giving it an effective and powerful launch.

One of the great evolutionary improvements to the system was superimposing flexibility into the atlatl. If this is incorporated successfully into the system, with the degree of flexibility of both atlatl and dart in a functioning relationship with one another, their function will be similar to that of a diver diving from a spring board. In this system the diver's legs are bent, like the dart, and store energy to be used to push away from the diving board. The diving board, like a flexible atlatl, is also bent back, storing energy to be used to push the diver away from the board. With the diver and diving board pushing each other away at the same time, the launch of the diver is considerably higher, smoother, and more powerful than if the diver had used a fixed rigid platform.

When the proper mathematical relationships of length and flexibility between atlatl and dart are achieved, the results are a long and noticeably flexible dart. But the atlatl on the other hand is, at approximately one third the length of the dart, short and somewhat stiff. The proper flexibility of an atlatl is rather subtle. The atlatl which is correctly flexed seems too stiff to be of any benefit. This is where the atlatl weight is applied to the system.

What atlatl weights accomplish in the system with the flexible atlatl is rather sophisticated and ingenious, representing a level of engineering skill which is impressive even by today's standards. Its mass, located approximately at the middle of the atlatl shaft, resists acceleration, (Newton's first law of Motion) and forces the atlatl to deflect further than is possible without it. This enables the atlatl to store more spring energy to be used to push the dart away from the atlatl. The weight's position along the atlatl shaft influences the amount and rate at which energy is stored and released. Therefore, the atlatl weight is a timing device influencing the amount and rate at which the spring energy of an atlatl is stored and released against the spring energy of a dart. That is its primary function. Its effects on the system are not so profound as to propel the dart to a noticeably greater distance or velocity, although higher velocities are achieved. (A longer atlatl will noticeably increase the velocity and distance of a dart at the cost of accuracy). When properly incorporated into the system, the atlatl weight improves the performance of that system in terms of efficiency. Smoother, more controlled and powerful launches make for better accuracy. And ultimately it is getting to the target that counts.

TYPE I SINGLE WEIGHT



TYPE I DOUBLE WEIGHT



TYPE II WEIGHT



CLASSIFICATIONS

Now that atlatl weight function has been firmly established, the problem of classification can be more easily addressed. Archaeologists have attempted to classify weights according to their shape and hafting technique. In this they have failed miserably. Not only have the same atlatl weights been placed in a category Type III by one archaeologist and a Class I category by another but some categories contain only one known example. This being the case I have laid down the framework for a new system of weight classification based solely on function and effect.

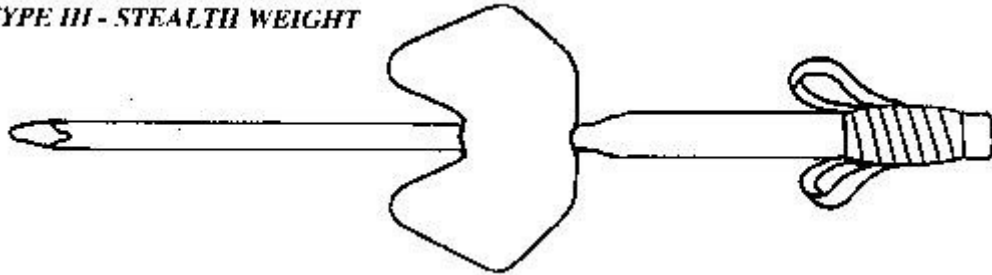
The basic atlatl weight, or Type I in Perkins' atlatl weight classification, is a single point mass weight with a mass of approximately 65 g. Mathematically a mass can be boiled down to one point where its influence is applied to the atlatl's flexibility. No matter how it is grooved, holed, shaped, or hafted to the atlatl its final position is that point at which its mass influences the mechanics of the system. Type I has sub-categories of multiple point mass weights. Type Ib would be two point mass weights whose combined mass add up to approximately 65 g. These would be located along the atlatl shaft to render a smoother response to the flex of the atlatl with distributed point masses as opposed to one concentrated mass.

There can be further sub-types with three and even four distributed point masses, but as the base mass of 65 g. is divided the influence of the smaller weights becomes increasingly ineffective.

The improvement over multiple point masses in the evolution of this particular technology is the Type II weight. Its mass of approximately 65 g is distributed along its length and, given its unique moment of inertia and method of hafting, influence the atlatl's flex at only one significant point. The Type II causes a finer, more precise response to the flex of the atlatl, accomplishing with one weight what was attempted with several.

This brings us to the most fascinating weight to be classified. The Type III stealth weight. More commonly known as a Banner Stone, there is some dispute as to whether they are atlatl weights or not. Based mainly on evidence from Indian Knoll, KY where Banner Stones have been recovered in context and in alignment with atlatl hooks and antler handles, I believe that Banner Stones are indeed atlatl weights. Type III - stealth weights in fact. Their mass tends to be somewhat greater than other weights at approximately 80 g, but this can be resolved quite easily when the probable length of the associated atlatls is taken into consideration. Atlatls from the Western United States, which Type I and II atlatl weights tend to represent, are approximately 60 cm in length. Atlatls from the Eastern United States on the other hand, appear to have been somewhat shorter at approximately 40 cm. Not having the mechanical advantage of length, Eastern atlatls seem to have utilized greater mass in order to influence the flex properly.

TYPE III - STEALTH WEIGHT



Mechanically the mass of Banner Stones tend to influence the system like a Type I weight, but their shape has the interesting effect of silencing the noise caused by the swing of the atlatl. When a stick or atlatl is swung an audible "zip-like" noise is generated. It seems that when a Banner Stone is attached this noise is significantly reduced, generating more of a low frequency "woof" as opposed to the high frequency "zip" sound. One would think that because of the greater surface area created by the Banner Stone an increase in noise would result. But those who know physics will tell you that what might be expected is not necessarily what occurs.

THE EXPERIMENT

Since first discovering this effect I have demonstrated it to several people. At distances of anywhere from 5 to 15 meters I have asked observers to listen for a difference in sound levels between an atlatl equipped with a Type III stealth weight and an atlatl with only a Type I point mass. After three swings with each all observers reported a significant difference in that the stealth atlatl was noticeably quieter than the other. On the off hand chance that my observers were predisposed to report a difference in sound by being asked to "listen", I began asking subsequent observers to "watch" for a difference between the test atlatls.

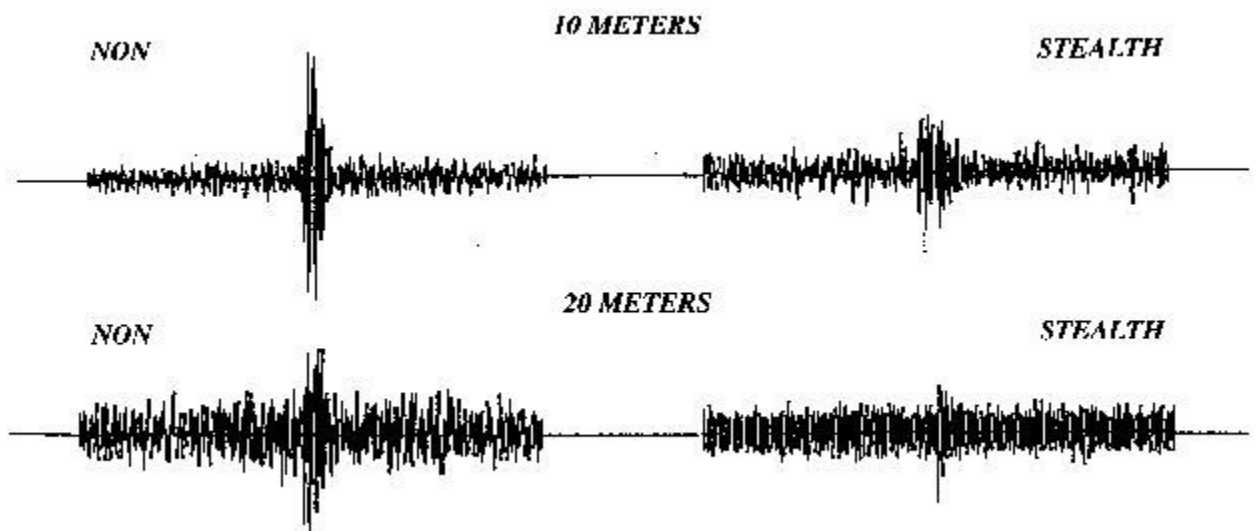
The fact that these observers were asked to watch for an effect as opposed to listen resulted in a tendency to be more hesitant when reporting what was noticed after having the atlatls swung in front of them. But again in all cases, they reported that the atlatl with

the Banner Stone was considerable quieter than the other atlatl. This result suggested that the effect was so profound that observers, led to believe that they were looking for an effect with their eyes, none the less noticed an effect with their ears.

This type of experimentation being more qualitative than quantitative merely suggests rather than confirms the effect of sound suppression by the Banner Stone weight. That being the case I began to arrange for a low budget electronic sound test to be conducted at the 1992 Rabbit Stick Rendezvous. To my complete surprise, it was arranged to have sound equipment from Ricks College made available to me for this purpose. The equipment provided was so sophisticated that its technology has been available only within the past three years. The microphones, about three feet long and 4 inches in diameter could, on a calm day more, than likely detect the sound of a needle being dropped into a haystack.

For this experiment the same two atlatls were used as for the observational studies. Starting at 5 meters and increasing the distance five meters at a time to a total of 25 meters, each atlatl was swung three times with and without the use of darts. A total of ten separate comparisons were made and recorded on magnetic tape. The five comparisons made shooting darts over the head of the technician handling the microphone were noted, for the record, as all traveling approximately the same distance. This was done in case it was suggested (as it subsequently was) that I was swinging the Stealth atlatl differently from the other atlatl.

All things considered, the deviation in throwing was held to an absolute minimum. In fact, I maintained a degree of consistency surprising even to myself, since I was concentrating on NOT hitting the sound man more than anything else during this portion of the experiment. None the less, it should be noted that all darts traveled over the head and landed behind this trusting sole at a surprisingly consistent height and distance respectively.



THE OUTCOME

The data recorded on tape was analyzed by computer and for all ten comparisons the Stealth atlatl registered significantly lower sound levels than the unsilenced atlatl.

