The Patriot Caller

Brought to You By the National Self Reliance Association

OCTOBER, 2014 VOLUME 2, ISSUE 10

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DIY 5 GALLON BUCKET SWAMP COOLER

In many parts of the US, highs in the 100-degree range are considered a SHTF crisis all by themselves. Just imagine what would happen if a serious crisis occurred in the midst of an intense heat wave.

If the power grid goes offline, or capacity is seriously compromised, (which is highly likely during regional heat waves) running a power-hungry A/C unit will be impossible.

See ***COOLER****, 11*

5 BEST GUNS FOR YOUR BUG-OUT BAG

Recently, a neighbor of mine who'd only recently been bitten by the self-reliance bug asked me, "What's the best gun for my bug-out bag?"

It's a question that I've answered more than a few of times over the years, but my answer has always been the same.

I answer with another question: Do you consider yourself a firearms enthusiast?

Now, I don't ask this to be condescending. I'm always happy to talk about firearms until I'm blue in the face... but their answer to my question helps me give a much more helpful answer to the theirs.

The reason is that I need to paint a mental portrait of this person's level of familiarity with firearms in general. Does this per-

See ***Best****, 2*

THE DOS AND DON'TS OF FORAGING FOR SURVIVAL

Foraging has made a remarkable comeback from the forgotten recesses of ancient knowledge. Maybe the Great Recession of 2008 had something to do with it? Along with the resurgence of homesteading?

It used to be that foraging was much more common, a necessity really, particularly amongst those that lived outside the city. Food was expensive (still is), so gathering free herbs and native vegetables growing around you naturally helped previous generations make ends meet. Many people are now re-embracing it in the name of self-sufficiency and sharpening survival skills.

One of the Survival 101 maxims is "Learn to recognize edible wild plants for survival." Gaining this knowledge is empowering, whether it is a fight for survival or a recreational

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son shoot often? Have they ever handled a weapon in their life? Do they have an entire room in their house dedicated to storing and displaying weapons?

This information helps me determine whether or not this person would truly benefit from owning a "niche" weapon like a bug-out bag gun, or if they'd be better off investing their time and money in acquiring a good all-around weapon first.

Face it. In all honesty, a gun that's sole purpose is to live inside your bug-out bag is the definition of a single-purpose gun. Not everyone can afford one and even fewer people actually need one.

You probably see where I'm going with this. Almost any modern handgun would be a good all-around choice that travels nicely in compact spaces, ideally a holster for immediate access.

Except for the fact that you must remember to grab this all-purpose gun as you frantically react to a high stress crisis (which takes precious time and mental bandwidth) a specified BOB gun is not a top priority until you've secured many other important preparedness items.

B.O.B. Guns vs. Everyday Carry

So, why not just throw your trusty Glock 17 in your bug-out bag? There are several important distinctions worth noting between BOB guns and everyday carry handguns.

The first distinction is that, if you're going to carry a handgun for personal protection, it needs to be readily accessible. By the time you've rummaged through your backpack to find your handgun, what are the chances that you're too late? Even drawing a handgun efficiently and effectively from your holster takes some disciplined practice.

Here's another critical difference: A handgun is a great choice for self-defense, but it has many limitations in terms of backcountry use. What if you need to reach out and touch something 50 yards away? Do you plan to hunt for food? What do you plan to hunt?

A Colt .45ACP won't leave much meat on a squirrel left to cook, and that squirrel would need to come within 15 yards for me to make a high percentage shot (within 10 yards would be optimal).

The point that I'm driving at is, although a pistol is compact enough and light enough to fit nicely in your backpack, it's really a self-defense weapon and should be used as such. To be ideal for bug-out scenarios, a gun must have a longer effective range that facilitates hunting, perimeter defense, or even sniper activities.

Now for my disclaimer: If you don't already own a handgun, I'd place a higher priority on that purchase than a BOB gun. As I've said, a backpack gun is more of an advanced survival item, a nice-to-have rather than a must-have.

In fact, if you never get around to buying one of these quirky B.O.B. guns, you may still consider yourself prepared for SHTF.

Still, if you're anything like me, and you just love the heck out of guns, especially the slightly esoteric ones, then you'll get a big kick out of the 5 entries on this list.

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BEST (*continued*)

Kel-Tec SUB-2000

Lightweight, compact, foldable, and pragmatic, the Kel-Tec SUB-2000 is just a nifty little utilitarian carbine that's perfect for BOBs. And with its unique look, you certainly won't mistake it for anything else out on the market.

Collapsed, the SUB-2000 measures all of only 16 inches long, a very handy and backpack-friendly length. It also weighs just 4 lbs., which is an added bonus.

