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Impermanence

By Paradis Perdu (Charles Richey), 1992

See holly berries'

Orange blush under azure

October skies. Change.

Fall Folklore

By Banjo

Summer 2022 is just about over and I don't know about you, but I am always excited to see the arrival of Autumn. The vibrant colors of the fall foliage is good eye candy! It is about this time of year I tend to wonder what the upcoming winter will be like. I am ready for some cooler air, but not winter.

So, to fill my afternoon with something enjoyable while I wait on Autumn and her cooler air, I thought the time is appropriate for some weather folklore and weather proverbs.

Break away from your computer and take a walk in your backyard. Look at what nature is saying about the upcoming winter. Look for signs.

Acorns that fall heavily means a cold winter is coming. Similarly, a large crop of walnuts means a snowy, cold season. Thick nutshells predict a severe winter. An abundant crop of berries is also a sign of a cold, snowy winter.

Spiders spinning larger than usual cobwebs and/or entering the house in great numbers may mean a rough winter ahead. According to the old folklore, "For every foggy morning in August, it will snow that many days this winter."

While we might think this will be a simple thing to keep track of, it's a bit harder than you might think. I have a friend who counted all the fogs in August this year. He resides in western Kentucky and I am excited to see if his first prediction of the number of snow falls in his area will be accurate.

Other predictors pertaining to winter and the month of August include if the first week in August is unusually warm, the coming winter will be snowy and long. If a cold August follows a hot July, it foretells a winter hard and dry.

If squirrels are more active than usual, it's considered an indication that a severe winter is on its way. And it's no wonder why. During the autumn and winter season, a squirrel's main task is gathering nuts and seeds for its storehouse, so if its efforts have noticeably increased, it could only mean he's preparing for the worst. As the saying goes:

"Squirrels gathering nuts in a flurry, Will cause snow to gather in a hurry."

When squirrels bury their nuts early, it will be a hard winter

A persimmon's seeds are thought to foretell the type of winter expected. Carefully cut the seeds open lengthwise. What do you see inside? A spoon-shaped pattern is said to represent a shovel for all of the heavy, wet snow to come. A knife signals a cold, icy winter with cutting winds.

If a fork is visible, it means that a generally mild winter with only light powdery snow can be expected. While it makes no difference if the persimmon is picked or purchased, it must be locally grown otherwise, you'll be getting results for a region other than your own.

A tough winter is also said to be ahead if: Onions or cornhusks have thicker than normal skins. Leaves fall from the trees late in the year.

The larvae of Isabella tiger moths more commonly known as wooly worms, or wooly bear caterpillars are easily recognized by their short, stiff bristles of reddish-brown and black hair.

According to legend, the width of the middle brown band foretells the severity of the upcoming winter. If the brown band is narrow, the winter will be cold and long. However, if the band is wide, then the winter will be a mild and short one. Some consider the wooly's hair thickness to be another indicator, with a thicker coat signaling harsher, and sparse hairs a milder winter season.

What's more, the wooly has exactly 13 segments to the length of his body, the same number of weeks there are of winter.

A warm November is the sign of a bad winter. Thunder in the fall foretells a cold winter. If animals have an especially thick coat of fur, it will be a cold winter. If fruit trees bloom in the fall, the weather will be severe the following winter.



A cold winter is succeeded by a warm winter and vice versa. If the first snow falls on unfrozen ground, expect a mild winter. Hornets nests built in the tops of trees point to a mild winter. The first twelve days of the year are thought to foretell the weather for each of the next twelve months.

The variant is the 12 days from new Christmas (Dec. 25) to old Christmas (Jan. 5) determine the weather. If an owl hoots on the east side of a mountain it denotes bad weather. Main thing is this winter, and everyday, stay warm and safe and spread winter cheer!

Jo Ann's Corner

By Jo Ann Bullard

Good morning, my friend. Welcome to Jo Ann's Virtual Café 2022. Come on in and help yourself to a breakfast beverage. Let's talk. Joe has a story.

In Appalachia, there are small towns that don't exist anymore. Sometimes people will seek out these abandoned towns. They wonder how or why these little towns became ghost towns.

Two teenagers, Tom and Janet, loved to wander around the hills and mountains close to them. They had heard of a story about an abandoned town named Otisville. The strange thing is that they had an old map of the area.