Although a mathematical module of this effect has not yet been formulated, the focus of maximum sound suppression seems to be between 20 and 25 meters, indicating an effect known as superposition of sound waves. But no matter what the mathematics are, the effect is definitely present.

Although these experiments may not confirm that the effect of sound suppression was the purposeful function related to the shape of Banner Stones, they certainly go a long way to indicate it. And as far as the actual advantage of noiseless atlatls is concerned, I will leave that to other researchers to contemplate, since they no longer have the "counter balance" theory to consider.

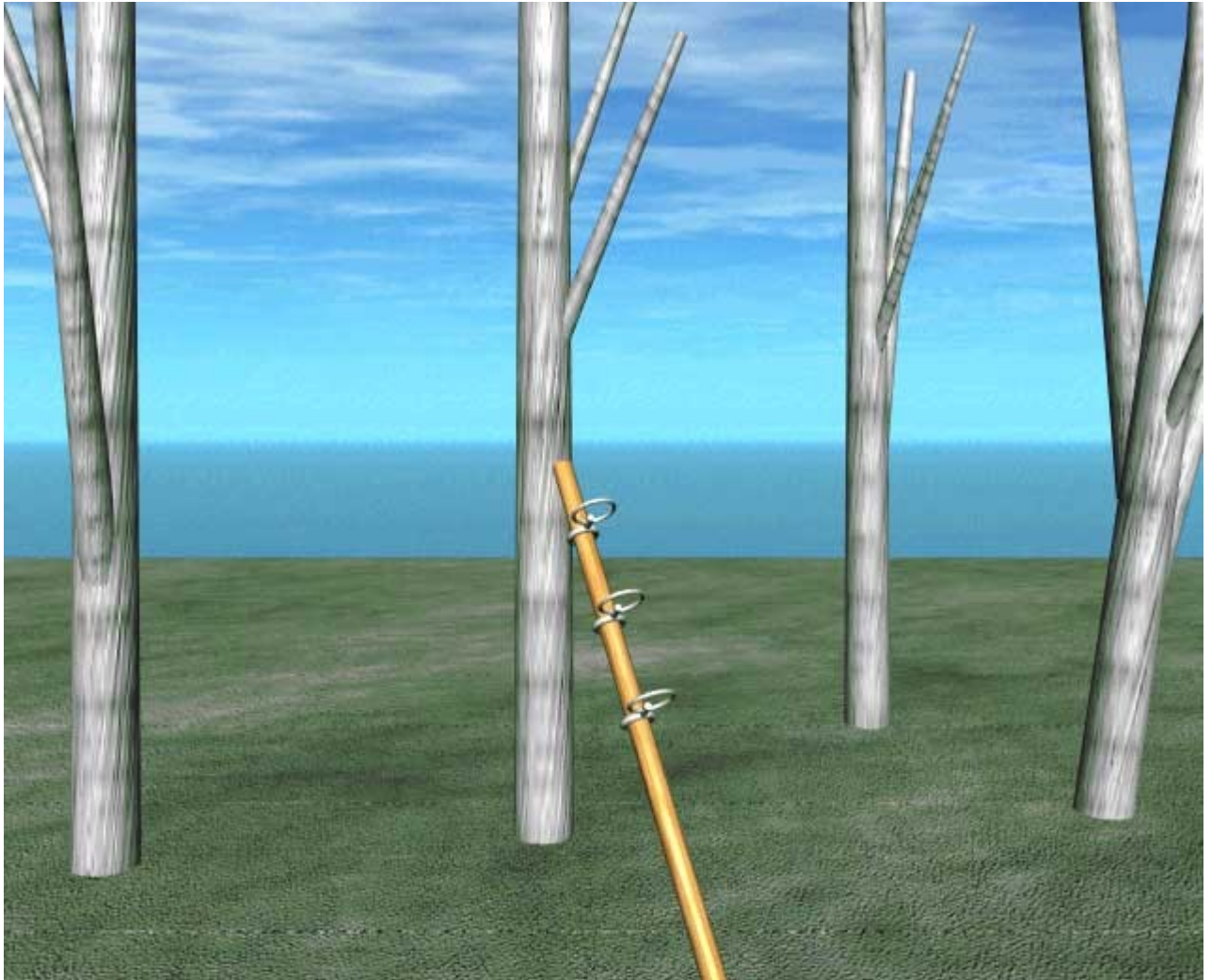
SQUIRREL SNARE

One of the most effective snare types I have used is great for nabbing squirrels. Don't scoff... they taste like chicken, and one good sized gray squirrel has about the meat content of a small game hen (a large meal for one). Whereas squirrels are so plentiful in North America, this seems to be the best quarry to fill ones belly.

The snare itself consists of a small noose loosely wrapped around a pole. I usually would set several (3 or 4) of these on each pole, which then get leaned against likely trees. I have drawn the snare with white wire here for visibility. I usually use green US military spec snare wire (available in many Army/Navy Supply catalogues and stores). The reason for using wire and not cord or string is that the wire noose kinks closed when pulled tight, whereas string will loosen if the tension is let off.



You see, like people, squirrels are inherently lazy creatures. Rather than running and hitting a tree at a 90 degree angle, if you set up a nice ramp at a 45 degree angle, they WILL use it. Choose some likely trees. Likely trees are those that have a lot of acorn husks underneath them indicating that squirrels feed there. Another place to set them is under trees where there is a visible squirrel nest.



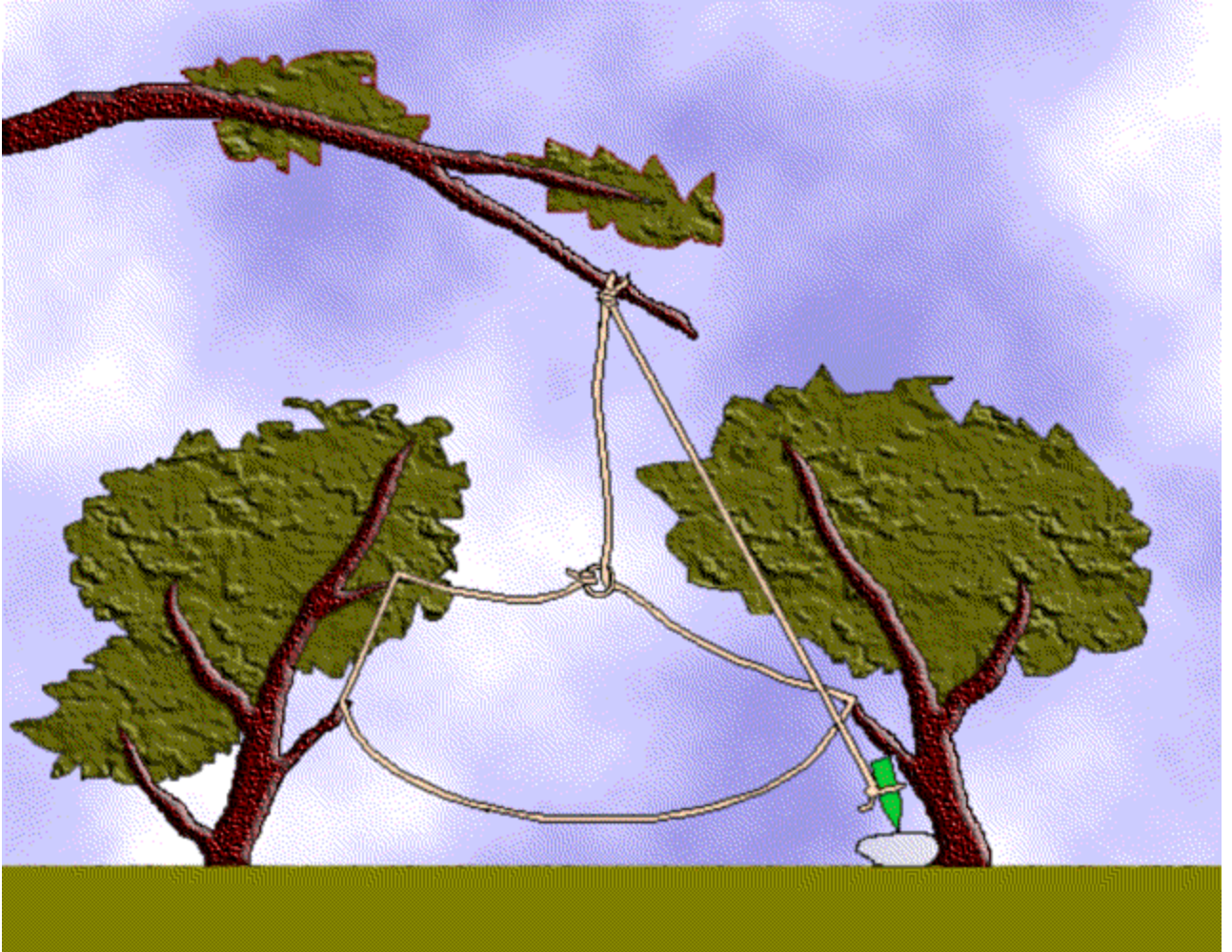
Note that in this picture I have made the pole stand out, but only so that you can see it in the example. In reality I use a bark covered pole and green snare wire. As you can see from the example, I give the sucker about half the pole to get a running start before the first snare. A squirrel sees the snares as simply twigs. When a squirrel feels that noose close on his neck, he thinks it's something trying to grab him, and instinct makes him leap from the pole, thus hanging himself. That is why it's best to loosely wrap the wire around the pole. It allows the wire to pivot 180 degrees to hang the squirrel under the pole.

RABBIT SNARE

Rabbits, being very common worldwide, are a good wild game food. They taste like chicken, and one good sized rabbit has about the meat content of a whole chicken. They can typically be found grazing in fields and clearings where grasses and other low lying plants are found. Watch to see where they enter and exit these areas to provide the locations for snares. Some people have been known to add impassable brush and wooden stakes along both sides of the path leading to the trap creating a funnel effect. They can then drive rabbits or other small game in the direction of the trap and be relatively sure that the game will head straight into the snare.