Perhaps the most outstanding feature of the SUB-2000 is the fact that it might just be the perfect complement to your handgun. The SUB-2000 comes chambered in either of the two most popular law-enforcement calibers, 9mm and .40 S&W, which just so happen to be two of the cheapest and easiest to find when it comes to ammunition.

What's more, this carbine can also be configured to accept many popular handgun magazines, including models by Glock, S&W, Sig, and Beretta. If you already own one of these semi-auto models, then you can share magazines interchangeably between you handgun and your SUB-2000, a pretty excellent tactical concept.
MSRP $490

Henry US Survival AR-7

The AR-7 by Henry is in many ways the "ultimate survival gun." The barrel, trigger assembly, and the action all fit neatly inside the rifle stock, which just so happens to double as a waterproof storage case.

Packed up, this rifle measures 16.5" and weighs only 3.5 lbs. On its website, Henry guarantees that the rifle will remain highly accurate after taking it down and putting it back together in the field. Putting it back together takes only a few seconds after some practice.

Some people won't like that this rifle is only chambered in .22LR, but others will love that aspect.

Now, on to a few of my least favorite aspects. For many .22 caliber rifles, high capacity magazines offset the smallish caliber. The AR-7 comes with two 8-round magazines (less capacity than you find in many handguns these days). Plus the AR-7 is not exactly ready to shoot when you pull it out of your pack. **MSRP $290**

Rossi Ranch Hand

Now for my personal favorite category: Lever-action rifles (which I think are far too often overlooked). The reason I like these rifles is that they're highly accurate, they hold very powerful cartridges, and they're very safe to carry on your back.

In this case, we'll take a look at the Rossi Ranch Hand. Like most other contemporary models, the Ranch Hand has a cross-bolt safety, which is unnecessary in my opinion on account of the half-cock safety and highly visible hammer.

Subjectively, I like the "wild west" nostalgia factor of the lever action rifle, as well as the fact that this type of firearm was designed to bounce around on the back of a horse. Simplicity and durability are high priority assets if you ask me.

When compared to the other designs on this list, only the Ranch Hand's simple lever-action design has passed the test of time. The others have excelled primarily in the theoretical world.

The Ranch Hand is available in .357 S&W, .44 Rem Mag., and .45 Long Colt, powerful calibers capable of dispatching most anything. With a 12" barrel, the Ranch Hand weighs in at 4 lbs., and has a 5+1 round capacity.
MSRP $519

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BEST (*continued*)

Ruger 10/22 Takedown Autoloading Rifle

You'd be hard pressed to find a more beloved rifle than the Ruger 10/22, and trust me I've done a lot of looking. The problem is that the tried and true Ruger 10/22 will not fit in your backpack -- until now.

The 10/22 Takedown model is designed for compact storage applications. This rifle breaks down into two pieces that can easily be stored in a bug-out bag (although it comes with its own carrying case).

As I mentioned with the AR-7, some shooters may argue that the .22LR is too lightweight for a bug-out gun. I disagree. Your handgun is your primary self-defense weapon; protection is a secondary priority for a bug-out gun. And while .22LR is not ideal for a firefight, it is ideal for small to mid-size game, which is a top priority for a BOB gun.

According to urban legend, the .22 kills more people each year than any other caliber. I don't know if that's accurate, but I do know that I don't want to get shot with one.

This handy rifle weighs in at 4.65 pounds and, when broken down for storage, this rifle measures 13.5 inches. Putting it back together is a cinch, a 3-second process at most. Plus, Ruger swears in its specs that even with a scope mounted, this gun stays perfectly zeroed in when broken down and put back together.

Springfield Armory M6 Scout

Don't let the fact that this over-under combo is currently out of production keep you from considering the M6 Scout. Although Springfield halted production in 2008, this gun has been produced in one form or another for over half a century.

The M6 Scout was originally designed as a minimalist survival weapon for US military pilots, and was issued to US airmen from the late 50s until the early 70s. The folding M6 design has since been produced by several manufacturers looking to meet the demand for survival and nostalgia weapons.

The M6 Scout is 100% function, no frills. In fact, it's almost entirely made out of steel, except for the rubberized butt pad and cheek rest. The upper barrel is chambered in either .22LR or .22 Hornet, while the lower barrel gives you the benefit of a .410 shotgun bore. Oh yeah, and did I mention that the rifle stock doubles as an ammo box?

The far more common .22LR version holds 15 rifle rounds and 4 shotgun shells. That's a generous amount of firepower for a rifle that weighs 4.7-pounds and measures just 15 inches when folded for storage.

If you're a fan of the popular over-under "turkey" gun concept (rifle on top, shotgun on bottom), the M6 is very similar, just without all the furniture on it. Some shooters like the trigger pull and others don't. Like any other weapon, comfort grows with practice.

