

Tools You May Need
Or, Welcome to the Iron Age
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Steel tools play a prominent role in the modern practice of primitive skills. While the use of stone tools is often crucial to the outcome of a prehistoric project, such use is not always necessary or even appropriate. Moreover, those practitioners who are unable to produce their own stone tools often have no alternative but to use modern counterparts. It is a fair bet that many readers will use a modern axe, saw, and knife as they seek to make a fire kit, rabbitstick, atlatl, or other item.

My own interests extend well into the modern era, and include traditional woodcraft as well as contemporary survival skills. And, like many practitioners, I view traditional knife-and-axe campcraft as a direct descendant of an older stone tool legacy. I am also fascinated with processes, whether modern or ancient. This has resulted in a diverse array of interests ranging from prehistoric pursuits to the construction of my own log home. Within this context, I find it illogical to deprive oneself unnecessarily of appropriate levels of technology. Having a long-standing reputation as a flintknapper and stone-tool user, I occasionally draw flak from others when they observe me carrying a steel knife or using a steel axe. My typical reply is that I am foremost a woodsman, but one who *also* knows how to make and use stone tools.

That said, there are a few essential tools with which every outdoor enthusiast should be familiar: Chief among these are knife, axe, and saw. I have also included a number of other tools that reflect my personal preferences. While I do not consider these as strictly essential, they are nonetheless useful and convenient. The following discussion serves as a brief introduction to a limited range of these tools, and among these I am dealing only with portable versions that are likely to be carried afield. Needless to say, tools--including correct use and sharpening-- are a subject that can fill volumes.



My home under construction, ca. 1991.

Essential Tools

Knives: One of the foremost tools of the woodsman is a good knife. A fixed-blade sheath knife is often preferable over a folding (pocket) knife because of overall durability, and that the fixed blade will not fold up during use. (Folding knives with a locking blade solve this problem, but I find that the various locking mechanisms can become uncomfortable in the hand during prolonged use.) Yet because of their compact size and multiple blade configurations, pocket knives are highly utilitarian, and I am seldom without one.

Fixed blade knives: There are many good knives available today (and, unfortunately, a large number of poor-quality ones). There are a number of “survival” knives on the market, but many of these are costly and somewhat gimmicky. The sheer number and variety of knives on the market is dizzying, and I find that many people welcome an informed opinion about knife selection, especially when it can potentially save them a substantial sum of cash. A good knife needn’t be expensive, but there is a vast difference between a good yet inexpensive knife and a cheap, badly made one. If you

already own a good knife that you can use (and sharpen) comfortably, my intention is not to sway you to a new type. But for those who are unfamiliar with the world of outdoor knives, the following information may provide some guidance.

It is widely acknowledged that the Scandinavians have a way with steel. While there are many good knives available from this part of the world, the type most in evidence among outdoor professionals is the Swedish-made *sloyd*-type knife made in Mora, Sweden. For many years, the main manufacturers of these knives represented in the U.S. market were K. J. Eriksson and Frosts Knife Manufacturing (the later not to be confused with Frost Cutlery, a mass importer located in Chattanooga, TN). These companies merged in 2005 as Mora of Sweden. Although Mora of Sweden continues to produce a number of high-end knives, their most popular product consists of an array of high-quality, durable, general purpose knives. Often referred to simply as “Mora knives”, these are a staple among outdoor and primitive skills enthusiasts. These knives are very affordable: At the time of writing, retail

prices for most popular types generally runs between \$15-20 (U.S.).

Mora knives are available in carbon steel, laminated carbon steel, or stainless steel, and come with either wooden or plastic handles. Purists sometimes shy away from plastic handles, but I own a number of the plastic handled models and can attest to their utility and durability. Stainless steel also suffers from a certain amount of prejudice arising from a tendency to be either too hard or too soft. I find, however, that many Scandinavian stainless blades have the overall “feel” of carbon steel.