The Rabbit Snare can be used for many types of small game depending on how and where you deploy it. It consists of a noose loosely draped over twigs, brush, or any low-lying points where you can drape it. The noose is smooth cord that can easily slide through the small metal ring it is tied to (small key-rings work very well for this). The key to this snare is the bowed branch overhead, and the catch or trigger mechanism. As you can see in the diagram below, my trigger consists of a very simple stake that is wedged at an angle very close to that of the line to the branch. It is also sharpened and sits on a smooth rock so that any movement at all will free it.

A rabbit is not very smart, and assumes that the string across its path is simply grass, and typically does not slow down. The looseness and breadth of the noose allows the game to proceed a couple feet before it tugs the branch and releases the catch.



Note: In this picture I have made the cord stand out, but only so that you can see it easily in the example. In reality, I would use either the green para cord or the green heavy (80lb test) fishing line for this. Also, there are MANY types of catches and triggering mechanisms, but this one is quite simple, and requires no fancy whittling skills. The KISS (Keep It Simple, Stupid) principle is always best in the woods (and elsewhere).

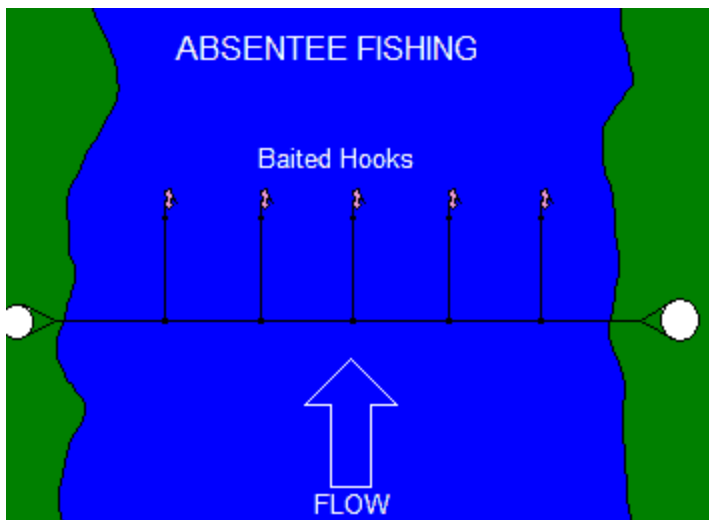
Note: You may want to trim back foliage on the overhead bent branch. Otherwise, wind can sway it, releasing the trap prematurely.

Survival Fishing

Survival fishing is quite different than normal fishing. Survival fishing is often done without you even being there. It's more akin to trapping and snaring than it is to conventional fishing. There are several ways in which this can be accomplished.

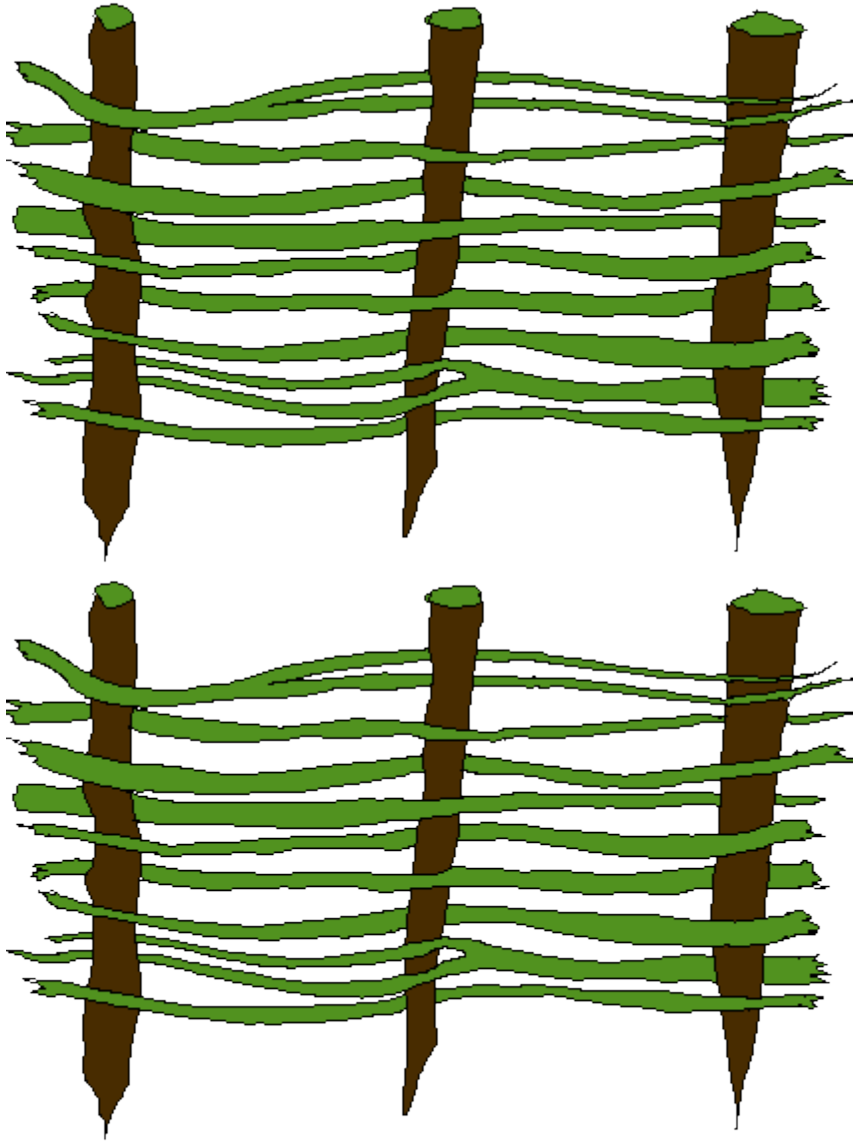
ABSENTEE FISHING

If you have fish hooks and line (in a survival kit), then you're way ahead of the game. You can bait a whole bunch of hooks, string them on a line across the waterway, and then walk away. This is "absentee fishing". Be careful that the line you string across the waterway is strong (550 cord works well). Tie it between a couple trees a couple feet above the water, and then you can either rely on the water flow to keep the bait near the surface, or simply put just enough line down to your hooks to not allow them to sink. If the water is moving, your bait will be dancing to entice the fish. If there's little or no movement, you can tie some leaf covered branches to the paracord to catch the wind, which also makes your bait look lively. While waiting for a catch, you can keep yourself busy with important things like fire and shelter, and simply check your lines every few hours.



FISH FENCES

If you don't have any hooks and line, then I recommend a "fish fence". A "fish fence" is just what it sounds like. It's a fence that you make out of sticks that will corral the fish for you. Below, you'll see a couple sections of fish fence. As you can see, the smaller twigs are woven back and forth between the posts, which holds it all together nicely. The denser the better, as long as water can flow through, and fish cannot! This is built on land in sections, and then inserted in a likely waterway by pushing the posts into the mud at the bottom.

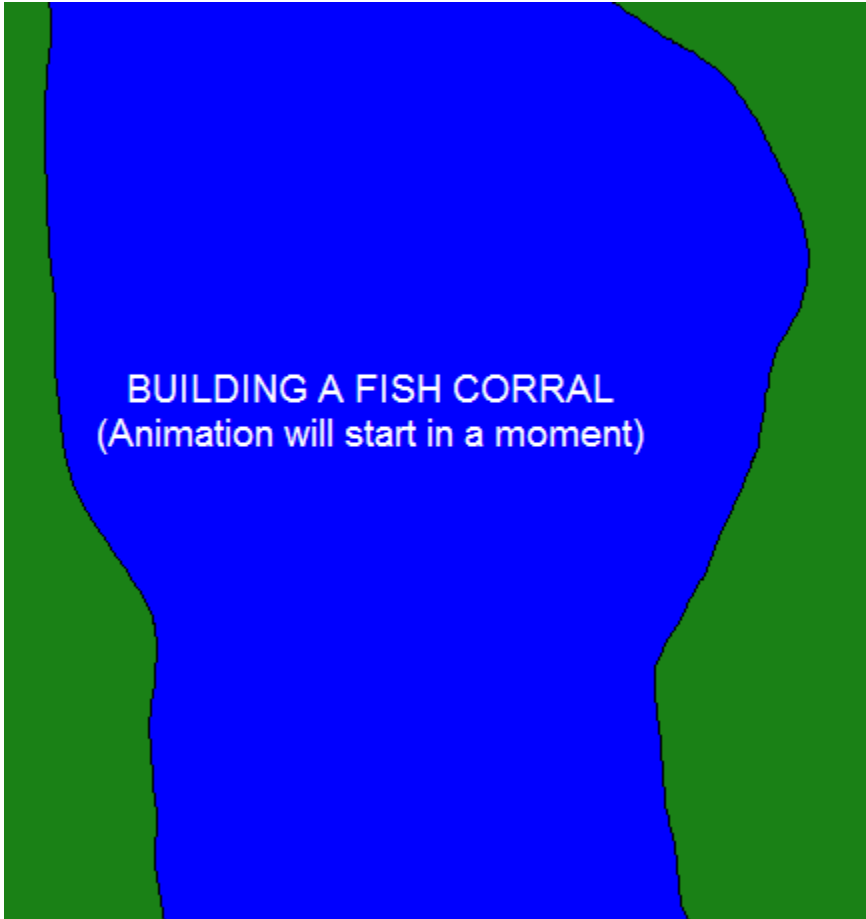


There are several versions of this... it really depends on the waterway.

