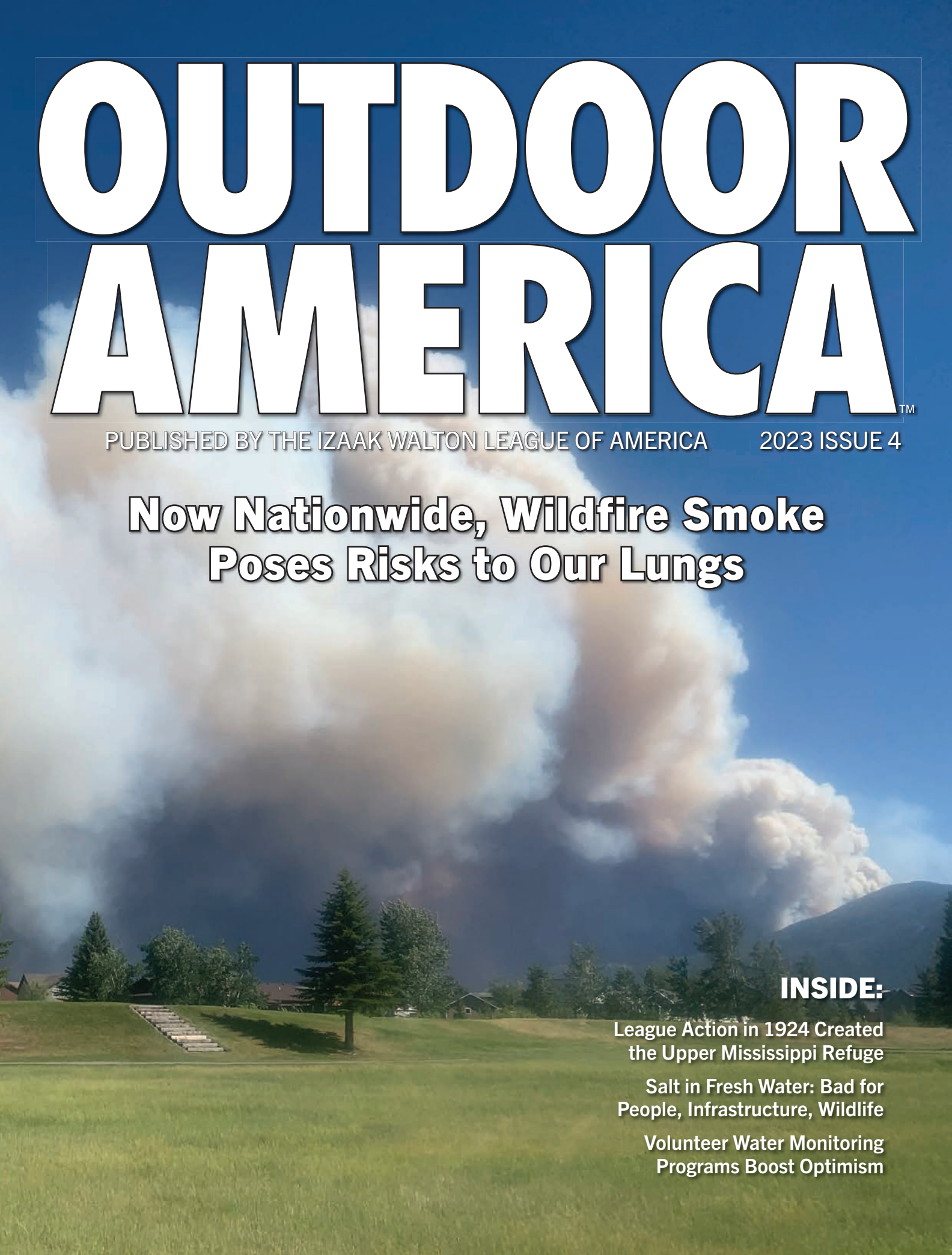
OUTDOOR AMERICA™

PUBLISHED BY THE IZAAK WALTON LEAGUE OF AMERICA 2023 ISSUE 4

Now Nationwide, Wildfire Smoke Poses Risks to Our Lungs



INSIDE:

Highlights from 2023:

Thanks to your support, the Izaak Walton League of America kicked off its second century of conservation leadership by building on our strengths: policy advocacy, community-based conservation, volunteer science and connecting people to the outdoors.

Tracking Dangerous Nitrate Pollution

The League launched Nitrate Watch to test local drinking water and surface water for dangerous levels of nitrate pollution. Volunteers submitted more than 1,200 test results during the program's first nine months.

Making Your Voice Heard across the U.S.

In media ranging from the Washington Post to the Des Moines Register, Fort Myers (Fla.) News-Press, Axios and the Duluth News Tribune, among others, the League and chapters were featured in stories about conservation, clean water and outdoor recreation.