My all-time favorite Mora



A classic tool: The 4-inch laminated carbon steel Mora knife, shown with sheath options. From left to right: An early effort at buckskin covered rawhide sheath construction, with awl and attached decorations visible at top of sheath; buckskin covered plastic sheath, using rawhide extension discussed in text; plastic sheath with extra cordage wrapping and snap ring; original Mora leather sheath.

knife is the classic wooden handled model with a 4-inch laminated carbon steel blade. The blade consists of a layer of hard tool steel sandwiched between two layers of softer steel. This design allows custom woodworkers to bend the blade into a desired shape without breaking. For me, however, this yields an extremely tough, durable knife that takes a keen edge.

Next on my list is the wooden handled 3-inch carbon steel knife. It is precisely the right size for many projects, and strikes a good balance between size and utility. This model is followed by a number of others, including a tapered 3-inch laminated blade, and various plastic handled carbon or stainless steel models with blades in the 4- to 4 ¼-inch range.

Sheathing the Mora: The only real source of complaint about Mora knives concerns the sheaths. While many of the high-end knives come equipped with leather sheaths, the lower priced knives generally come with plastic sheaths. The 4-inch laminate is sometimes available with a leather sheath, but this option increases the price considerably.

In itself, the plastic sheath is sturdy and durable. Some object to these because of aesthetics; others, because the belt attachment on some sheath styles is weak, and tends to break off. Both problems can be overcome to varying degrees, depending upon how much effort one is willing to expend in so doing.

Using the plastic sheath: With most plastic sheaths, my first order of business is to cut off the belt attachment, replacing it with a small loop of nylon cord and a snap ring (carabiner). After removing the belt attachment, I attach a length of 3/16-inch braided nylon cord (or parachute cord) so I can form a small loop at the top of the sheath where the belt attachment used to be. The rope may be secured by threading it through a couple of holes drilled near the top of the plastic sheath, or by wrapping it over a layer of epoxy applied around the opening of the sheath. I generally make the initial loop larger than necessary, so I can later tie an overhand knot in it. If correctly calculated, this results in a small, sturdy loop that I can slip a snap ring into. With a little trial and error, it is possible to get the length just right.

Because I like to carry a supply of cordage, I often wrap the plastic sheath with as much extra as it will accommodate. With an overhand knot at the top and bottom of the cordage wrapping, I secure the ends with duct tape. With cordage and carabiner, the plastic sheath becomes something of a tool kit that can be clipped to the belt or belt loop. Also, these touches help to dress up an otherwise drab sheath, giving it a slightly deliberate look.

Another tactic is to cover the plastic sheath with a more desirable material such as buckskin. After removing the plastic belt attachment, fit a piece of buckskin or thin leather around the sheath, and mark (with a pencil) where you plan to cut. Leave enough allowance for stitching, and plan your pattern so there is enough excess material at the top to fold down and stitch to the back to form a belt loop.

Most of my buckskin-covered sheaths are sewn with the seam up the middle, but it is also possible to place the seam on the side. Determine which design you will use, lay it out and cut the buckskin. Because the sheath is slightly tapered, it is advisable to stitch the cover from the bottom towards the top, inserting the plastic sheath periodically to check the fit. Once finished, insert the plastic sheath completely into the cover. If the cover fits tightly, friction alone may hold it on. If the sheath tends to slip out of the cover, the judicious use of a small amount of contact cement will help.

Many of the plastic sheaths cover only the knife's blade and a small portion of the handle. It is therefore a good idea to extend the upper part of the sheath prior to covering it. An option I have experimented with is to roll up a piece of deerskin rawhide into a short (2 to 3") tube, positioning it so it protrudes an inch or so above the top of the sheath. Glued in place with contact cement, this "extender" adds depth to the sheath and makes the knife less likely to fall out. With a sewn-on buckskin cover, this incarnation of the plastic sheath is aesthetically quite appealing.

Making your own sheath: Another option for a knife sheath is to make it from scratch, dispensing altogether with the plastic model. My method uses a rolled-up rawhide core covered with buckskin, similar to the



Other favorites (left to right): Modified ("Tri-flex") carbon steel blade with plastic handle, and plastic sheath with cordage and snap ring; tapered 3-inch laminated blade with homemade handle, and buckskin covered rawhide sheath; three-inch carbon steel blade with buckskin covered rawhide sheath. Center and right sheaths are equipped with awls.

similar to the

covered plastic sheath described above. Instead of extending the top of the plastic sheath with a separate rawhide tube, a sheet of rawhide is rolled around the entire knife. Rolled up, the tube consists of several layers of rawhide. The shape of the knife will cause the tube to taper slightly towards the bottom, forming a slender, open-ended cone. The shape of the cone can be adjusted to better conform to the shape of the knife. Once the desired fit is achieved, the rawhide is tacked with glue to prevent it from coming undone (use hide glue, super glue, or contact cement). Once glued, the portion of the cone that will cover the blade should be flattened slightly to conform to the shape and orientation of the blade.