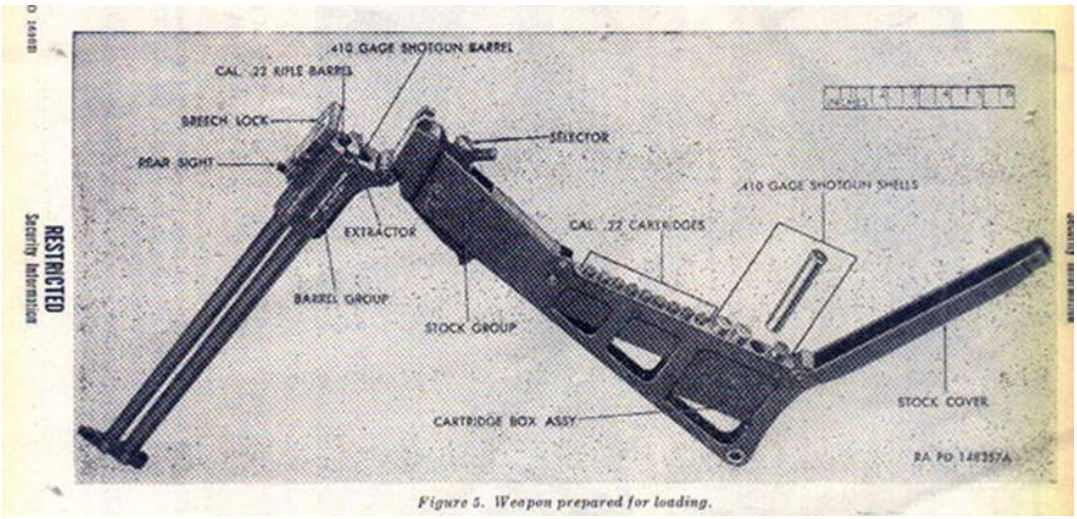

Figure 5. Weapon prepared for loading.

Conclusion

Any of these guns will make an excellent addition to your bug-out bag, providing both the range and functionality that will serve you in a backcountry survival scenario. No matter which B.O.B. gun you choose, the most critical component is you. The more time you spend shooting, as well as getting familiar with your weapon's components and safety features, the more prepared you will become.

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walk through the woods. Whatever your goals, it's a huge step toward becoming self-reliant.

For that reason, many put learning edible wild plants at the top of their survival skill list.

Up front, let's be clear on the word survival in the context of this article. We're talking SHTF here. We're not talking about a 72-hour crisis, but a longer term scenario in which you may need to "bug out" and live off the land.

Fasting for Survival

Some of today's "reality" shows feature survival experts who emphasize edible wild plants as a stopgap survival priority. With some of these "reality" scenarios lasting 3 weeks, clearly you have to activate an alternative food plan. Right?

Maybe not. One theory that's gaining momentum suggests that fasting is the answer, even for 21 days. When faced with fasting or famine, this theory holds that it's preferable to drink water only, rather than to eat less than the minimum number of calories required each day.

As the thinking goes, if you fail to meet your basal metabolic rate, 1,100 to 1,700 calories per day give or take, your body will use a disproportionate level of protein reserves in comparison to fat reserves. Burning fat reserves is not only preferable, protein loss accelerates the starvation process 400% compared to fasting.

Fasting results in a more balanced use of proteins and fats. A healthy person of normal weight (143 pounds) will not suffer any irreversible harm for at least 6 weeks of fasting. Overweight persons may get by longer than this. The record is over a year.

Fasting six weeks without irreversible effects should give the survivor peace of mind to focus on other needs such as staying warm, hydrating, getting enough rest, and rescue. But how do you manage for that long without eating? Those first 2 or 3 days of fasting will NOT be comfortable.

But did you really think you'd survive a SHTF scenario without some discomfort? And do you think eating unfamiliar foods your body's not accustomed to will be a comfortable alternative?

When fasting, the body uses up its storage of liver glycogen and a good portion of its muscle glycogen. Then, the body starts to synthesize glucose through gluconeogenesis. The body switches gears and consumes fatty acids as the primary source of energy (ketone production). It's important to note, fasts lasting more than 14 days cause the basal metabolic rate to drop by 21% as the body becomes more efficient with its remaining resources.

Advantages of fasting on water:

- Tides you over while you become competent in living off the land
- You can learn to fast in less time than you can learn to identify edible plants
- You may have no choice but to fast
- Better use of calories than gathering limited quantities of food
- Fasting usually brings on greater clarity of thought and improved recall
- Within two to six days of true fasting, energy levels become more normal
- You could exert yourself to the point of burning 5,000 calories per day assuming you felt like it
- You typically heal more quickly while fasting

There are problems associated with fasting. Especially when it's your first major fast, and the body undergoes the detoxification process. Symptoms could include severe headaches, foul breath, aching joints and teeth, loose teeth, body odor, etc. Not so bad considering the alternative.

