

SPECIAL

Newsweek

EDITION

OFF GRID



**EXPLORING THE END
OF LIFE AS WE KNOW IT
ARE YOU PREPARED?**

INTRODUCTION BY "SURVIVORMAN" LES STROUD

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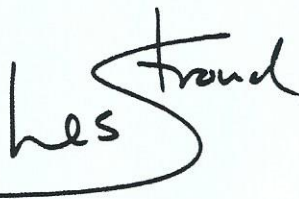
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Introduction

I have endured all types of wilderness extremes, from frostbite and hypothermia to dangerously hot and dry conditions, from deserts to the Arctic. Surviving harsh conditions is not easy or fun. While the magic of nature is beautiful, the reality is that you may perish if you have not prepared yourself for basic human survival.

Do you know about edible plants and bugs, wilderness travel, building fires in all types of weather, identifying safe drinking water or hundreds of other skills and techniques to help you survive? If you answer 'no' to any of the above, this special issue of *Newsweek* was written for you. It combines outstanding international expert advice with personal experiences and stories to highlight tips you need to survive in the most dangerous conditions. It answers some of the most common survival questions and provides guidance on preparing for challenging outdoor experiences.

The natural world enriches our lives and there are hundreds of benefits to living off the land, but when you're confronted with a survival situation, you must be prepared to beat incredible odds to become a survivor.

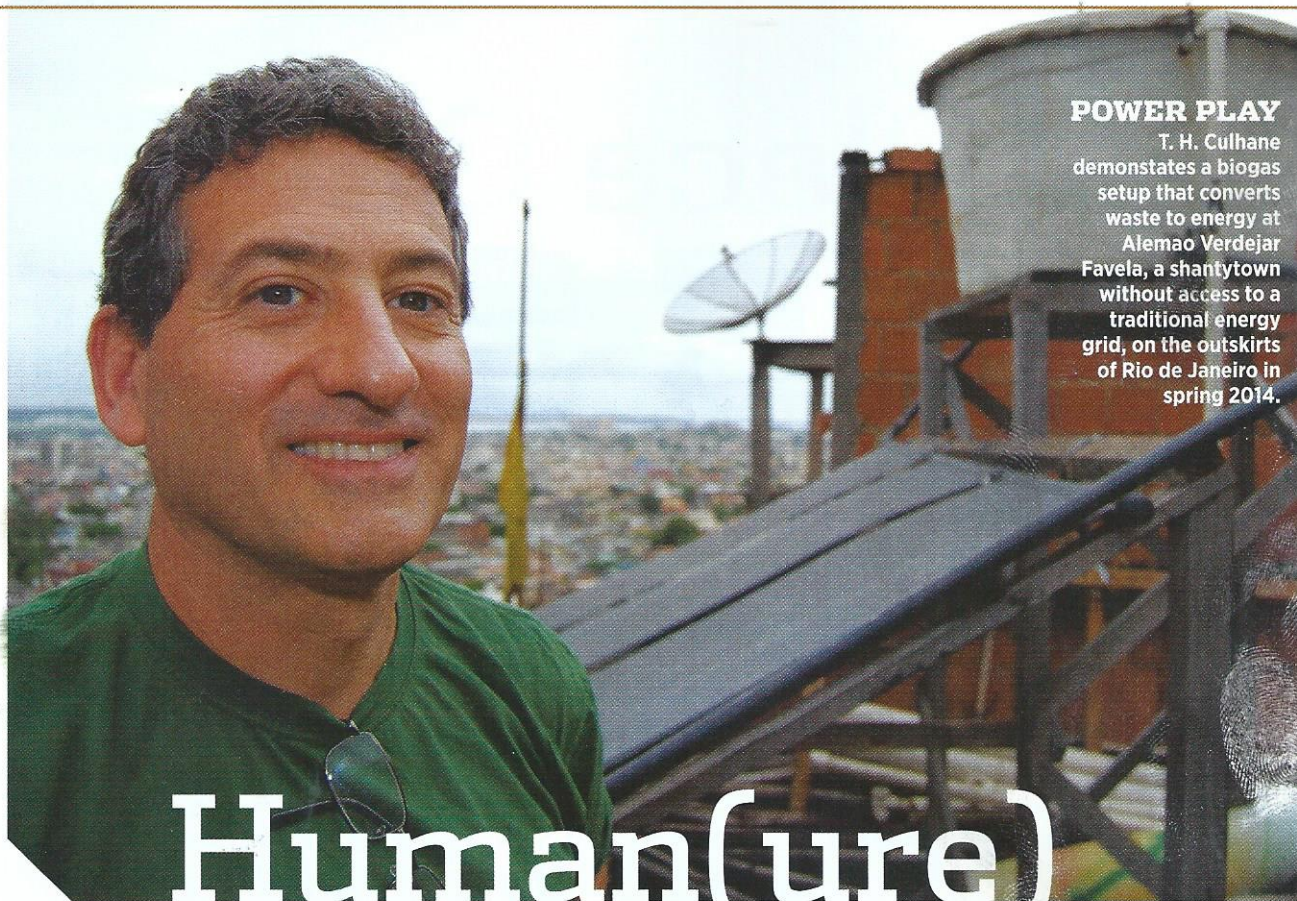
A handwritten signature in black ink that reads "Les Stroud". The signature is stylized, with "Les" written in a cursive script and "Stroud" in a more blocky, slightly cursive font. A horizontal line is drawn underneath the signature.