They found Otisville on the map and had hiked to where it was on the map. There were no buildings or anything resembling a town there. There was not even a single foundation anywhere. Tom told Janet, his girlfriend, that doesn't make any sense. These two teenagers were pretty brave souls. They both loved history. Their goal after High School was to become local historians of this part of Appalachia. They knew an old man named Otis. He was at least 90 years old. Many said he was older. Nobody knew much about him.

He lived a few miles away from where the map said Otisville was up a hollow where nobody ever went. People only saw Otis once in a long while. He would pick up a month's load of supplies on an old pack mule. Nobody had ever been to his old shack. Well, Tom and Janet decided that they were going to talk to Otis. They were wanting to solve the mystery, but first they talked to the local town historian about Otisville.

"I can't tell you much. There was a town there. I even got pictures of it. Nobody can explain it, but it simply vanished without a trace. It was a nice little place."

Almost all of them worked in a local mine mining copper. The rumor was, before it disappeared, they found a gold vein in the mine. People were starting to argue who found it first. Then one thing led to another, and people started fighting each other. A lawman, John O'Toole, was sent to stop the fighting to keep someone from getting hurt.

Shortly after that, the town just disappeared. Other lawmen went there looking for John O'Toole. They never found any trace of him either. Nobody knows what happened to him either. That's all I know. You can take some pictures with you. I made many more prints of them. If you find Otis, show them to him. He might know something.

One other thing, Otisville was established in 1871 by mostly people from Ireland and Scotland on October 31st,” said the local County Historian. Early on Saturday morning, Tom and Janet told their parents that they were going to look for clues about Otisville up the mountain from their homes.

Their parents didn't think nothing about it. They figured that it would take them about four hours to get to Otis's place. Now Tom was good at tracking things in the forest. He would sometimes be called to find a local or visitor that got lost in the forest. He would always somehow find them. When they got a couple of miles up an old mountain road, Tom saw a faint sign on a man's track and some mule tracks as well.

About three miles further, the track led off where the old road ended. They followed the tracks until they found an old rundown shack. An old man was sitting on the old porch eating some hickory and walnuts.

“Why in tarnation are you two doing here? Nobody has ever found my place,”

he said to them. He then looked at Tom.

“I should have known. It would be you, Tom.

I heard by the wind in the trees that you were the best tracker ever to set foot in these forests. By the way, you two. What do you want?” old man Otis asked.

“We are wondering about the old town Otisville and what happened to it. We figured you might know something,” said Janet.

“Yes, I know something, but I don't want to tell you. You might get someone to lock me up for being crazy or something like that.” Otis replied.

Tom and Janet reassured Otis that they were local historians and just wanted to set things straight. They showed him the old pictures of Otisville they had brought.

“Ok, sit down and I will tell you what I know. I was just a teenager like you when all the stuff started happening in Otisville.

It was a good place until they found gold.

Then everyone turned on each other. They sent a Lawman named John O'Toole to stop the fighting. Now he did just that. He was Scotch-Irish like the folks in Otisville was. There was something different about him. Some said he was a wizard.

I talked to him once. He told me that everyone here had gold fever. Unless he somehow got them out of this place, the fighting would never stop. He told me he had a plan. On October 31, he would take this town away. He had a girlfriend in Otisville so taking all the gold and them didn't bother him.

The only problem was that I didn't want to go. I lived up here. I had a girlfriend. She didn't want to go and wanted to stay with me. On Halloween of 1900, I went to get my girlfriend. Her parents and some town's people caught me and tied me to a tree.

'You can't come because you are an outsider' they said. Just before it happened, Lawman John Roberts told me that if I stayed here until October 31st, 1999, they would return for one night.

He gave me a potion to take. Well, that night a big earthquake happened. I closed my eyes because of the dust. When the dust cleared, the town and everyone in it just disappeared. I was heartbroken. I have been here ever since waiting for their return tonight. I only hope that my girlfriend is waiting for me. Now that's my story. You are welcome to come and wait with me, tonight," Otis said.

Tom and Janet couldn't help it. They had to stay even if it got them in trouble. When it got dark, Otis and them went down to where the town once was. The moon was full. At midnight exactly wind started blowing leaves around and dust filled their eyes. When the dust cleared, Otisville was sitting in front of them.