Do the Math

According to medical research, during a long-term scenario where you don't meet your daily BMR (Basal Metabolic Rate) needs, eating as few as 150 grams a day of carbohydrates could stop ketone production. Thus, eating a little bit here and there removes the advantages of fasting, including gluconeogenesis to tap into your energy reserves.

This may be the crucial point in the entire article: Fasting is likely preferable to eating far too little.

I'm not suggesting you don't pack food for a SHTF

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crisis, just that you do the math and make sure your calorie count will be sufficient and balanced. Even in a short-term crisis, it's important to stay sharp and avoid sugar "crashes." Do this by carrying foods with a proper balance of simple and complex carbs and some protein for stabilization.

In addition, stay active. Your body burns more fat and less glucose at approximately 60% of your max heart rate. The simple formula is 220 minus your age = your max heart rate. Take 60% of your max heart rate to find your target zone of burning those fat reserves.

So if you are 40 years old: 220 – 40 = 180. 60% of 180 max heart rate = 108. Keep your heart rate at 108 or below and you will be primarily burning body fat and reserving your glucose for when you really need it.

How to Find Over 1,100 Calories from Edible Plants

Whether you're prepping for long-term survival, or simply learning to live off the land, here are a few key concepts:

- Know how to properly identify the plant (and it's poisonous look-a-likes)
- Learn to find plants in the right season
- Know the right/wrong parts to eat
- Forage enough to at least meet your BMR calorie needs
- Know how to prepare edible plants; and have items needed to do so
- Drink plenty of water to assist digestion

Here are plants commonly identified as survival foods:

Cattail =7 calories per ounce. To meet an average BMR need of 1,400 calories per day, you would need to eat 12.5 pounds of cattail. Granted, most of those calories come from carbs (starches), it's still low on the carb scale and simply unrealistic.

Inner Pine Bark = 500 – 600 calories per pound. Sounds reasonable. I will let you do the math. By the way, the word Adirondack is Iroquois meaning, bark eaters. The tribe supplemented their regular diet with Eastern White Pine to survive harsh winters.

Acorns =142 calories per ounce for white oak. You have to hope there are oaks and it's fall or spring when they drop. You'll also have to compete with the other wildlife for the resource and have a pot with fire and enough water to leach out the tannins.

As a reminder, the fasting strategy is for long-term survival (over 72 hours). In the short-term, take those few carbs from cattail and inner-pine bark as long as it takes little energy to get them and you have drinking water digestion.

Real Food Eats Plants

Studying edible plants is a long-term commitment, one in which season, identification, and preparation are critical. The bottom line is: You're not going to obtain enough calories from foraged plants.

The human being cannot be a vegetarian in the wilderness under primitive conditions (with the possible exception of the tropics). In reality, a combination of plants and animal

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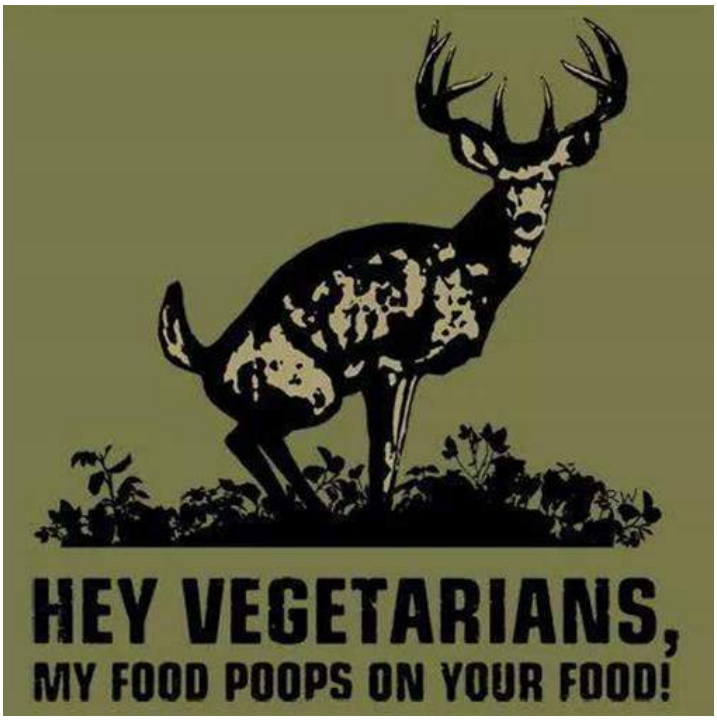