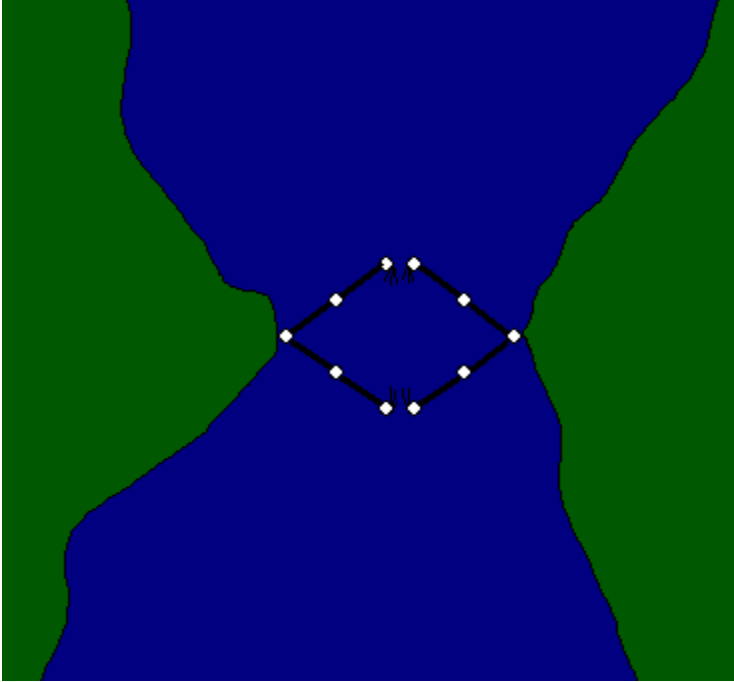
If it's a pond, and there's no flowing water, then you'll just make a corral in a shallow area with only one opening that funnels fish in. Once they're trapped in the small area, they can be speared or grabbed more easily.

If you're working with a stream, then it's important to determine the direction of flow. Observe whether fish are moving upstream, downstream, or both. If the fish are moving in one direction then a basic fence placed diagonally across the stream will concentrate the fish in a small area making it easier to spear one.

In the animation below, you can see the basic strategy used to corral fish.



If the fish are moving in both directions, you may want to make a "corral" that will catch in both directions as shown below. If you have built your fencing in sections, it's easier to try different configurations to see which works best for you.



In this picture, I show 4 fence sections across a narrow point in a stream. The points facing inward from the two openings are sharpened twigs. These ensure that once something comes into the corral, it is "encouraged" to stay there.

As always, plan twice and build it once! Before you build, make sure you know where you're going to put it, and how deep the water is. Shallow areas are best. There's less fence to build, but mainly it's the fact that you really don't want to go swimming after fish in November!

How to Practice Wilderness Survival

The fact of the matter is that actual wilderness survival with nothing but a few odds and ends from an emergency kit is an utterly miserable experience. I DON'T recommend running out into the woods with your knife or kit and trying to survive. You gain nothing from that misery, and you may as well practice bleeding for all the good it will do you.

I also don't recommend just reading about it. Mark Twain once said, "Knowledge without experience is just information". He was quite right. We all knew those kids who were "smart in school, but dumb on the bus". With all of their book-smarts, they couldn't figure out how to stop the daily beatings. In this analogy, wilderness survival knowledge is schoolwork, but mother nature is the bully on the bus. So how do we gain hands-on experience without the misery? The answer is simple... GO CAMPING.



Camping is extremely valuable practice, and even more so if you go with friends who are also interested in learning outdoor skills. It will quickly let you know which items you've packed that cover actual needs, and which items are simply adding to your comfort level. The first thing you'll notice over multiple camping trips is that your pack will become gradually lighter. You'll learn what items you need and why, and over time, you won't bring nearly as much. Instead, you'll learn to make due with bare essentials, and you'll start to improvise the rest. Having a few like-minded friends with you will allow you to put your heads together and compare notes. You'll find there's a lot of different ways to do things and a lot of improvisation will take place.

While you're out there... PRACTICE YOUR SKILLS! You should always have a lighter in your pocket, but pull out that magnesium fire starter instead and light your campfire

with it. Why wait to use it until you have a real emergency? If you've built a bunch of fires with it, then it will be much quicker and easier if you ever really need to use it. Try some different types of fire pits. My favorite is the lazy-man fire.



A "Lazy Man" fire with a nice 3-sided stone fire pit, and a high back to reflect light and heat back into camp.

Once you're settled in, hike around your surrounding area, and make note of things that would be valuable if your gear were suddenly gone. This might include a rock ledge or a pile of brush that would make building a shelter much faster. Look for thick evergreens to make a bed, and for dry grasses and moss for tinder. Keep your eyes open for potential water sources, food sources and game trails. You can try some compass navigation as well as natural navigation by sun and stars.



This upturned tree's roots have formed a partial canopy. It's almost a ready-made shelter.

Each time you go out, try different skills, and be as "hands-on" as you can. This will expand your skill set, but more importantly, it will increase your comfort level and familiarity in using those skills. Eventually, you may find yourself attempting to build a shelter instead of using a tent. DON'T leave your tent home! If rough weather blows in and your shelter isn't up to par you'll be absolutely miserable. Again... there's nothing gained in that misery, and you're back to practicing bleeding. If you're beginning to see a trend here, it's to use your head. Don't put yourself in dangerous situations for the sake of the danger. Adrenaline junkies are just as stupid as any other junkies, and they all end up just as dead.



A thick evergreen can provide a good basis for shelter in the wintertime!



This moss covered rock ledge is a shelter just waiting to happen. Just look at all your roof timbers and leaf cover just lying there!

Over time, you'll find that your confidence in your abilities will grow exponentially. Your awareness of your surroundings will change as well. Without thinking about it, a house painter probably notes every house that has peeling paint as he drives by. While driving down the street, I find that my eyes and mind will be scanning the woods along the roadside, seeing potential shelter locations and making note of streams and wildlife. It's not intentional, and almost not a conscious thought.

SURVIVAL SKILLS - FIRE

Fire is one of the most basic skills to have, yet it is quite amazing how many people can't start a fire without dry wood and fuel at hand. I won't go into minute detail on this subject, as there are plenty of sites out there that already do. This site is made primarily for those who already have some modicum of outdoor skills. Fire is a skill that should be practiced by anyone who spends time away from civilization. Anyone can practice making fire in their backyard. Fire is the means to warmth, water purification, cooking food, and a general sense of well being. The following tips will help you to start fires in less than ideal conditions with limited tools (I practice with flint and steel, but prefer a lighter when available).

Rule number one for a fire is similar to that for shelter... LOCATION, LOCATION, LOCATION!!! Find a place that is out of the wind and elements, that has ample fuel at hand, and that doesn't cause a hazard. It's hard enough surviving in a forest, it's even harder trying to survive in a forest fire! The more you do in preparation before ever striking a match, the easier it will be to start and maintain a fire. A large boulder is usually a prime place to build a fire. Besides acting as a wind break, it will also reflect warmth back at you, and will keep the smoke flowing up the side of the rock face, and out of your eyes.

Make your fire as small as possible... you'll use less wood, and therefore less energy. If you're using the fire as a signal, you can still keep it small, yet have a large pile of dry material ready to throw on at a moment's notice.

To build a typical campfire, you'll need three types of fuel . These are Tinder, kindling, and logs. The first rule of fire making is to always have twice as much of each as you think you'll need. Have these ready before you ever strike a match. Whereas the logs and kindling are typically just little sticks and big sticks arranged in a nice tepee or log cabin arrangement, I will not waste time comparing the burn rates of different types, etc. In a survival situation, the hard part is getting the first flame to take to your tinder. Once you have a nice little pile of tinder material burning, it's relatively easy to get the rest of the fire going, so I will not waste time explaining it. I will focus on some tinder sources and tips.

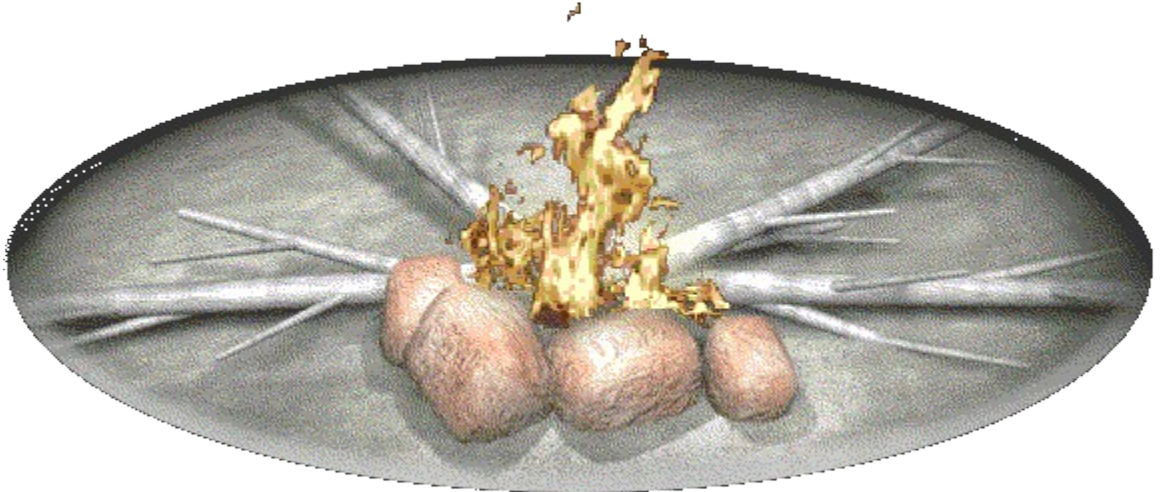
Know your tinder sources! There are a multitude of mosses, grasses, and other thin and fibery materials that can be easily ignited. A key to these is that they need to be dry. When walking along in the woods, I collect wispy looking materials, and put them in my

shirt pocket (body heat dries them out in a hurry). Some other great tinder that will light in just about any conditions are as follows

- Cat-o-Nine Tails. The large bulb at the top of this plant has enough "fluff" to start a LOT of fires.
- The large, black, lumpy growths on the sides of birch trees is a type of fungus that burns VERY well. Lop or break off a clump. It is orange to brownish on the inside. This can be ignited with a spark and forms a very nice coal. This material can also be used to carry fire from place to place. This stuff may be orange, but it's gold to me!
- Low lying, gnarly pine shrubs and trees (common in sandy soils) build up amazing amounts of sap. The wood becomes infused with it and is VERY flammable. Dead branches on these fill with sap to seal them off (also makes them waterproof). Use these. A small piece can be used to start many fires. Shavings from this type of wood will ignite with nothing but a good spark. A little goes a long way. If you find a piece of this, chalk it amongst your assets, and find a pocket for it.
- Pocket Lint... No Kidding... if you knew how flammable this stuff really was, you'd be carrying a fire extinguisher around with you. It only takes a spark. Once I learned this, I became fanatical about cleaning the lint screen in my dryer !!