"I'm Lawman John O'Toole, I am looking for a man named Otis. He was to meet us here tonight. Anyone who would wait 100 years to see his love deserves to come with us." said the young man in front of them.

"I am Otis. I have been waiting for almost a hundred years. I am old but is my girlfriend Sally there? he asked. "You two can't come, but Otis can. I had to take people away from here to save them. I will give you a map of distant Scotland, you can find us there next All Hallows Eve and I will tell you all about it and answer all your questions,"

Roberts said. Otis walked into the main street of Otisville. A beautiful young lady ran to Otis. As soon as she kissed him, Otis turned into a young handsome man. Otis waved good-bye to Tom and Janet.

The wind blew up the leaves and dust. The town was gone. When Tom and Janet got married a year later just before All Hallows Eve, everyone couldn't believe they wanted to honeymoon in Scotland at a place called Ellivsito.

That's Otisville backwards.

—

You know it's strange how memories come out of nowhere. One popped in my mind this morning while I was having my coffee on the porch. Do you remember going to Vacation Bible School?

I didn't realize that Vacation Bible School began in 1894 in Hopedale, Illinois. The first one had 40 students and lasted 4 weeks. They held it in a school and by a park where they actually had recess.

Now, most of the Bible Schools I attended were in Powell Valley, Tennessee while I was staying with my Grandparents. I had to walk through a field or on a road that had no shoulder to get there.

So, my Grandmother made me walk through the fields. The only thing that separated the church's property and my Grandparents' farm was a barbed wire fence.

Well one day, I was going to Bible School and my dress got caught in the barbed wire fence. Now, I was in a pickle. I was just a kid and couldn't figure out what to do. I didn't want to tear my dress, so I was stuck behind the Church Parking lot in back of the Church.

I started praying that if I yelled someone would hear me. The only trouble was that Bible School was starting and they always started with everyone singing. No matter how loud I hollered no one could hear me above the children singing.

There I was. Unless someone saw me and helped me, I would have to remain there. My mind was in a whirlwind of thoughts. It could be hours before anyone would see me. What if I slipped and fell and tore my dress to pieces?

Now, there was a road that curved around the Church. With any luck, a car just might come by, and the driver might see me caught in the barbed wire like some wild animal. I only hoped that they would see me. I thought what if they didn't. I would really be in trouble.

Well, I was going to Bible School – that should count for something. I started praying to the Good Lord that I needed help. “Please let me get loose, so I can go to Church to Bible School,” I prayed. As if by a miracle, I saw in the distance a car going around the Church. I prayed harder. I was disappointed when the car didn’t stop.

Having a temper, I thought I must have done something wrong, and I was being punished. I was getting tired. I must have been stuck there for over two hours and I was worried that I couldn’t help but tear my dress that my Grandma had made me. Lo and behold, I saw a little lady come out of the back of the Church. I prayed she would see me. As the little lady got nearer, I realized it was my Grandma.

I yelled for her to help me. She came right straight to get me. I was never so glad to see her. “What in the world are you doing in that barbed wire fence?” I cried, “I got my dress caught in the wire and didn’t want to tear my beautiful dress that you made me, Grandma.”

My Grandma replied, “Now, hush child. I will get you out. When I got to Church to help with lunch, they asked me where you were. I was worried to death about you, Jo Ann. So I came to find you.” Grandma got me out of the barbed wire. She was proud that I didn’t tear my dress.

“Grandma, I was happy you found me, but I am sad that this is the first time I didn’t win Bible Drill because I was stuck in the wire.” Grandma asked, “Were your prayers answered about getting out of the barbed wire?” I answered, “I guess that some of that Bible School rubbed off on me because today I learned prayers do get answered!” My Grandma laughed, “Maybe that was your lesson to learn today.”

Having said that, let’s share a breakfast beverage and a Native American proverb:

“A wise Elder once said, “There are things that only the Great Creator understands.”

Thanks for coming. Enjoy your gift of today. Have a great day! We look forward to seeing you tomorrow!

***Note from the editor, Jo Ann has just released a book of her incredible morning routine which you can purchase [here!](#)**

“By and By”

I stood on that knob,

fluttered up and screamin' like a bird,

tears thicker than butter,

I know that mountain cat could hear me.

Mercier to Maine, I know these ridges will carry my song.