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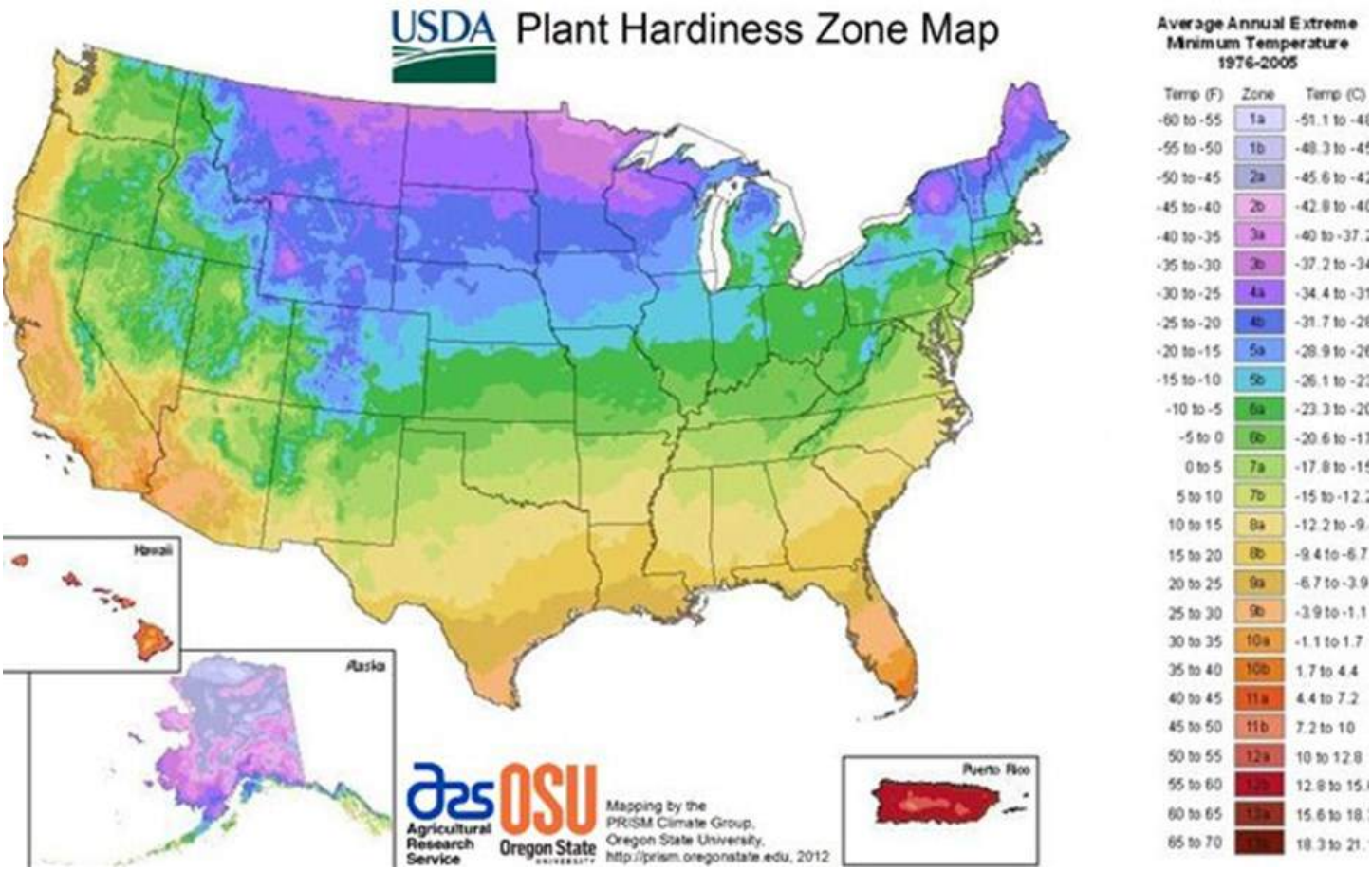

protein is necessary to keep humans alive in wilderness situations.

That being said, it is far easier to learn a few deadfalls, snares and improvised fishing methods if you are concerned about food in a long-term survival situation. The calorie gain is much better with wild animals than edible wild plants as noted below:

Approximate calorie counts from just 3 ounces of meat:

Rabbit (cottontail)= 123

Rabbit (Jack)=131

Squirrel=128

Rainbow Trout=140

Sunfish=97

Crayfish=74

10 oz. of packrat=650

And that is just the meat. Other organs such as the liver, kidneys, kidney fat, heart, lungs, and brain would double the calories of an animal such as a squirrel or rabbit.

Eating the lean meat alone could lead to death of malnutrition in the long -term. You have likely heard that a high protein diet lacking fats and carbs is known as "rabbit starvation." It killed numerous early explorers who did not know to eat more than just the meat.

The Takeaway

Unless you're skilled at taking game to meet your BMR in calories, a fasting strategy maybe your best option in a long-term survival scenario. Remember, it's not the calories that will get you in the short-term; it's also the lack of carbs. Carry food and, if necessary, harvest any easy opportunities in the near term (especially those with carbs). Always have an ample supply of water to digest them.