TYPES OF FIRE

LAZY MAN FIRE - Fire making is not all about starting the fire... sometimes it's about how you maintain it! Here's a type of fire called a "Lazy Man's Fire". If you are in a survival situation, save your energy. Don't burn energy chopping firewood. Feed large branches and logs into the fire, and let the fire do all the work (see below). Be careful with these, as they must be watched more closely than a fire contained in a proper pit. As the logs burn, move each further into the fire. It's amazing how much wood you can gather when you're not wasting time chopping or sawing!



I prefer this fire type to all others, as it saves a LOT of unnecessary chopping!

DAKOTA PIT FIRE - A Dakota Pit Fire is another way to make an efficient fire that uses very little fuel, and can warm you or food easily. Whereas it is contained in a hole, it is easy to hunch over it for warmth, or to place food or water over it for cooking. The

second hole is to allow oxygen to get to the fire, thus preventing it from being easily smothered. It is scalable depending solely on the size of the pits you dig.

A Dakota Pit Fire is also used when one wants to be inconspicuous. This is one of the fire types that the Air Force teaches for use by downed pilots who must evade an enemy whilst surviving. This is due to the fact that it does not throw much light, and is therefore primarily used for warmth.

Making Fire with a Bow Drill



The components of the bow drill consist of the spindle, the hearthboard, bow and the bearing block.

Downward pressure is applied by pushing down on the bearing block and rotation on the spindle is generated by the bow.

In the right hand photo above, notice that the string closest to the left hand holding the bow is underneath the other half of the string. The left thumb is used to push down on the string to separate the string as the spindle is rotating. This keeps the string from abrading each other. Also in the right hand photo above, the right wrist is locked into the shin of the right leg to stabilize the rotating spindle.



Place a leaf underneath the notch to catch the char dust.

Use a consistent sawing motion to create some char build-up in the notch. Continue to rotate the spindle as the hearthboard begins to smoke and the char dust ignites into a ember.



Transfer the glowing ember from the leaf to the the tinder bundle. The white, cattail down in the tinder bundle of the above, left photo will help to extend the fire of the ember. Blow into the tinder bundle to increase the fire of the ember.



Continue blowing until the tinder bundle bursts into flames.

The spindle was California Buckeye. The hearthboard was Incense Cedar. The wooden bow was willow and the string was made from Flax. The bearing block was from a piece of soapstone.

The tinder bundle was from the bast fibers of cottonwood with some cattail down in the middle.

Making Fire with a Hand Drill

by Dino Labiste



Spindle rotation and downward pressure are two of the most important requirements for starting a hand drill fire. To guide beginners, who are first learning to do a hand drill fire, a leather thong with thumb loops can help apply the downward pressure that is necessary for creating the needed friction.



After you get the feel of the downward pressure by using the thong, try using the hand drill without the leather thong. Practice and patience will eventually improve your rate of success.



There are a variety of ways in preparing your notches. The notch in the photo above was cut tangent to the circle of the spindle hole on the hearthboard. Two V-shaped notches were cut on the top and bottom of the hearthboard for catching the char dust.



When you begin to see smoke coming from the spindle and hearthboard, don't think that you have a fire and stop spinning the hand drill. Be sure that the char dust has ignited before you stop rotating the spindle.



A leaf was placed under the hearthboard to catch the ignited char dust. The glowing ember was dropped into the cattail down in the tinder bundle. The bundle was constructed of the bast fibers of cottonwood and a pile of cattail down placed in the middle.



Blow into the cattail down to help extend the ignited char. Once the coal starts to spread, it helps to hold the tinder bundle out and above your head to keep the smoke from getting into your eyes.



Continue blowing into the tinder bundle until it ignites into a flame.

SHELTER

A healthy human can survive for several weeks without food, and several days without water, but in many cases only several hours without proper shelter from the elements. Evaluate the weather for where you are, and to what extremes it may go. Shelter from the elements or a fire may well be your first priority. There are multiple items in a decent [survival kit](#) to help you build a shelter or a fire. For shelter, a clear plastic painter's tarp or a survival blanket can help immensely. A survival blanket can also help to reflect the warmth from a fire.

Be careful not to damage any waterproof piece of gear. Example: instead of poking holes in a tarp to tie it off, push a small pebble up from under the tarp, and tie off around it (See Construction Notes below). Try using rocks instead of stakes to hold down corners, etc etc. Getting a good night's sleep will make everything easier on you. Try to build as good a shelter and bed as you can. The extra time and effort will pay off. Use everything you can think of for insulation. Crawling inside a big pile of leaves or pine needles is actually pretty warm and comfortable (do not attempt this near a fire !!). A large pile of fresh pine sprigs is not only a springy mattress, but is good insulation from the ground.

There are LOTS of shelter materials and types. Any survival manual will teach you about most of these. The general rule for a survival shelter is that it is not much bigger than you are (just enough room to lie down). This allows your body heat to keep it, if not warm, at least warmer than the ambient temperature. I won't go in depth telling you how to crawl under a fir tree during a blizzard. I am sticking to a few basic favorites.

A FEW SHELTER TYPES

TARP SHELTERS - Probably the quickest and most basic shelters you can build. These can be set up in under 5 minutes using materials listed in my [Survival Kit](#).

DUGOUT SHELTER - My favorite shelter type is the Dugout Shelter, which is sometimes called a "Sniper Hole".

DEBRIS HUT SHELTERS - One of the most basic and versatile shelter types. These can be made from many different materials.

HILLSIDE SHELTER - This shelter is quite elaborate, and takes longer to construct. If you have some time and energy, this one is pretty decent as it has an internal fireplace.

BEWARE OF IDIOTS

While building this site, I surfed around the net to see what others had written, and I noticed a big "green" trend amongst some of the writing. While it may be great advice for a site about camping to stress low environmental impact, the environment should be your LAST concern in a survival situation. You will be living at odds with it. The environment is what will KILL YOU.

One granola headed idiot out there had stressed that the roofing and insulation for his shelters and all the bedding should be dead material. He was obviously worried that someone might kill some plants... I say fuck the plants. Kill, hack, slash and bash. Do whatever needs to be done to stay alive. I hope nobody burns alive in one of his "Bonghead Bonfire Shelters" (my name for them).

Use your head as your primary weapon AGAINST nature. There's not an animal out there that gives a rat's ass about nature or the environment. Just look at what a beaver does to local environments. Does the beaver worry that the trees were alive? In a survival situation, your concern is that YOU survive... you are the animal... everything else is potential food or materials.... and I mean everything.

SURVIVAL SKILLS - WATER

Basic water finding skills

Finding water can be an essential skill to have. A human can't live more than a few days without water. You must drink plenty of water even if you do not feel thirsty. An adult should drink at least a couple of liters per day (more in hot climates). Water can be found or readily produced even in desert conditions. For starters, aside from Saudi Arabia, I have never lived in desert areas, and would not be likely to be found hiking in a desert. The only way that I know of to obtain water in the desert is using a solar still in conjunction with whatever scrappy plant life you can locate (see instructions below). That said, my advice if you are caught in the desert is to get the hell out of the desert (hunker down in daylight, move at night).

In much of North America however, water is plentiful. In mountainous areas, just **continue to walk downhill and you will eventually find water**. Water obeys the laws of gravity quite well! Watch animals or follow their tracks. They will usually lead to water as well. Birds also tend to congregate near water. If you are getting water from streams or ponds, boil before drinking, or use water purification tablets. If you cannot boil it or have no purification tablets, a couple methods of finding or procuring fresh water are discussed below.

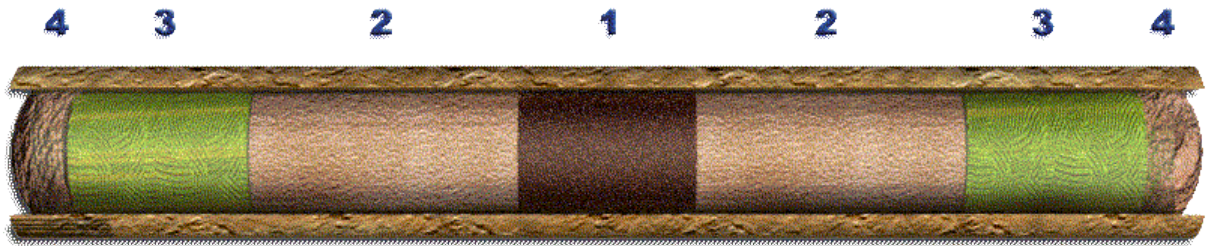
Using the Earth Itself to Filter Ground Water

The ground itself makes for a great water filter. If you are near a water source that is less than clean, use the ground to filter it. Go about 50 feet from the standing water, and dig. If your "pit" looks less than clean after you hit water, give it a few minutes, or continue scooping out water and discarding until it clears up. This same method works

even for sea water. For seawater, I would move a little further inland... maybe 50 yards or more before digging. You should strike fresh water there. The further you can go without a significant increase in elevation, the better your chances of getting a good fresh water supply.

Water Filter from All Natural Materials

I kept wondering when the dumbasses on "Survivor" were going to think of this one (especially since their map of the area specifically listed a "charred log"), but apparently they immediately disqualify anyone who has more than two or three brain cells. Anyhow, this filter doesn't filter down to viral levels* or anything, but is surprisingly effective nonetheless. I plan on experimenting with clay in the future to see what I can come up with.



Constructing the Filter

This unit is housed in a hollowed out log, (see cutaway view above) rolled up bark, or whatever else you can make a tube out of (a pant leg for instance). **Item 1** is the crucial part. It is crushed black charcoal (not ash). This is wood that has been charred to black, and then crushed up to sand or powder consistency. Sand is packed on either side of the charcoal (**Item 2**). Grass, moss, leaves or other material is packed in to help retain the sand (**Item 3**). Finally, a rock pushed into either end to hold it all in place (**Item 4**). The rocks are not tight enough to seal anything, they simply keep everything in place. You can skip both the grass and rocks if you have extra fabric to tie around the ends to hold in the sand.

Once the filter is completed, water is slowly poured in from the top and allowed to filter down through. The first few gallons of water that go through will be a bit murky. Toss these, and keep pouring... it will clear right up.