—“SURVIVORMAN” LES STROUD

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POWER PLAY

T. H. Culhane demonstrates a biogas setup that converts waste to energy at Alemão Verdejar Favela, a shantytown without access to a traditional energy grid, on the outskirts of Rio de Janeiro in spring 2014.

Human(ure) ENERGY

National Geographic emerging explorer T. H. Culhane talks about harnessing the power of poo.

Break down your take on trash and poop.

In the field of industrial ecology, the mantra is that, in nature, there is no waste. And we are a part of nature. Everything we produce is a material. We produce energy and matter and it comes back around and is transformed into something else. My insight is that we are almost self-contained biospheres. We're pulling materials into our nests and then we're excreting—if you like—urine, fecal matter, sweat, lemon peels and banana peels

and avocado pits and onion skins and the food that we didn't eat that was still on our plate. My study is harvesting this stuff that other people have ignored.

What is biogas and what's so great about it?

Biogas [fuels like methane produced by the breakdown of organic matter] is the most ancient simple hydrocarbon. It's what dominated the Earth's atmosphere when this planet began. There's methane everywhere in the universe, but

Earth was almost completely dominated by methane until microbes began to produce oxygen. At that time, the methane-producing organisms went into hiding because they can't stand oxygen—it's a poison to them. So they went down into ocean sediments and deep into rock and that's why we have so much natural gas; they're still there, churning, making the stuff. And we have them living in our guts, in our intestines, in our stomachs, and so does every multicellular life form.

How'd you start with methane?

I started a biodigester in my bathroom using my baby's diaper waste. I knew there were all these organisms in that material the baby was creating. I'd take the food waste the baby didn't eat, and I'd put those in the biodigester and the organisms would eat the food waste and then fart out methane. I had this stomach I created out of plastic in the bathroom, and it farts and it also pees out this liquid fertilizer. You can burn it on a stove and you can run electric generators off of it so you can run lights, gas lamps, refrigerators—it's true natural gas. And then eventually you have a sludge that builds up that you can dry and it's soil. Three byproducts—methane, fertilizer and soil—that are fantastically useful and you don't have to worry about waste treatment.

How does all this translate into turning on lights and ovens?

You store the methane in a balloon or a plastic bag, and we use a hose to deliver it. In India, we used garden hoses, and, here in the U.S., we go to Home Depot and get the clear plastic hoses people use in their aquariums. If we want to create pressure, we get biogas pumps from China, which have an inlet and an outlet so you can plug a tube in one side and then it pumps it out the other. You can turn any stove into a biogas stove.

Would this work for people who want to live off the energy grid?

If you've got a kitchen and a toilet, you've got all the makings

of a biogas system. A family of four to six produces enough waste, both toilet and food—you can keep them separate or you can combine them—to cook for about two hours a day or run a generator for about 45 minutes a day, which you can use to charge batteries to run lights for many, many hours. And that's just on the waste they produce. Now if they went out and hunted and gathered great sources of biogas that are just piling up to rot—grass clippings, fruit fall, animal waste—they begin to get to the point where they can probably

garbage disposals are the most important technological achievement of the 21st century because you grind up the food waste and then you can turn it into soil in three to six days instead of composting it for three to six months, or you can turn it into biogas in 24 hours. And no rats, raccoons, dogs, cats or other animals have interest in it after it's been ground up. It all belongs to the microbes.

Can you mess up the recipe?