With that out of the way, I'm not trying to discourage you from learning about plants. Edible plants are an excellent way to augment your diet, today or during a crisis, but you can't live on naturally occurring vegetation alone.

10 Plants for American Foragers

It goes without saying that eating wild plants requires particular care and attention. Never eat any plant unless you are absolutely sure that it is edible.

It's a very good idea use a field guide written by an expert. The information in this article is for educational purposes only, and

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not intended as a substitute for medical advice, diagnosis, or treatment. Harvest wild edibles at your own risk.

As with any foraged food, make sure the plant hasn't been tainted with pesticides or any other contaminants. Try to avoid plants grown too close to roadways as they tend to contain too much dust and automotive exhaust

The general rule of thumb for gathering edibles in season is:

Gather leaves in spring and summer

Gather roots in winter and for some, late fall and winter

Gather fruits in late summer and fall

Gather seeds after flowering in late summer and fall

Plants to Avoid

If you can't clearly identify a plant, it's better to be safe than sorry. Steer clear from a plant if it has:

- Milky or discolored sap
- Spines, fine hairs, or thorns
- Beans, bulbs, or seeds inside pods
- Bitter or soapy taste
- Dill, carrot, parsnip, or parsley-like foliage
- "Almond" scent in the woody parts and leaves
- Grain heads with pink, purplish, or black spurs
- Three-leaved growth pattern

Many toxic plants will exhibit one or more of the above characteristics. Bear in mind that some of the plants below have some of these attributes, yet they're still edible.

Amaranth

Pre-Colombian Aztecs lived off amaranthus. It is a bushy plant that can be eaten as a vegetable, or the seeds can be eaten as grain. The preparation of amaranth seeds is similar to quinoa. The wild versions are green, sometimes with red stems, spindly and usually no more than about 2 feet tall.

Amaranth seeds are high in protein, contain essential amino acids that are not often found in grain, and they're high in fiber. One cup of Amaranth seeds contains as much protein as 3oz of chicken. It also contains calcium, iron, potassium, phosphorus, and vitamins A, C and E. It grows in Zones 7 and up.

Chicory

Chicory is a relative of radicchio and Belgian endive, cichorium intybus, or "blue sailors" and has many edible parts. The young leaves are edible, though usually bitter.

Put leaves and the blossoms in a salad. The flower buds can be pickled. The roots can even be boiled and eaten, although you may have to change the water several times to reduce the bitterness.

The roots can be baked, ground, and used as a coffee substitute. These will take very low temperatures and survive temperatures in the low 20s, so you can find them from zone 5 and up.

Curly Dock

Rumex crispus- also known as "curly dock", "curled dock", or "yellow dock" often grows in dry areas and is a self-irrigating plant. The curly edges capture rain, mist and dew, channeling the water towards the central

leaf vein then down towards the root. It grows in zones 4-7.

The young leaves should be boiled in several changes of water to remove as much of the oxalic acid in the leaves as possible. Once the plant matures, it becomes too bitter to consume.

Curly dock is an excellent source of both vitamin A and protein, and is rich in iron and potassium. Although edible, consume in moderation because oxalic acid can irritate the urinary tract and increase the risk of developing kidney stones.

Field Pennycress

Thlaspi arvense or field pennycress is a common plant that prefers disturbed areas. It can be found in croplands, fields, weedy meadows, along roadsides, and near waste areas. It is hardy to zone 6.

Field pennycress has a distinctive bitter flavor, and is usually parboiled to

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remove most of the bitterness. You can eat the seeds and leaves of the plant raw or boiled.

The plant is a "hyper-accumulator." It takes up any and all minerals around it. So don't eat it if it's growing in contaminated soil along roadsides or near waste areas, for example.

Fireweed

Commonly known as fireweed, Chamerion angustifolium offers something useful all stages of growth. You often see it in pictures of Alaska. It grows from zones 2-7.

Early shoots can be eaten raw or lightly cooked. Young leaves can be pinched off and eaten like spinach. Mature plants are fibrous and relatively inedible, but their flower buds make a colorful addition to salads.

Leaves are harvested for tea around the time the plant flowers. Dry the leaves in baskets or paper bags and store in glass jars or bags. They will remain potent for about a year. Dried fireweed has notes of berry and citrus.

Morel Mushrooms

Morchella are edible mushrooms with a distinctive honeycomb-like appearance. Also called dryland fish, hickory chickens, miracles, and sponge mushrooms.

The mushrooms can most often be found under elm and ash trees, usually ones that are in some stage of dying. A couple of other morel producing trees are sycamore, tulip poplar, and cottonwood.