The apple doesn't fall far from the tree,

Oh mighty.

These hands, made from something that can hold.

strong and soft, grown south of Cherokee.

Oh mighty,

how both can be.

Taking a boy from his family, out of a nest, barely sewed, says the military.

Oh mighty.

These nails, pick and whittle. The song of my 'jo and hmmmmm of my harmonica,

Oh mighty.

This seat still flies when there is no wind coming by.

All this sungleam,

skin, like soil for the soybean.

Oh mighty.

These veins, carry rust and there is no get well or bed manner.

Peonies and ponies, buckets of blossoms,

Spit and fire and a miner's hammer,

My coat of iron,

Oh mighty.

—Sydney Hamilton

Mountain Folk Forage: Black Walnuts

By Aimee LaFon

***Disclaimer: I am not a doctor, nor do I pretend to be. This article is informative and only covers the traditional uses for edible plants commonly found in the Appalachian region. It's always best to consult a health care professional or medical doctor when suffering from any ailment, disease, illness, or injury before trying any traditional folk remedies. ***

With the fruits of fall forming, you'll see your fair share of black walnuts this season. These nuts, which come wrapped in a strong-smelling, green, hard husk, are an Appalachian delicacy although, in their raw form, few people want them around.

However, you can use them for tons of things, such as as a dye, as a wood stain, and as a tasty snack or ingredient in sweet foods. Plus, they are readily available almost everywhere in Appalachia. So, why not pick up a few on your next walk and see what you can do with them?

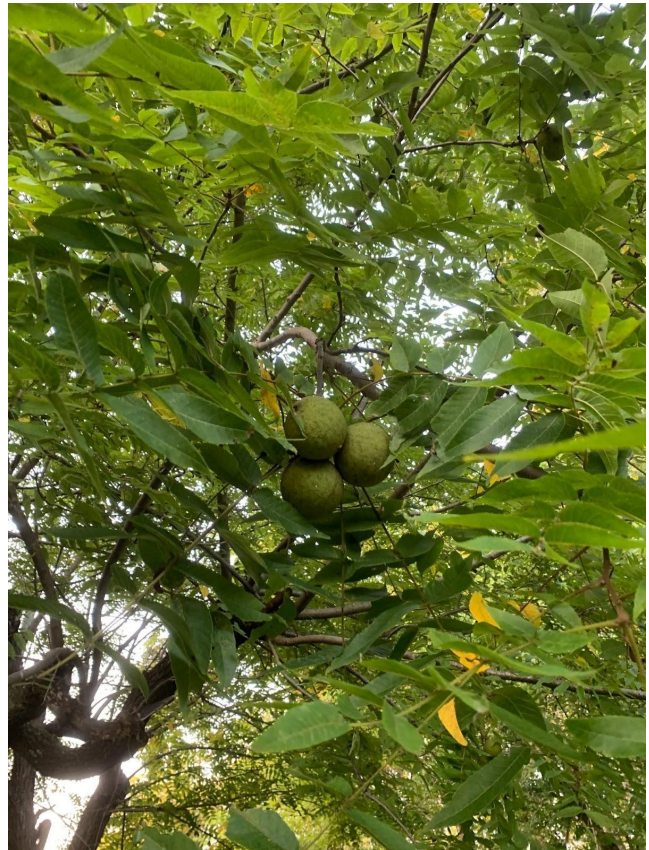
About Black Walnuts

Folk Names: American Walnut

Medicinal Properties: antibacterial, antifungal, antiparasitic, astringent, insecticide, antioxidant

Black Walnuts are often considered a nuisance since the tree produces a chemical called *juglone* that works as a growth inhibitor. Thus, plants around your black walnut trees will experience stunted growth and potentially die.

This entire process works in the favor of black walnut trees, which eliminate the competition and hoard all of the water and nutrients for themselves.



Because of their ability to harvest plenty of energy from their environment, black walnut trees are excellent producers, and they can weed your garden for you!

That's good news considering that the nut meat of black walnuts themselves is an incredible source of food. Out of all nuts, they are the highest in [protein](#). They also include omega-3s for a healthy heart and brain, plus they have plenty of antioxidants. They're super healthy!

The green husk, however, is also very versatile. It contains juglone and iodine, which make it a great material to use for skin ailments such as fungal infections like ringworm and athlete's foot.