Yeah. It's a stomach and people tend to overfeed it and then it

“If you've got a kitchen and a toilet, you've got all the makings of a biogas system.”

heat water for bathing as well and generate emergency backup electricity. Could a prepper live 100 percent off-grid? Yes.

What about places that are snow-covered?

You can put a big tarp over a permafrost lake and it bubbles constantly and you capture that gas and you use it—they're starting to do that in some parts of Scandinavia. The microbes are there. It's all been a question of how much organic material is available at any given time, and, at most cold temperatures, the microbes are producing gas very slowly.

What can we do to maximize our daily energy output?

I've said that InSinkErator

goes sour and won't produce methane anymore and starts to produce carbon dioxide. Then you have a couple of options: 1) stop feeding it and wait until it recovers, which will take several weeks, 2) dump in sodium bicarbonate or antacid and wait for it to start again 3) drain it and refill it with more manure or lake mud to get it started again. If you have a system that has toilet waste going in all the time, or animal waste of any kind, you almost never have to do anything, but many communities don't want to do that because of psychological taboos.

Can you store it?

It's natural gas. It can be stored for millions of years. It'll be as good as the day you produced it.

10 Things I Learned From THE WALKING DEAD

Though all five seasons of the show are fiction, the survival strategies are real. So are the spoilers.

1. Know when to make some noise.

When you're exposed without shelter, put up noisemakers around the perimeter of your camp site to alert you to trespassers—animal or otherwise. Empty tin cans tied on a string work. Bob, Sasha and Maggie used this pretty effectively in Season 4, when they were back in the wild following the Governor's devastating prison onslaught.

2. Use whatever you've got on hand to get the job done.

Walkers don't stop coming just because someone's left their knife in their bunkroll. *Walking Dead* survivors have dispatched zombies using screwdrivers, boot heels and a machete scabbard, and Rick took out a living villain using just his teeth. Daryl Dixon even used a walker's skull to bash in an attacker's. If you're in a survival situation, you'll need to use whatever works, too. Sticks become shovels, socks become water purifiers, and so on.

3. Make your own luck.

Don't stay in a dangerous situation and hope to get rescued. But also don't discount an SOS. Communicate however you can. Exposed because she was walking along train tracks in Season 4, Maggie wrote Glenn notes in zombie blood and guts alerting him to her direction—and kept walking.

4. Always make sure your water supply is clean.

After all those gunfights and herds of walkers, it was Patrick's sneezing over the water barrel in the opener of Season 4 that nearly took down the entirety of Rick's crew.

5. There is strength in numbers.

There's something romantic about you against the world, but you might not want to go it alone. Loners tend to go a bit nuts. Rick and company are pretty good at keeping their "people" in one piece. Plus, in a group, as Hershel said, "Everybody's got a job to do."



DEAD SET

In Season 3, Episode 1, "Seed," Rick Grimes (front, center) leads a team of post-apocalyptic survivors, as they cover each other's backs, to make a walker-free haven in an abandoned prison.

6. Smelling is seeing.

In Season 1, Rick and Glenn (and four seasons later, Carol) shambled among walker herds after covering themselves in zombie guts to disguise their human scent. Effective hunters often use both clothing and scent as camouflage and lure. Smell can be a deterrent, too: Some farmers employ coyote urine and human hair to protect their food source from rabbits and deer.

7. Shelter isn't always safe.

Don't assume an already-standing structure is perfectly safe and pest-free. Look in all the nooks and crannies for dangerous surprises before you hang your hat. Remember the Tombs in Season 3?

8. Gather food where you may.

No, not like the Terminans. (RIP, Bob's leg.) But do look beyond the grocery shelves. Like Father Gabriel's basement stash from the food drive in Season 5, a termite mound can be a

much-needed protein source. Just make sure it's a non-toxic, uninfected source first. (RIP, Bob.)

9. Learn how to wield your tools.

Things like fire starters are a lot less surefire if you don't have practice using them. Think back to Shane's gun training sessions near Hershel's farm in Season 2. They're what made Andrea go from not knowing how the safety works to being a stone cold shot the night of the fire. Patricia, on the other hand, could have used a little more learning.

10. Be aware of your surroundings.

As they walked into the unfamiliar Terminus in Season 4's finale, Rick noticed that one Terminan was wearing Daryl's poncho and another was holding Hershel's pocket watch. Trusting your senses can sometimes mean the difference between being the hunter or the hunted.