False morels can be told apart from true morels by careful study of the cap, which is often "wrinkled" or "brainy", rather than honeycomb or net-like. The easiest way to tell the false from the true variety is false morels contain a cotton-ball looking substance inside their stem. True morels are hollow inside. The caps of the false morel can be easily twisted in comparison to the normal morel, and false morels are often a brown, reddish color.

Morel mushrooms have been found in all 50 states. While they can appear anywhere in limited quantities, the Midwest is where they tend to be most prevalent. In the West, there are large commercial industries dedicated to harvesting morels that appear in burn sites. Hundreds or thousands of foragers scour these burned out areas after the massive forest fires from the previous year. So your chances of finding any out west are almost nil.

There's a saying that there's no such thing as an old mushroom hunter. That's because poisonous mushrooms have no outward characteristics in common. So picking and eating wild mushrooms requires the utmost caution. Of the thousands of mushrooms found in North America, only about 5% are edible. Only about 5% are poisonous, too. And the rest just aren't fit to be eaten.

The number one rule for enjoying the fruits of a mushroom hunt is to eat only those mushrooms which you can absolutely, positively identify as edible. Just remember: even experienced mushroom hunters can be fatally fooled, since many edible mushrooms have toxic lookalikes.

Don't believe the old wives' tales. All the stories about how to tell if a mushroom is poisonous, like whether it tarnishes silverware or turns blue when bruised, are dead wrong. Don't you be...

Purslane

Portulaca oleracea is more commonly known as purslane, verdolaga, pigweed, little hogweed, pursley, or moss rose. It grows in all US zones.

It has smooth, reddish stems and alternate leaves clustered at stem joints and ends. Depending upon rainfall, the yel-

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low flowers appear at anytime during the year and open at the center of the

leaf cluster for only a few hours on sunny mornings.

Like the dandelion, purslane has a taproot. The stems, leaves and flower buds are all edible. It has a slightly sour and salty taste. Purslane may be used fresh as a salad, stir-fried, or cooked as a vegetable similar to spinach.

Sheep Sorrel

A cousin of the curly dock, Rumex acetosella is also known as sheep sorrel, red sorrel, sour weed, or field sorrel.

It is a common perennial weed with green arrowhead-shaped leaves and red-tinted deeply ridged stems. It grows in zones 5 and up. The flowers emerge from a tall, upright stem. The female flowers are maroon. Sheep sorrel can be used in salads and as a stuffing, but they're best known in sorrel soup made by the French. Like all plants with oxalic acid, it should be used in moderation. Some people may also be allergic to it.

White Mustard

Sinapis alba or white mustard is an annual with a fast rate of growth and is not frost tender. You can find it zones 6 and up. It grows in sandy, loamy and clay soils and prefers good drainage.

Mustard plants are most easily identified by their small and plentiful flowers with four small petals, growing in clusters atop a long stem. Wild mustard has long stems, with rounded or jagged leaves at the end.

Leaves can be eaten raw or cooked, and have a hot, pungent flavor. The seed can be ground into a powder and used as a food flavoring. White mustard's pungency develops when cold water is added to the ground-up seed. An enzyme produces a sulphur compound in about 10 – 15 minutes. Mixing with hot water or vinegar inhibits the enzyme and produces a mild, yet bitter mustard.

Wild Asparagus

Wild asparagus tends to grow in rural areas near water. Asparagus can be grown in just about every state. It requires frost to force it into dormancy.

It can be found around irrigation ditches in the countryside (with or without water in them). You may find some dead, yellowish, tall, wispy plant material around new asparagus growth. It is last year's plant and the source of the new growth. Once you locate a spent plant, search the base for new growth. They may be surrounded by higher weeds or grasses, so it takes a little patience.

Wild asparagus can be harvested and treated just like store-bought asparagus.

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Air temperature	% Relative humidity																
	2	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
75	54	55	57	58	59	61	62	63	64	65	66	67	68	69	70	71	72
80	57	58	60	62	63	64	66	67	68	69	71	72	73	74	76	76	77
85	61	62	63	65	67	68	70	71	72	73	74	75	76	77	79	81	
90	64	65	67	69	70	72	74	76	77	78	79	81	82	83	84	86	
95	67	68	70	72	74	76	78	79	81	82	84	85	87				
100	69	71	73	76	78	80	82	83	85	87	88						
105	72	74	77	79	81	84	86	88	89								
110	75	77	80	83	85	87	90	92									
115	78	80	83	86	89	91	94										
120	81	83	86	90	93	95											
125	83	86	90	93	96												

One common off-the-grid solution is to build what's known as a "swamp cooler" (AKA an evaporative cooling system) in order to cool a confined space like a room or tent. The advantage of swamp coolers is their efficiency, affordability, and the fact that they can reduce temperatures by 20-30°F.

Perhaps the best thing about "swamp" coolers is their adaptability. As soon as you've finished constructing your first cooler, you'll have plenty of ideas for how to improve your system. Will you make it larger? Get a more powerful fan? A bigger pump?