Footnote: Viruses are typically not an issue in water sources unless you are traveling into tropical regions. Most viruses found in the waters of N. America are bacteriophages. They are dangerous to bacteria such as Cryptosporidium, Giardia and other single cell protozoa.... which are the critters you're trying to get rid of anyways. My point is that, if the charcoal layer is properly packed, this filter should trap the stuff you're primarily concerned about. In other areas, you will filter and then **BOIL** the water. The filter will take care of the murkiness, taste, etc and then the boiling will get the rest.

Using Household Bleach to Purify Water

Almost all laundry bleaches, whether Clorox or any other brand, have 5.5% Sodium Hypochlorite, which is a suitable purification chemical for water. Bleach in a suitable container with an eyedropper dispenser makes a nice addition to any camping/survival kit. Make sure you do not use powdered, scented or other non-pure bleaches.

Prior to the addition of bleach, remove all suspended material by filtration (through a cotton cloth or improvised sand filter for instance) or by simply allowing sediment to settle to the bottom.

Add 8 drops of bleach per gallon of water (or 2 drops per quart). If the water was filtered, then shake it up for even dispersal of the bleach, and wait 15 minutes. If it has sediment at the bottom, don't shake it up. Instead, allow the treated water to stand for 30 minutes.

Properly treated water should have a very slight chlorine odor. If you can't smell chlorine, repeat the dosage and allow the water to stand another 15 minutes.

For cloudy, green or really nasty water (ie: swamp water), you can start with 16 drops of bleach per gallon of water (or 4 drops per quart). As detailed above, smell the water. If there's a faint odor of chlorine, the water is drinkable. If not, then repeat the treatment.

Treating Larger Quantities of Water

- 1 teaspoon equals 60 U.S. drops. Therefore a teaspoon of bleach treats about 7.5 gallons of clear water or about 4 gallons of dirty water. The teaspoon measure is handy for treating 5 gallon buckets of water.

- 1 tablespoon equals 180 U.S. drops. Therefore a tablespoon of bleach treats about 20 gallons of clear water or about 10 gallons of dirty water.

- 1/4 cup equals 720 U.S. drops. Therefore a quarter cup of bleach treats about 90 gallons of clear water or 45 gallons of dirty water.
(a quarter cup measure is suitable for use in a 55 gallon drum of fairly dirty water).

How Does Bleach Work? (and why the smell test?)

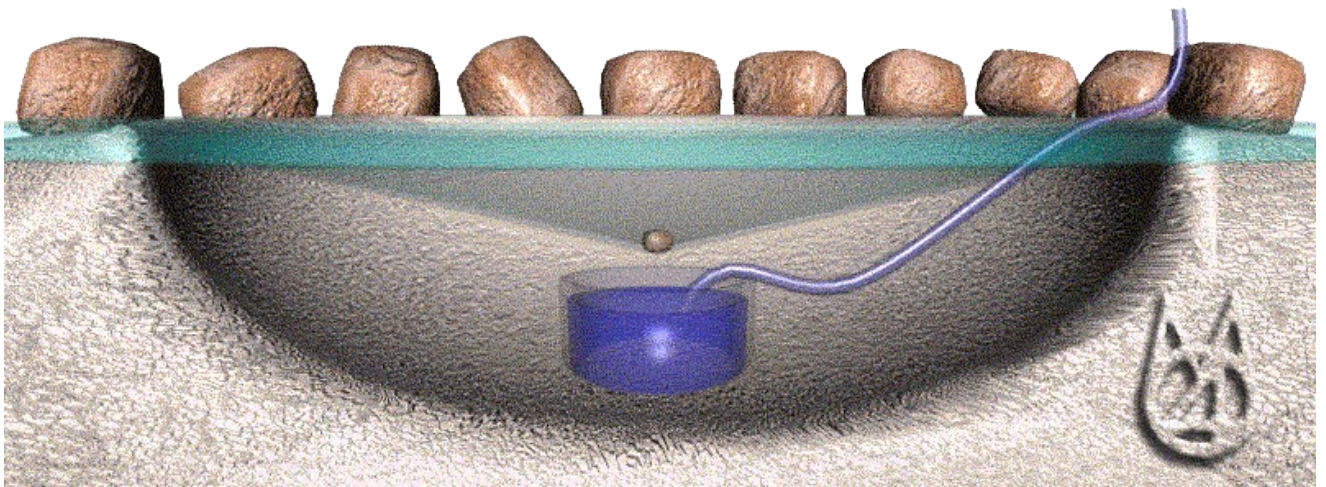
Bleach is an oxidant, and it will react with and kill pretty much any microscopic cellular life (including viruses) that it comes in contact with. When it reacts, the bleach is actually consumed in the process.

Because killing microorganisms also consumes the bleach, the scent test tells you whether or not there's anything left to kill. If there's no chlorine odor, then all of the bleach was used up, meaning there could still be living organisms. If there is a chlorine odor, however faint, after 30 minutes, it tells you that all of the bacteria, viruses and other

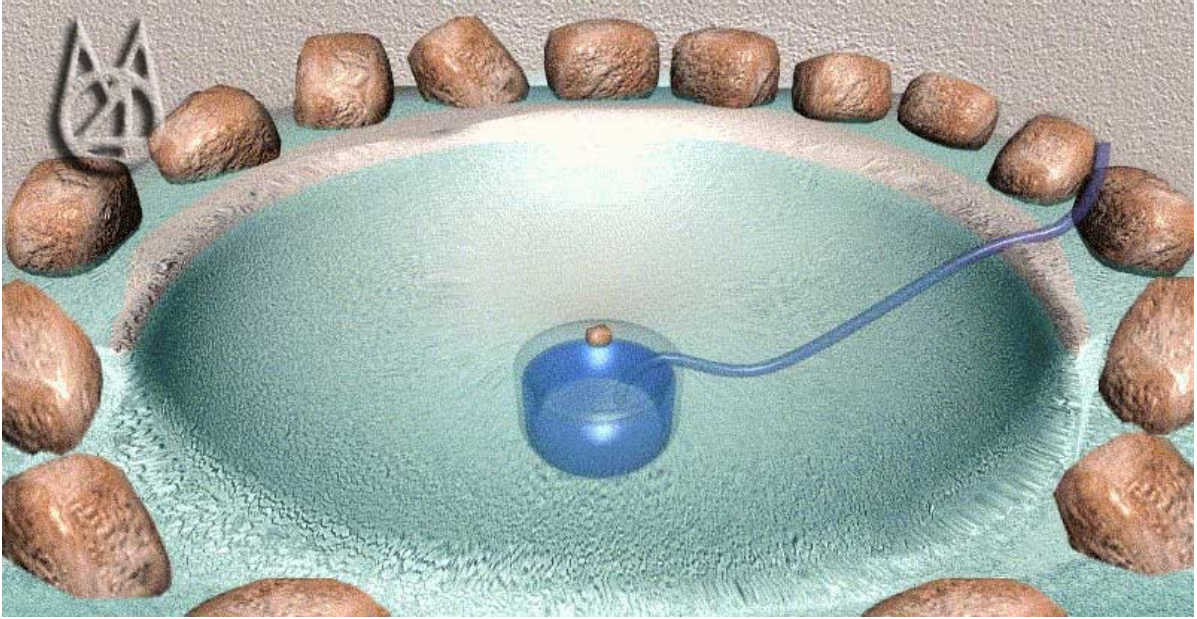
nasty stuff is dead, and the bleach has done it's job with some to spare.

Solar Still

A solar still is a fairly efficient way to collect moisture from the soil. As you can see in the two views below, a tarp is draped over a hole in the ground. This is sealed in place with rocks, logs, sand or whatever is available. Make sure it is well sealed. The sun on the tarp heats the air underneath, which causes moisture in the soil to evaporate. This moisture has no place to go and condenses on the tarp itself. Because of the pebble in the middle, there is a sufficient slope for the condensate to run down the inside, and drip into the collection vessel.



A view from the top. From this angle, you can see the pebble in the middle, centered over the collection vessel.



Notes

- The collection vessel can be anything... cup, bowl, tin can, another section of tarp, even a large leaf.
- The drinking tube shown in the pictures is a nice addition, but not absolutely necessary. You can always lift the corner, reach in and remove the collection vessel every so often. It's more work, but if all you have is a tarp, then it may be necessary.
- If the ground itself is not yielding enough water, try tossing in vegetation. It doesn't even matter if the vegetation is edible or not, as you are effectively distilling the water. The water that is collected from a solar still is 100% pure, drinkable H₂O, and does not require boiling.

Final Word

In closing, I would like to mention that there is quite a lot of misleading information out there. I saw one site that told people how to make a "divining rod". These supposedly show you where to dig to find water. Their claims indicated that this was done with mystical psychic energy or some such crap. This is all part of the "new-age" line of Birkenstock bullshit that many out there seem eager to shovel on the unwitting. **Do NOT listen to granola-headed shrub cuddlers when it comes to survival info. They will get you killed.** The day I see the headline "Psychic Wins Lottery" will be the day I rethink my opinion of these charlatans. Wilderness Survival is all about using common sense, not a "sixth sense". I recently had someone write to me, telling me that I am wrong on the "divining rod" subject.

Survival Myths - Foreword

There are many myths surrounding the subject of wilderness survival. It's one of the biggest reasons that I started this site 5 or 6 years ago. I wanted to dispel these myths, expose them for what they are, and bring some sense of reality and practicality back into the subject. Many of these myths are highlighted elsewhere on this site, but I decided to put the best ones here on a single page. Enjoy!

FIRE MYTHS

Survival Matches - I see "waterproof survival matches" listed in more kits than I care to count, and I gotta say... terrible idea. While it may add a sense of drama to a movie when "Rambo" is down to his last couple matches, you don't need that kind of drama if you're in a life or death situation!

The space and weight taken up in a kit or in your pocket by a dozen "survival" matches would be better filled with a small Bic lighter. A lighter will start a LOT more fires than those few matches. If you're worried about the lighter failing, then bring a magnesium fire starter. These are 100% waterproof, will light thousands of fires, and the magnesium burns a lot hotter than matches.

Flashlight Method - This is a method I've seen by which you can break the bulb of your flashlight, and then use the coil inside to light a fire. Simply put... give it a shot in your backyard and you'll find that it's great at destroying flashlights but terrible at actually starting fires! Recommendation... bring a lighter, and use your flashlight for... LIGHT!