The bottom of the cone requires special attention, since this is where the blade tip can eventually cut or wear through. I often trim, tuck and glue the tip area so I have multiple layers of rawhide. (The rest of the sheath consists of multiple layers already. This area needs yet more.) Another technique I use is to apply glue to the layers of rawhide that will form the tip, and then clamp it until it dries. This provides a sturdy, laminated tip that can be trimmed and shaped prior to installation of the buckskin cover.

Once the rawhide core has been satisfactorily fitted to the knife, lay out and cut a buckskin cover as described for the plastic/rawhide composite sheath, being sure to leave a seam allowance and belt flap. Also, the procedure described here uses deerskin rawhide. Because it is relatively thin, it is necessary to roll the sheath core so that it contains multiple layers. Cow (or other large animal) rawhide may be used. Depending on the thickness, only one layer may be required.

As a side note, I often equip my rawhide/buckskin sheaths with a slender bone awl. This practice began as an accident of convenience, when, to prevent losing a newly made awl, I slid it between the buckskin and rawhide at the top of the sheath. This proved to be a handy and accessible location. I now do this as a matter of course, sometimes outfitting the awl with small decorative objects that keep it from sliding too far down into the sheath. The awls I prefer for this purpose are not the needle-tipped variety designed for leather work. Instead, they are abruptly to bluntly pointed for general purpose use. Their function can be compared to that of a “marlin spike” on a sailing knife, in that they are useful for untying knots, or any other task where sharp edges are a liability (as well as for stirring coffee, among other things).

Pocket Knives: Folding (pocket) knives are useful because they are compact and often have multiple blade sizes and tip shapes that are useful for a variety of chores. My favorites are two- or three-blades types with no locking mechanism. The best quality knives are from established American or European manufacturers.

Sharpening: Sharpening is a subject of much rich discussion among outdoor skills enthusiasts. Despite much debate about the most correct methods, one point stands above the fray: If you own and use a knife, you should know how to sharpen and maintain it. My goal here is not to engage in a complicated discussion of the minutiae of sharpening, but to introduce readers to a simple and accessible method.

I own and use a considerable number of sharpening stones, including natural Arkansas (novaculite) stones, synthetics, and



diamond-grit types. The majority of my day-to-day maintenance sharpening, however, is done with a much simpler, lighter, and cheaper set-up. This consists of a block of $\frac{3}{4}$ -inch lumber measuring about 2 $\frac{1}{2}$ inches wide by about 6 inches long; a scrap of heavy leather glued to one side of the block; and a few sheets of 400-grit wet/dry sandpaper.

The sandpaper provides the abrasive component for sharpening. I normally crease and tear it into half sheets for convenience. To sharpen, fold a half sheet into an appropriate size and place it on the bare wood side of the block. Starting either with the tip or the base of the blade, push the sharp edge into the sandpaper, as though you are trying to carve off a thin slice (because this is paper, not stone, you *will* eventually cut into it). Starting at one end of the block, use a single smooth motion to push the blade down the length of the block while sliding the edge diagonally from tip to base (or vice versa). Considerable pressure is needed to achieve the abrasion necessary for sharpening. Arriving at the other end of the block, turn the knife over, and repeat the process for the opposite side of the blade. There are variations on this technique that also work well: I will sometimes push the entire length of the blade into the sandpaper as described here, and then pull it back across it. I have seen others use a circular motion, working the edge from one end of the blade to the other.



The elements of basic sharpening

It is important that the blade be held at a correct and consistent angle throughout this process. An accepted rule of thumb is that the distance from the sharpening surface to the back of the blade should be equal to the thickness of the blade. Finding the correct angle is simple for knives with broad, flat-beveled blades (such as Mora knives). Simply place the blade on the sharpening surface so that the bevel lies flat against it. This automatically puts the blade at a suitable predetermined angle. Proper sharpening of hollow ground blades require more finesse and control.