While that 20-30 degree cool-down is impressive, swamp coolers work more efficiently in climates with a lower relative humidity. See the nearby chart to see the potential temperature reductions you can achieve with evaporative cooling. The gray boxes indicate optimum comfort, which isn't likely during a dangerous heat wave.

As the relative humidity increases, the difference between the ambient air temperature and the air coming out of your swamp cooler will shrink. Even at a very high relative humidity like 90%, your swamp cooler can still cool you off (slightly), but it can also increase moisture levels like a humidifier.

Simply put, this design is a lifesaver in conditions where relatively humidity is below 60%, where it's most effective. Due to its limited capacity, your 5-gallon swamp cooler will work best in a small space such as a tent or a bedroom, as opposed to an entire home.

The very young and very old are the most susceptible to heat related illnesses, so their rooms are ideal places to install your cooler.

Materials

1 - 5 gallon bucket w/lid

1 - Dura-Cool pad (24" X 34")

1 - 4-inch PVC pipe w/ elbow

1 - Small fan (AC or DC depending on your application)

1 - Solar-powered fountain pump

1 - 3/8 inch aquarium hose

1 - 3/8 inch T connector

1 - 4-inch hole saw

STEP 1

Using your hole saw, cut holes along the top half of your bucket, the more the better as long as you maintain the integrity of your bucket. Don't cut holes in the bottom half of your bucket, as it will need to hold at least 2 gallons of water.

STEP 2

Cut your Dura-Cool pad in half length-wise and use one of the pieces to line the inside of your bucket. Then roll up the second piece and insert it inside the first piece, doubling up on the thickness. This pad will actually hold the water as it is evaporated, cooling your air.

STEP 3

Cut one section of 3/8" hose to the length of the inside circumference of your bucket (it will sit atop your Dura-Cool bucket liner). Connect both ends with the T-connector and drill holes evenly around the loop. This loop of hose will drip the water on top of your pads, keeping them moist (see diagram on page 12).

STEP 4

Place your submersible pump at the bottom of your bucket, in the center of your cooling media pads, so that it will pump water up into the distributor hoop.

Continued next page

FORAGING *(continued)*

STEP 5

Choose Your Own Adventure: This step is where you must make a decision regarding how you'll use your swamp cooler.

If your goal is to keep your home cooler and save money, then you may choose a simple 110V plug-in fan. This option will produce the highest airflow and thus cooling. However, when the power goes out… so does your swamp cooler.

The off-the-grid alternative is to install a battery-powered fan, which generates less airflow, yet works in a grid-down situation. Because our goal is self-sufficiency, I'm going to focus on the battery powered 12V version.

The most energy-efficient option for this application is a 120mm computer fan, like the Delta Very High Speed Fan (available on Amazon), which puts out an airflow of 150 cubic feet per minute. It draws only 1.5 amps, which will go easy on your power source.

Plus, as you can see in the nearby image, it mounts neatly onto the 5-gallon bucket's lid. Use your 4" hole saw to cut out the center of your lid and mount your fan on the underside of the lid, pushing air up and out of the bucket. Don't forget to connect the fan wires to your 12V power source. (See photo above right).

STEP 6

Glue the 4" PVC pipe and elbow to the top of your bucket, directing the fan air through the pipes and out horizontally. The direction of the airflow from the PVC pipe isn't particularly critical, but you'll probably want the cool air to blow toward you.

STEP 7

Switch on your pump and make sure it's evenly soaking your Dura-Cool pads inside the bucket. Once you've confirmed the pump is working properly, replace the lid tightly and switch on your fan.

This system will consume roughly 2 gallons every 5 hours and 1.6 Amps per hour. Thus, a 12Ah (amp-hour) batter would operate your system for approximately 7.5 hours before it was completely drained (which is not ideal for the life of the battery).

If you have an off-the-grid power system already, this small load shouldn't make a huge difference in your energy needs if operated sparingly. If you want to operate this system independently, you may want to research introducing a small-scale solar panel, such as a 20W panel, into your system to keep your batter from fully running down.

Conclusion

By now, you understand the fundamentals of how swamp coolers work. By drawing warm air in through a wet media (in this case, a Dura-Cool pad), you can harness evaporative cooling and cool down an enclosed space with much less power than a conventional air-conditioner… even when you're completely off the grid.

The main challenges are a.) Keeping your media wet, and b.) Scaling your system to cool down larger spaces.

I've seen these types of coolers built using 50-gallon trashcans and even larger, custom-built cooling structures for larger spaces. The trick is to find the right combination of pumps and fans that will keep your media wet, while boosting the output of cool air.

At some point, you also have to consider how much water you can afford to evaporate for the purpose of keeping cool.

NOTE: This doesn't have to be potable water.