Ice Lens Method - Can you start a fire with a lens that you fashion from ice? Probably not. Scientifically, it's possible, but in all practical sense, the odds are really slim to none. Seriously, give it a try in the comfort of your own backyard on a nice warm day. Feel free to let me know how well this works. Also, while you're wasting hours on this, imagine that you're also freezing to death in a snowy, icy environment. You'll quickly realize that this is a colossal waste of your time and energy, and you won't get a fire going. I guarantee you that. Recommendation... bring a lighter!

Soda & Candy Bar Method - This fire starting method is yet another fun science experiment, but in actual use, it's another colossal waste of time, at the end of which... you'll have no fire. If you're lounging in your backyard someday and suddenly decide that you'd like to piss away the entire afternoon on some fruitless endeavor, go ahead and give this a shot. However... in a real survival situation... eat the friggin' candy bar and be glad for it. Drink the friggin' soda and rejoice. Be glad for those precious calories, and then keep the can as a canteen and cooking vessel. Recommendation... bring a damn lighter!

SHELTER MYTHS

High Ground is Warmer - This is one survival tale that keeps popping up all over the place. We're told that when considering locations for a shelter, we should avoid valleys and low lying areas because cold settles there and it may be several degrees colder than higher ground. This is scientifically sound, but in actual practice... it's pure, unadulterated bullshit. This is because while a thermometer may show a few degrees difference between two elevations, thermometers are incapable of measuring wind chill factors.

In most cases, higher elevations are exposed to a lot more wind while small valleys and lower areas are sheltered from it. A thermometer may show that actual air temperature has increased 2 or 3 degrees by moving to higher ground, but the temperature as far as your body is concerned is likely to have dropped by 20 or 30 degrees. Wind will suck away your body heat faster than you can generate it. Today as I write this, it's almost 50 degrees and sunny outside... a seemingly nice March afternoon. However, today's wind chill factor drops that to somewhere between 20 and 30... and suddenly it's not so great!

Now consider what happens once you get a fire going. Most fires will quickly heat the surrounding area, but when you have some wind factored in, most of that heat is carried off. Also remember that a fire in the wind is going to consume about twice as much wood. You'll spend most of your time and energy finding firewood, and then get very little heat as a reward! Not a very good tradeoff. As such, one of your primary concerns is to find a place that's very sheltered from the wind and elements, and then build yourself a nice, warm fire to keep you warm!

Shelters Should Be Built From Dead Materials - This one came from our friends in the "green" survival movement. They are far more concerned that a few trees might get killed than they are about your life. All advice from them should be considered highly suspect. Imagine building your shelter as a big pile of dead leaves and wood. Now imagine having a campfire anywhere near that. Do you really want to climb in there and go to sleep? Nuff' said.

WATER MYTHS

Boil for 10 Minutes - This is one so old, I don't even know where it came from. I've also heard 5 minutes, 15 minutes and even 20 minutes of boiling time. All of these are bullshit. I'll keep this short... if the water reaches boiling point, it's safe to drink, period, end of story.

Divining Rods - This is another old wives tale. Use your common sense and you'll probably find water. Use a forked stick and "mystical psychic powers", and you may find yourself very dead. I've heard people claim that a divining rod is simply tapping into one's subconscious thoughts. I suppose if you're some sort of walking emotional wreck who keeps every shred of logic and common sense buried away in your subconscious... then sure... go ahead and wave your stick. Hold a seance while you're at it. Maybe the spirits will tell you where to find water.

The rest of us (sane folks) will simply think our way through the situation. Common sense says water runs downhill. If you walk downhill, you're pretty likely to find water. Birds and animal trails can also lead you to water... they need it as much as you do.

FOOD MYTHS

Plants Are a Good Source of Food in the Wilderness - Unless you're a certified expert not just in plants, but in the plants of the given region you happen to be in, stay the hell away from the plants!

Here's the facts...

- ALL fur bearing mammals are safe to eat, and will provide you with nutrients and calories.
- ALL 6 legged insects are safe to eat, and will provide you with nutrients and calories.
- Almost all freshwater fish and almost all birds are safe to eat, and will provide you with nutrients and calories.
- ...and finally
- MOST plants will harm you, make you sick, or worse... poison you. There are actually very few that will provide you with any nutrients or calories.

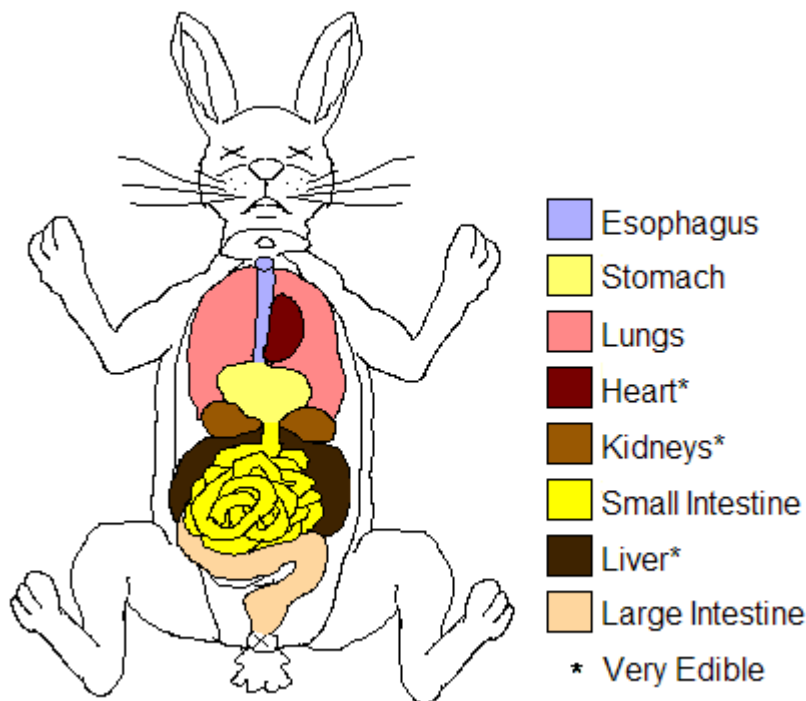
It's a simple equation... if it walks, crawls, swims, or flies, the odds are in your favor that it's not only safe to eat, but that it will provide you with the nutrition and energy your body needs. If it sits there like... umm... like a plant, the odds are against you both for your own physical safety, and for nutritional content. It's just not worth the gamble unless you're absolutely sure!

THE GUTS - A Few Pointers

A "gut hook" or "belly zipper" is the curved hook that is sometimes found on the back of hunting knives. This is used to hook under the skin and "unzip" the pelt without snagging on internal organs. If you don't have one on your knife, you must be very careful when opening your critter up!

Once you have exposed the internals of your critter, you may feel like you are back in high school science class. If your memory fails you as to which organs are which, I've made this quick guide.

In the picture below, you'll see a (somewhat exaggerated) picture of what major organs you'll find and approximately where. I've had to move them around a bit in order to show it all in one picture (stomach and kidneys would be lower, some organs would be obscured, etc), but the general locations will be the same in pretty much EVERY MAMMAL on earth. A convenient point is that most of that internal mess is only connected at the throat and the anus. Cutting those two points will allow you to remove it all in one big mass.



ESOPHAGUS - This is the throat/windpipe which connects the mouth with both the lungs and the stomach. It contains a lot of cartilage and gristle, and is not really worth eating.

STOMACH - This contains a lot of harsh acids along with whatever the critter has been

eating. Unless properly prepared, you really DON'T want to be eating it!

LUNGS - These are edible, but most folks aren't fond of them. Your choice, but in a survival situation, go for it. PS - You may want to search the critter. If you find cigarettes, avoid the lungs :)

HEART - Solid muscle... ie: MEAT. Good eating, but this is pretty tough muscle and is a bit "chewy". Tenderizing or boiling will soften it up.

KIDNEYS - Good eating. Enjoy!

SMALL INTESTINE - This contains a lot of harsh acids along with whatever the critter has been eating. Unless properly prepared, you really DON'T want to be eating it!

LIVER - Typically good eating and packed with vitamins and minerals... BUT you should examine it carefully. If there are any discolorations or spots on it, you should discard it.

LARGE INTESTINE - This contains a lot of waste product (shit). Unless properly prepared, you really DON'T want to be eating it!

Most internal organs are edible, but you should stick with the easy ones if you don't know what you're doing. The liver, heart and kidneys are probably the easiest to recognize and are packed with vitamins and minerals. These should definitely be eaten. I've marked them in the diagram with an asterisk (*). The rest would require extensive preparation, and should thus be avoided. You may want to use some of these as bait for other critters or fish!

Weapons

1. The Rock:

Thought to be mans first weapon other than his or her hands.

2. The Club

A very dangerous weapon.

Due to the laws regarding possession & use, I do not manufacture these.

3. Single Ball Bola (Bola Perdida)

Believed to have been used by primitive man more than 50,000 years ago.

When a hunter discovered a rock could be cast farther with more accuracy and more velocity than it could by hand, if it had a cord or thong tied to it.

Probably the predecessor to the mace. Made famous in later years by the Ona Indians, of Tierra Del Fuego, who used them to crush the skulls of Puma. But the Bola Perdida was and is used world wide.

4. 2 Ball Bola (Avestruccero)

This bola comes in various weights and measurements, depending on the size of the game.

Probably used 50,000+ years ago in pre-history, as a weapon of entanglement.

After dropping his prey, the hunter would rush forward with a fire hardened spear to finish the prey off.

It migrated with tribes. World wide the most factual history is with the Tehuehches, of Argentina, who used it to hunt Rhea. It was made famous by the Gaucho's rounding up horses. It is difficult to use, but my favorite of the primitive weapons.

Mine is 10' of leather & chain with 3" hardwood balls.

5. 3 Ball Bola (Boleadora)

This bola was probably used some 50,000 years ago and also varies in weight and size depending on the game. This self centering bola is the easiest to master.

Like all bolas, with the exception of the Bola Perdida, it is a weapon of entanglement.

The third ball, or Maneja, is slightly lighter than the other two.

Some Maneja are egg shaped and the one held in the hand. The slip joint always centers it which creates the natural spread from the thrower to the target.