Indigenous Americans have also used black walnuts as medicine for thousands of years. They primarily use the nut as a laxative, but they also use the nut as a brown dye, wood stain, and treatment for skin issues like eczema and herpes.

How To Identify and Harvest Black Walnuts



difficult to describe!

Black walnuts have a unique appearance that's pretty easy to identify.

The leaves of the black walnut tree are slender, and come October, the ground around the trunk will be littered with green nuts the size of tennis balls. The tree's bark looks scaly, running in v-shaped strips that overlap.

You might also find some black or dark brown nuts with cracked, deflated brown husks on the ground. These brown nuts are not good to harvest, as they've already begun decaying.

To harvest the nuts, you can pick up any green husks from the ground or pluck them straight from the tree. They should have a unique smell – slightly citrusy and earthy. They may smell a bit like freshly mown spring grass, but it's very

How To Prepare and Use Black Walnuts

For my tests, I will be following all of these recipes in one fell swoop. So, you can too!

Before I go into any of these tips, I must tell you that the black walnuts will dye your fingers, skin, and clothing. If you care about what your hands look like, wear gloves and an apron.

I wore my black apron, but I did not wear gloves (this was all just to show you what will happen):



How To Use Black Walnuts as a Natural Wood Stain

Black walnuts will give wood a beautiful golden color if you apply the husk to the wood for a short period of time, but if you want a deep, dark brown, you can leave more of the black walnuts on the wood for a longer period.

Over time, black walnut colorants will patina as they oxidize, giving you deep, rich warm colors that age very well. However, the only downside to using black walnuts as a wood stain is that it will dry out the wood. Coating your stain in any sort of oil is a must after applying it.

So, let's make the stain!

The pigments in black walnuts are in their husks and in their husks alone. So, if you want to harvest the nuts for eating, you can kill two birds with one stone and remove the husk for stains and dyes, then save the nuts for a snack after all that work!

Most people recommend soaking black walnut husks to remove them easily, but in my experience, the easiest way to remove them is to slice them off with a serrated knife.

Taking the husk off is a bit like pitting a peach, so you may need to cut the walnut into lots of chunks to get it all off.

As you cut, you will notice a honey-colored liquid seeping out. That's your stain!



To use it, simply rub the walnut pieces on unfinished wood. I like to dip my husk chunks in a bit of cool water before I rub it onto the wood to give me a more even coat that's easy to apply.

Then, let the wood dry and finish it off with some oil. You can use mineral, coconut, linseed, olive, tung oil – or anything else you have on hand. Heck, I've even used canola oil in a pinch.

How To Use Black Walnut as a Natural Dye



While cutting my husks into chunks, I collected them in a hemp bag and put them in some cool water to soak. I also added in a few whole black walnuts for good measure. This bag will become my “tea” to make a pot of brown dye!

Now, I have to mention, I’ve already dyed some of my handspun yarn with black walnuts, but I messed up last time. Instead of using fresh walnut husks, I used some of the brown, crispy ones that I picked up off of the ground. Turns out, half-rotten walnut husks won’t do too much to dye your fabrics no matter how long you let them sit in the “tea.”

So, this time, I’m going to prime up my wool yarn with a 15% weight-of-fiber mordant (alum) and use fresh walnuts.

I will also be dying some plant fibers, such as cotton and kudzu, which don’t need any sort of fixative or mordant when dying with black walnuts. These nuts contain tannins (like those chemicals in red wine that make it bitter), which automatically make the walnuts’ color stick to plant fibers.

To make the dye bath, add around 6 walnuts or 6 walnuts' worth of husks into around a gallon of water. Simmer the walnuts gently for around 4 to 6 hours. Then, turn off the heat, remove the walnuts from the water (that's why I'm using a bag), and pop your fabric in the dye bath as soon as the water stops bubbling.

During this dyebath, I was pretty impatient, and I only simmered my walnuts for around one hour. This gave me a slightly lighter brown than I intended, but I'm still very happy with the result.

Once you put your fabric and fibers in the dye, allow them to soak for as long as you wish. I will let mine soak for around 8 hours (overnight) to get the deepest, darkest brown colors. However, if you only dip the fabric in for around 5 minutes, you'll still get a light tan color.