Sharpening is accomplished through multiple repetitions of the motion(s) described above. This alternating motion is repeated many times for both sides of the blade. If executed correctly, it will result in visibly polished bevels that extend along the entire length of the blade. Ideally, these bevels converge at the edge, resulting in a highly effective tool.

When this part of the process is finished, sharpening is not yet complete. Tiny fragments of waste metal accumulate along the edge of the blade during sharpening. The second step in this process is to give the edge a final cleaning (called *stropping*) with the leather side of the wood block. With the leather side facing up, place the knife edge on the leather at the same angle as (or just slightly higher than) that used for sharpening. Pull the blade so that the edge is dragged across the leather, allowing the blade to slide diagonally from base to tip. This is essentially the opposite motion from that used for sharpening. Just be sure not to push the edge *into* the leather. Repeat this several times, turning the blade over each time. By dragging the blade back and forth across the leather, waste metal and other debris along the edge will be removed.

As you perfect your technique, you may wish to try finer grit paper for an even finer edge. If your knife is really dull, an initial work-up with coarser (320-grit) paper may be in order. Also, the wet/dry sandpaper will allow for the use of water during sharpening. I don't generally use water while sharpening, opting instead to rinse the sandpaper from time to time. However, the use of water prevents metal debris from clogging the abrasive grit.



Correct position for sharpening.

Hatchets: Axes in general are a diverse group of tools, and have been historically produced in a wide range of sizes and patterns. The hatchet (called a "hand axe" by some, although this causes no end of confusion among flintknappers) is no exception. Ideal for tasks that range from the preparation of kindling to the controlled shaping of wood, it is an indispensable outdoor tool. For most uses, good choices include American and Scandinavian brands, with a head weighing about 1 ¼ pound.

To sharpen a hatchet, place it on a flat surface (such as a table or workbench) so that the bit (edge) hangs over slightly. Using a file, push in towards the head while maintaining a consistent edge angle. This angle depends upon how the tool will be used: For splitting and rough work, an angle of 40-45 degrees is suitable. For controlled hewing and shaping, a keener edge (30-35 degrees) is recommended. After a rough filing of the edge, it can be honed using an axe stone (a disk-shaped whetstone made for this purpose).



The hatchet is another essential tool. A sheath or blade cover is also a necessity.

If you intend to transport your hatchet, a sheath or cover of some type is a necessity. This prevents personal injury *from* the blade, and also prevents damage *to* the blade. Many hatchets come equipped with suitable leather or plastic covers. A durable cover can be sewn from scrap leather. In a pinch, however, a temporary cover can be made by folding a piece of heavy cardboard around the head and securing it with tape.

Also, avoid the temptation to strike the poll (back of the axe head) with a hammer or other metal tool. This will cause the poll to mushroom, but worse, it will cause the thinner metal around the

eye to bulge outwards. This loosens the head, irreparably damaging the tool while creating a safety hazard. However, there are situations in which it is necessary to strike the poll of an axe or hatchet, such as the controlled splitting of wood stock for tent pegs or spoon blanks. In such an instance, a wooden club (called a *maul*) should be used. For most uses, a serviceable maul can be roughly shaped from a piece of sturdy firewood.

Saws: Though not truly “traditional”, my preferred type of saw ranks as a genuinely essential tool. In my intuitive ranking of tools, my knife is number one. In competent hands, it can be used for an incredible range of tasks. The number two spot, however, is very nearly a toss-up between my hatchet and folding saw. In an end-of-world scenario, the reality is that I would probably grab a good hatchet. It can cut anything a saw can cut, plus the poll end can function as a light-duty hammer. But the comparison is hardly fair: Ounce for ounce, a lightweight, aggressive-cutting folding saw is worth its weight in gold. While grabbing for the hatchet, though, I’d likely slip a folding saw into my pocket as well. Also, in terms of modern survival gear, the light weight, compact size, and relatively safe operation of the saw gives it a modest degree of superiority over the swingin’ hatchet.