It was made famous by

6. 4,6,8 & 10+ Ball Bolas

These bolas were used throughout the world in pre-history.

They were lighter in weight than other bolas and were mainly used for water fowl or small game.

Many ducks and geese were entangled in these bolas.

Until the availability of shotguns, they were always carried by the Eskimo's who called them Ka-Lum-Ik-Toun. They are still in use today in many parts of the world.

7. The Sling (David Sling)

The sling is a very old weapon.

It dates back 40,000+ years ago for hunting small game.

It is simple to make, but to be accurate it takes practice.

It was made famous by the biblical account of David and Goliath.

It was totally mastered by ancient Greek armies as a weapon of war.

For as armies met, the Greek's hailed thousands of egg shaped projectiles on them, especially the opposing archers.

First the long range slings were used, then the mid-range followed by the short range.

Then both armies charged with Pikes and Swords.

Also used in Rome and Throughout Europe the construction is of leather or cordage.

The sling was also found in the tombs of Egypt, where its use as a hunting weapon is well known.

8. The Spearthrower and Darts

30,000 years ago the spearthrower is the weapon that changed the world.

With it a hunter could kill any large game, including Mammoth, from a safe distance.

No longer did he have to entangle his prey with a bola and rush in, dangerously close, to finish it off with a spear.

The spearthrower is a fairly simple weapon.

In primitive times it was made from a tree branch about 1 1/2" thick and about 20-31" in length.

The remaining smaller branches were removed. If there was a protruding hook it was left on

to engage the blunt end of the dart that was recessed to engage the spear or dart shaft.

If there was not a natural hook, the hunter mad one from a piece of wood, bone or antler.

He then lashed it in place.

The finished spearthrower somewhat resembled a crochet hook.

Some spearthrowers utilized a socket in place of the hook.

The socket helped retain the dart.

The primitive hunter could cast the dart forward 100 times faster than he could by simply throwing it by hand.

Spearthrowers were used almost world wide, but were made famous by the "Aztec".

Many accounts were made by the invading Spanish armies regarding the weapon the Aztec called *Atlatls*. This name has stuck.

However, the Australian Aborigines called them Woomera,

the Eskimo's called them Nu Gag and The Latmul of New Guinea call them "Nau".

The spearthrower is still in use today.

There are several organizations world wide, most notably the WAA (see link page), who, through effort from it's members, has legalized Boar hunting in several states and I believe Deer hunting in a few states. Consult WAA for more information.

WAA membership is \$10.00 per year and I do suggest joining.

9. The Blowgun

This weapon dates back thousands of years, however the specific time of origin is unknown.

Although the blowgun was used (and still is) throughout the world, there is no actual records of it's use by the Pygmies or Forest People of Africa.

I believe the blowgun originated in S.E. Asia, for there are records dealing with its use throughout this area, including Malaysia, New Guinea and Borneo. It was probably taken by migrating peoples to what is now Japan. There blowguns carved from ivory are still intact.

Blowguns are not used in warfare unless by the under strength insurgent groups, such as in the Philippines during the Spanish American war.

Many an invader fell to the poisoned darts of the Jivaro and Warandi during the Spanish Inquisition.

And not to forget the recent Vietnam war. Poisoned darts were used by both the Viet Minh and the Viet Cong.

The most daring use was by the commandos, under the command of Nazi SS Col. Skornski,

whose men were issued cigarette size blowguns with mini darts coated with Ricin.

The construction workers of the Panama Canal also faced death by natives of the surrounding

jungles, who did not like the takeover of their land. The weapon used of course was the blowgun.

And last but not least were the Ninja of Japan.

It's hard telling how many foe fell to the Fugu tipped darts of their blowguns.

The blowgun is a very efficient weapon for hunting small game and is still used to date.

Blowguns come in many lengths and caliber's, each used for a different purpose.

It's much harder to shoot a dart vertically, so when hunting Monkey's,

Parrots, etc., a 8' to 10' blowgun is used to get the dart up 100' or more.

For small game a blowgun 3' to 6' is used.

My favorite is 3' to 3 1/2' long.

For warfare the cigarette size to 30" is best suited.

The small caliber blowguns with plastic cones and wires sold today are great for target use and are

unbeatable for physical therapy, but for hunting they are *not* recommended unless a proper dart is

constructed that makes a fairly good wound channel. Most blowguns used for hunting are 50 caliber or over.

I will soon have a book out giving the history of blowguns, their use and the construction of All types

found around the world today.

Please do not ask or e-mail me about poisons unless on official Government stationery, because your questions will not be answered.

Special Note: Even with the most toxic poison the victim is in great pain for 15 minutes or more.

10. The Staff Sling (Fustibalus)

This is a sling of heavier weight.

It was attached to a shaft 24" to 4' long in which the slinger could cast heavier stones.

The pouch was larger than a standard sling, with shorter straps.

One of the straps is attached about 8" below the top of the shaft.

The second is then slipped into a notch on the tip of the shaft.

Other types just had a loose loop over the top of the shaft.

When used the 2nd strap flies off thus releasing the projectile.

Staff Slings were used basically as a fortification weapon.

Today they are great for flushing out game.

11. The Shot Thrower

This basically is an extension to the arm.

It is a bamboo sling.

It is simple to use and with a little practice, I have found it to be fairly effective.

I use mine cut from bamboo. The shaft is 1 1/2" in diameter and about 30" long.

I cut right below a node then drill out the center hole to 9/16".

I then use a very thin layer of melted beeswax to burnish the bore.

To use simply load with pea gravel or small shot.

Use some tissue paper as a wad to keep shot in place.

Then cast with a whip motion, holding the thrower so barrel is to your head.

It is great on small game and with a little practice, fairly accurate.

For the beginner I suggest using 1/2" brite shot they sell for sling shots.

With it you can see where the shot is going.

Natives used this in the Philippines.

12. The Stone Thrower

Another sling of sorts and basically the same construction as the shot thrower, only larger in diameter.

I use bamboo 1 1/2" to 2" in diameter.

Then I cut from the bottom of the node and cross cut the bamboo down to the next node.

I then apply a good glue, such as Gorilla or Grizzly, to the node and let dry.

I try to get some around the lower portion of the fingers.

After the glue has dried I coat the inner fingers with a thin layer of melted beeswax and burnish it in.

To load fin a rounded rock of the right size and push it into the fingers as far as it will go.

The stone thrower is then cast in the same method as the shot thrower using a whip like action.

The thrower will release the projectile just below the shoulders, if done correctly.

Like the shot thrower, the stone thrower was used in the Philippines.

13. The Throwing Arrow

This weapon looks like a giant arrow and is great for hunting small game, either on foot

or horseback.

The arrow is 5' to 6' long and 1" to 1 1/2" in diameter.

It has goose wing feathers for fletching and a sharpened steel spike.

The balance point of the throwing arrow is a rawhide grip attached with sinew.

This weapon was used by many tribes of the plains and still is to this day.

During pow wows, a ring is thrown in the air and a person on horseback attempts to throw the arrow through the ring.

Several years ago a small boy was hit in the head with a throwing arrow.

Luckily he survived!

This is a extremely deadly weapon.

Make sure you check your local laws!

14. The Javelin

This weapon dates back centuries.

Natives could cast this with amazing accuracy at a distance of 30 to 50 yards.

The Greeks and Romans attached a leather thong to the center of their javelins.

It was called a "*Amentum*".

A warrior placed his forefinger in the amentum. This accelerated the speed of the cast.

The Melanesian islanders used a accelerator also, but this type remained in the throwers hand.

For without the "*Ounkp*", an enemy could not cast it back at him.

Ours is 5' to 6' long and features a bone blade.

Survival Knife



Is it a high end blade? Is it big? Is it a chopper?

Here's a better picture:



Okay, so it's a piece of a hacksaw blade. The other day I stopped into my local hardware store, and saw a 10 pack of hacksaw blades on sale for \$1.99. That got me to thinking about a very small blade that could be packed in my [survival kit](#).

Hacksaw blades are VERY hard, high-carbon steel. They take and hold an edge very nicely, but can be brittle, so you don't want to make your blade too long, and it can't take a lot of abuse, but these have a lot of good uses in a survival kit. Each blade has a hole at each end. I figured I can get two blades out of each hacksaw blade (I could get three out of the length, but I want the hole at the end for lanyards, etc). That gives me 20 or more mini-survival blades for less than 10 cents each.

Making the 10 Cent Survival Knife



The pack of blades I got had 4 coarse, and 3 each of the medium and fine teeth. I started with the coarse.



Using a pair of pliers, you should be able to easily snap the blade without bending it.



I used a belt sander, but this can be done with a file, grinder, or even a stone (if you have lots of time). The sander makes quick work of this. It took me about 3 minutes to rough the shape, and another few minutes to give it a shaving edge.



I used a very coarse belt to rough out the shape I wanted. Notice that I'm keeping the blade wet as I work. I keep a jar of water next to my sander, and dip it when it gets warm. If you let it get hot, you can kill it's ability to hold an edge!



I used a medium grit belt to do the taper and initial sharpening, and then went to my favorite belt which is a fine belt that is so packed with gunk that it's pretty much a buffer to bring things to shave sharp. Yes... this blade will mow hair quite nicely.



This blade was designed to fit into the small tin I pack my survival kit in, though I'm beginning to think there's a lot of ways one could carry this blade comfortably in day-to-day life.



The addition of a small paracord lanyard makes this small blade a little easier to hold and use.



Putting two fingers through the lanyard helps to make this small blade more manageable.

The lanyard can be removed, and the small nylon string inside can be used to lash the blade to a stick for an effective fish spear.



The little indent I made at the front of the handle helps when holding the blade in your hand, but is also used to help secure the blade to your spear shaft along with the lanyard hole at the rear.



Without the lanyard, this blade can pack very flat, and could be carried in a wallet, in a slim pouch on the backside of one's belt, as a neck knife, etc. Just make sure you sheath it with something durable to protect both the blade and yourself!



Here's a second blade I did with one of the fine-toothed hacksaw blades. It's a little longer, and the fine toothed blades are better for cutting metal and other hard materials. Who knows... this may just be the first survival knife with a really effective saw edge!