After you've soaked your fibers, remove them and allow them to oxidize. I let mine sit for half an hour outside on my trusty drying stick.

Then, rinse the fabric with cold water until the water runs clear. Hang it up to dry, then you can wash it in laundry soap. I've found that this dye is incredibly colorfast. Even when I got some on my rag and tried to remove it with oxi-claen and other stain removers, it didn't budge. So, you have a strong dye here!



How To Eat Black Walnuts

If you've de-hulled your walnuts (read "How To Use Black Walnuts as a Natural Wood Stain" above for instructions if you skipped it), you will see the actual nutshell.

Now, this shell will be one tough nut to crack.

The best successes I've had are with a hammer. To break the nut, find the seam along the edge and follow it to the round, slightly pointy tip of the shell. That's where you'll want to hit it.

Once you break it open, you'll see the complex, beautiful interior of the shell – and the **nutmeat** (I'll never get tired of that word)!

There are tons of ways to eat these bittersweet nuts. Add them to cookies, granola, cakes, pies, and trail mix for a boost of protein and plenty of other health benefits.

Poetic Science is Contagious

I felt this need to find out how my self relates to everything else
I've been reading articles about how consciousness can collapse the wave function
But the more I read the more it seems that the way that i function is said to be an
unconscious assumptions
But maybe if I'm goal directed then my purpose can succeed at something
They say success is measured by performance on the tasks
But Is knowledge only acquired within the class
I believe My poetic science is contagious even within the mask
If school had all the answers then why do I still need to ask
My art can spit a truth that takes up space changes time and turns energy into mass
So I'm not worried about bottom up or top down
I'm trying to solve problems that exist all around
So I stay present look at the horizon where the sky meets the ground
I'm what happens when a hood scholar meets a class clown
Soon as I reach the top I'm on my way back down to break apart the crown
And give out gold around the town
A prophet doesn't make profits or deposits to fill up his own pockets
He chooses to see the world through his own optics
So you can't measure the main effect of my interaction
Not just another statistic I'm an outlier not the main attraction
My standards don't deviate because what I mean ain't average
Discipline is learning how to match perceptions with action
And In my brain I got Compensatory mechanisms up the regulation
But I need more receptors to feel the stimulation that's tolerance
My genes can't express because the stress of mythelation that's the symptoms of
oppression
Now my immune system is filled with inflammation that's the disease of depression
So enzymes catalyze the degradation this is how trauma flows across generations coping
strategies are now epigenetic when yo body is in a stressful environment setting
maladaptive behaviors Will naturally set in
When I feel I'm at a dead in I let go of all the negative energy that I let in Healing is knowing
that my higher self is where I'm heading

—Asante Knowles (AKA A'Sun)

Out of Sight, Out of Mind: Our Troubled Waters

By Bryan Langan

When we search for evidence of life on other planets, we look for the building blocks of life. We look for water. Without water life on Earth ceases to exist. But for some reason, we seem to overlook and take it for granted in much of America, including here in Tennessee. Our waterways provide Tennesseans with drinking water and places to boat, swim and fish.

They act as shipping lanes across our state and bring hikers, kayakers, and other adventurers to our area. Tourists and Tennesseans go down our rivers, fish in our lakes, and hike through our forests to see our waterfalls and the wildlife that surround them. Our waterways are the lifeblood of Tennessee, but there is something happening to them, and it's not good.

For far too long we have treated our waterways as out of sight, out of mind dumping grounds, and they are becoming more contaminated each year. As of 2020, over half (55.4%) of the waterways in Tennessee were classified as impaired by the Tennessee Division of Water Resources. That is up from 32.4% only a decade earlier. Seeing those statistics and that rapid increase got me thinking. What does it mean for a waterway to be impaired, how does that affect Tennesseans, what factors contribute to impairment, and what can be done to preserve and restore our waterways?

First, let's look at how the waterways in Tennessee are classified and what it means when one of our rivers, lakes, or streams gets designated as impaired by the state.