Because saws are commonplace today, we take for granted the ease with which we are able to cleanly cut and section wood. Early in my pursuit of primitive skills I discovered the utility of the basic folding “backpack” saw. It was an ideal tool for gathering and preparing materials, especially when



Folding saws are versatile and lightweight.

large quantities were needed for a class. I came to rely heavily on this tool type, and today I am seldom without one.

I find myself in a awkward position with regard to recommendations of specific brands or models of the folding saw. They seem to change every few years, and I seldom have the opportunity to use the same type for very long. In general, though, look for the folding (sometimes retractable) types sold among camping gear and sporting goods. Sometimes referred to (redundantly) as *sierra saws*, these are usually small saws with coarse teeth that cut aggressively. Though often somewhat larger, a number of

folding pruning saws can be found in the lawn and garden section of many stores. These are acceptable substitutes for the backpack styles, though not quite as compact.

Unlike a hatchet, a saw is not likely to lop off a finger. But be aware that some are extremely sharp and can inflict serious cuts. Conversely, they eventually become dull, especially when used on dirty wood, or if you hit a nail or rock. I have sharpened them successfully using a jeweler’s file.

Other tools

Machetes: I didn’t include the machete as an essential tool since many people don’t share my level of appreciation for it. But being a tropical kind of guy, I have had a lengthy relationship with this tool. In a day-to-day sense, my favorite machete (a short, broad-ended bolo-type) is often a stand-in for my axe. Indeed, I often roam the woods with a Mora knife, folding saw, and machete. In so doing, I feel well equipped for virtually any eventuality.

As with all “swinging tools”, the machete can be a fickle partner. A long (18-24 inch) blade has the potential for serious injury, and one of my worst work-related lacerations was inflicted with my short bolo machete. Yet in careful and practiced hands, it is remarkably utilitarian, with uses ranging from clearing brush to woodworking and food preparation.



Machetes are best sharpened with a file. As with most edge tools, work towards the blade. Just watch your fingers!

When not in use, a machete should reside in some sort of sheath. Many come with marginal yet adequate canvas sheaths; good quality leather machete scabbards are available from forestry supply catalogs. Lacking a proper sheath, a functional if somewhat makeshift version can be made by folding about two thicknesses of cardboard (from a large box) around the blade, and wrapping it with duct tape.

Specialized tools: There a number of tools that have functions related to particular tasks. Though not part of the essential backwoods tool kit, many of these allow a degree of artistry and craftsmanship.

While a few such tools can be purchased, many are specific to the user’s needs. As a result, many are the product of necessity, made at the time they were needed from materials such as old files and flooring nails. Many of the illustrated tools were crafted by me, through a combination of competent woodworking skills and a modest knowledge of metal working.



Awls, crooked and curved knives, gouges, and small knives are useful for a wide range of tasks. Crooked knife (left center) by Mora. Blade of curved knife (above Mora crooked knife) made by Kestrel tool. All other tools by the author. Cork (lower left) is placed over tip of awl when not in use, protecting both tool and user.

A selection of small conventional knives are useful for specialized tasks ranging from detailed woodcarving to removing splinters. Crooked knives have curved blades, and are made expressly for carving incurved shapes such as spoons and bowls. Less curved

versions have great utility for precision woodcarving. Gouges are chisel-like tools with the blade edge curved into a U shape. Like crooked knives, gouges are used for hollowing spoons, bowls, and other items. Awls are designed primarily for piercing hide in preparation for sewing, but they are often commandeered for other uses requiring a delicate, sharp tip. Metal awls are somewhat more durable than their bone counterparts, but are used similarly.

The information presented here is extremely broad, and touches upon elements of outdoor skills, survival, and traditional woodworking. I have barely brushed the surface of this later subject, and it deserves something more. My cursory knowledge of this rich topic has been in place for a number of years, and I am not up-to-date with regard to books, magazines, organizations, or other resources. However, there are two older but highly informative books that I recommend. These are *Country Woodcraft* (1978) and *Green Woodworking* (1987), both by Drew Langsner. Though technically far beyond the scope of the information contained in this article, these books expand on a few of the ideas introduced here. These book are increasingly difficult to find, but seeking them out is well worth the effort.