There are seven possible classifications for the designated uses of waterways in Tennessee:

1. Fish and Aquatic Life: meaning the body of water must be capable of sustaining aquatic life.
2. Recreation: Swim, wade, and fish
3. Irrigation: Ensures farmers access to water to irrigate crops
4. Livestock Watering and Wildlife: Drinking water source for livestock and wildlife
5. Drinking Water Supply: Currently or likely to be used for domestic water supply
6. Navigation: Used for commercial transport of goods by barges and large boats
7. Industrial Water Supply: Currently used for industrial purposes

Every waterway in Tennessee falls under the first two classifications, and these are the ones I'll focus on because they are also the most common reason for a river, lake, or stream to become classified as impaired, which is when a waterway is no longer able to function for one of its designated uses.

The majority of impairment in our state is the result of a body of water either no longer being capable of sustaining aquatic life or no longer being safe to swim and/or fish in. Approximately 50% of the impaired waterways in Tennessee are the result of E.coli contamination. This holds true in Knox County where 39 of our waterways are impaired

and 20 are due to E.coli contamination. This is what is happening to the water across our state.

Over half of our lakes, rivers, and streams either can't support aquatic life or our citizens can no longer fish and/or swim in them because we have let them become so contaminated. To me, this is unacceptable, and I hope it is for you as well.

The three most common reasons for impairment in Knox County are E.coli, PCBs, and mercury. Tennessee doesn't test for microplastics, but I will touch on them later. For now, let's focus on E.coli since it is the most common contaminant in our water and is responsible for about 50% of the impairment classifications in Tennessee.

So, how does our water become contaminated by E.coli, and what factors may have led to the drastic increase in impairments? There are two major contributing factors to E.coli contamination, agricultural (animal waste) and sewage overflow (human waste).

I'll start from the agricultural side and what changed between 2010 and 2020 that could help account for at least some of the increase in contamination of our water systems. Most of us have heard of E.coli and know it can be a major issue if someone becomes infected that can result in severe sickness and sometimes death.

The major cause of E.coli contamination is feces, so you would think our state would work to limit the amount of feces being introduced into our waterways.

However, instead of making moves to restrict the dumping of animal waste into our rivers, lakes, and streams, our legislature passed SB0899 which actually restricts cities and counties from enacting requirements for the disposal of animal waste at CAFOs (Commercial Agricultural Feed Operations) beyond the federal EPA requirements which don't apply until an operation has at least 1000 animal units.

When I first saw this, I thought, 1000 animals, that's a small operation for a farm, so this couldn't have much effect, right? But wait, it doesn't say 1000 animals, it's animal units. It turns out that an animal unit is 1000 pounds of animal weight.

When you multiply that out, this means our legislature decided that they wouldn't institute any restrictions and that our localities couldn't institute any restrictions on CAFOs that had less than 1,000,000 pounds of animals.

To put this into perspective, a feed operation could have over 100,000 chickens or as many as 10,000 sheep or pigs and not be subject to regulations regarding how they dispose of the waste. When animal feces enters our waterways through dumping or runoff from agricultural operations, the E.coli contamination comes with it.

The other major source of E.coli contamination in our waterways is our sewage infrastructure. In the Knoxville area, we have seen rapid growth and are now seeing a shortage of housing and sky-high prices to purchase or rent.

Everyone recognizes the financial costs of rapid growth, but what many don't realize is the strain on our sewage infrastructure from this increase in population and the effect it has on our waterways.

Currently, many of our sewage systems across the state are constantly pushing the limits of their capabilities with just the load of the population. This means that when we have heavy rains, our sewage systems are pushed beyond their limits and the load is forced down overflows that dump our waste into our waterways.

In many areas of our state, every time there are heavy rains, and especially when there is flooding, there is sewage overflow that results in further contamination of our water systems, leading to more of those red signs by our rivers, lakes, and creeks marking them as unsafe for entry due to the potential for bacterial infection. We can work to solve this issue by using some of our infrastructure funds to upgrade our sewage and stormwater systems across the state.

Stormwater systems are another example of our legislature siding with profit over our waterways while taking away control from cities and counties. Our state legislature sided with developer lobbyists and passed SB1830 which blocked localities from creating and enforcing regulations beyond the basic EPA requirements regarding stormwater systems in their communities.

As a result, a county or city cannot require a developer to do anything beyond the state requirements when it comes to their stormwater runoff.

The effect of this is that, in many cases, developers can run their storm drains directly to the nearest water source. Though this is not on the level of E.coli contamination and some of the other issues I will discuss later, it is yet another compounding factor affecting our waterways.

Possibly the most significant problem from this is grass clippings and other vegetative matter. Most of us wouldn't even think about it, but when we mow and trim, the clippings often end up going down the closest storm drain.

What this can do is create an increase in the biological oxygen demand (BOD) on a body of water due to an influx of algae and bacterial growth feeding on and breaking down the grass clippings, etc.

This can result in a waterway becoming impaired because there is no longer enough oxygen in the water for the fish and other aquatic life to survive.

The lobbyists who pushed for the bill claimed that it would save Tennesseans money on their homes. Based on housing costs, it doesn't seem like it worked. What it has done is become another factor contributing to the further impairment of our waterways and limited our capability to address the issue at a local level.

Other than E.coli, PCBs and mercury are two of the most common contaminants in our impaired waterways in Knox County.

The source of this type of contamination is generally from industrial and commercial waste, like the paper mill on the Pigeon River just inside North Carolina that has been polluting downstream into Tennessee, including Douglas Lake, since 1906 and still is today with carcinogens that are known to harm wildlife and humans. Some contamination is the result of spills and accidents, like the Kingston Coal Ash Spill.

When it failed and released radioactive waste into our rivers, we could have required that it and all other coal ash ponds in Tennessee be lined to reduce the chances of another failure and prevent ground seepage to protect our waterways and the public.

Instead, it appears nothing was changed to mitigate or reduce the chances of it happening again or to mitigate the potential for seepage and contamination of our groundwater.

The result was a complete lack of action from our state, despite the fact that dozens of workers died as a result of the clean-up efforts and hundreds of acres of land and millions of gallons of water along miles of river were contaminated.

Contaminants like chemicals and heavy metals build up in the sediment and can make their way up the food chain from bottom feeders to humans who may unknowingly feed their family fish from a contaminated area. This holds true for microplastics, as well. Although they are not tested for by the state, an independent study swam the length of the Tennessee River and took readings along the way.

Among the other contaminants that were tested for, they found that the Tennessee is one of the most polluted rivers in the world when it comes to microplastics. To give you a sense of how contaminated the Tennessee River is compared to others, here's a quick rundown from the study.

The Rhine (Europe) came in at 200 particles per cubic meter. The Yangtze (China) was measured at 9000, and at the top of the list, our very own Tennessee River was found to have an astronomical 16,000 particles of microplastics per cubic meter. These plastics can lead to fish kill and contaminate our food sources by climbing the food chain.

Unfortunately, no one has been able to develop an effective method of removing microplastics from our waterways. The best option is to mitigate the contamination, but even that will be difficult without some major changes because of the many potential sources of contamination, including plastic bags and bottles, potentially all the way down to washing clothing made from plastics.

Across Tennessee, our waterways have been neglected and pushed to the breaking point. The time is now to be proactive, to enact measures that give us the ability to preserve and restore our rivers, lakes, and streams before it is too late.

We must act before we leave a desolate state to the next generation. One that is devoid of the wonderful array of wildlife and fauna that Tennessee has to offer. We can all get involved and do our part, but we must hold our representatives accountable for their votes and pressure them to do the right thing, protect our natural resources, and ensure they are still around for future generations of Tennesseans.

If we continue our current trajectory, we soon may find ourselves without any swimmable or fishable waterways in Tennessee. As someone who moved to Knox County over 20 years ago, the mountains and rivers, the beauty of this area, is a big part of why people come here, and why many of us never leave. It's time we take care of them.

Sources:

<https://www.scientificamerican.com/article/coal-ash-is-more-radioactive-than-nuclear-waste/>

<https://www.newschannel5.com/news/whats-in-the-water-tennessees-water-pollution-problems-are-becoming-more-widespread>

<http://jeffersoncountypost.com/?p=56048>

<https://storymaps.arcgis.com/stories/0ae7ea467f5e4701a2968c11d94eb688>

<https://wapp.capitol.tn.gov/apps/Billinfo/default.aspx?BillNumber=SB1830&ga=109>

<https://wapp.capitol.tn.gov/apps/Billinfo/default.aspx?BillNumber=SB0899&ga=110>

<https://www.nationalgeographic.com/environment/article/coal-other-dark-side-toxic-ash>

https://www.tn.gov/content/dam/tn/environment/water/watershed-planning/wr_wq_cwa-integrated-305b-2020.pdf