Standing Up for Clean Water

After the rollback of protections for streams and wetlands in *Sackett v. EPA,* the League launched a campaign to build grassroots pressure on Congress to protect these waters under the Clean Water Act and mobilize our network of volunteers to monitor local waters.

Reducing Salt Pollution

During Salt Watch season six, the League ramped up engagement with and training of private road salt applicators, who are among the largest unchecked sources of chloride pollution. Staff engaged volunteers and partners from 24 states who submitted 5,500 test results.

Shaping National Policy on PFAS, Soil Health, Renewables, Carbon Pipelines

At the annual convention, members approved policy to protect Americans from PFAS and microplastics; incentivize better conservation through compensation for farm programs; reduce dangerous carbon pollution by facilitating small-scale generation of renewable electricity; and oppose use of eminent domain to take private property for construction of carbon dioxide pipelines.

Protecting Iconic Places: Boundary Waters Canoe Area

Continuing our 100-year fight to protect water, habitat and recreation in this unique "canoe country" wilderness, the League won a major court victory in September when a federal court ruled in our favor to prevent sulfide mining there.

Advocating for Farm Bill Improvements for Climate, Public Health, Conservation

Staff met with more than 50 key congressional offices on Capitol Hill to lobby for a better Farm Bill. The League co-hosted three summits attended by more than 50 representatives of colleague organizations to build support for critical conservation programs in the bill.

Keeping the Missouri River Healthy

In addition to helping shape policy for the river, the League worked with partners to organize clean-up days that enlisted hundreds of volunteers who removed more than 11 tons of trash from the river.

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ON THE COVER▶ This human-caused wildfire on Mount Maurice near Red Lodge, Montana, burned 21,000 acres, threatening lungs as well as property.
Credit: Jack Ballard

CONTENTS▶ To honor their dedication, the Izaak Walton League headquarters in Gaithersburg, Md., is called the Charles and Leila Wiles National Conservation Center.
Credit: Michael Reinemer

ABOUT THE IZAAK WALTON LEAGUE OF AMERICA▶
Founded in 1922, the Izaak Walton League of America is a national conservation organization headquartered in Gaithersburg, MD. Our more than 40,000 members protect and enjoy America's soil, air, woods, waters and wildlife. For membership information, call (800) IKE-LINE (453-5463) or visit our website at www.iwla.org.

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Resolve to Seize Opportunities During 2024

JODI LABS | NATIONAL PRESIDENT

In the "Director's Chair" column, Scott Kovarovics reflects on the League's efforts during 2023 to work together and make our vision for the future of conservation in America a reality. As Scott nicely lays out, we built a significant amount of momentum during 2023 drawing on the League's strength in community-based conservation and defending protections for natural resources.

As we head into a new year, I challenge each of us as members of the Izaak Walton League to resolve to build off that momentum and seize the opportunities that will be in front of us during 2024.

You may ask how you can assist. That is easy—you just need to commit to do one thing during 2024 that advances the League's mission to defend outdoor America. So as you make resolutions for the coming year, make a resolution to either personally, or as a Chapter, take on one new conservation activity or program in 2024.

Resist the temptation to think your one action item will not make a difference in your community or help the League advance its broader mission.

It is natural for us as individuals to believe that our actions are not enough to make a difference, which can lead to many of us electing not to do anything. However, keep in mind that none of us alone are responsible for solving the challenges in front of us. Rather, we need to, and should, work together to achieve the League's bold vision for the future of conservation.

Think about the impacts we can make if each of the approximately 40,000 of us members undertakes one new thing to advance the League's mission.

After all, we are part of a larger organization made up of like-minded conservationists and people who enjoy recreating in the outdoors. Think about the impacts we can make if each of the approximately 40,000 of us members undertakes to do one new thing to advance the League's mission.

Many ways to get involved

As you read this issue of *Outdoor America,* you will see that there are several opportunities for

you to get involved, regardless of where your interests may lie. Perhaps you are passionate about clean water, in which case you may enjoy the article about chloride in our drinking water and decide to get involved in the Salt Watch program. There will be plenty of opportunities to get engaged on clean water issues by working with us as we continue to push back and challenge the Supreme Court's ruling in the *Sackett* decision.

I also want to point out that there are a lot of tools available to the League's chapters and members as you look for new ideas for conservation and outdoor recreation activities or programs that you may take on during 2024.

On the clean water side, we have the Save Our Streams, Salt Watch and Nitrate Watch

programs. The League has developed written materials for each of these programs and for starting stream monitoring in your community. We have tools for engaging people in fishing and hunting activities, as well as tools to assist you in engaging with elected officials and media. You can find these resources on the League's website, or you can contact any one of the League's staff as they are always more than willing to assist our members.

A road map to success

The League's Second Century Action Plan is a detailed roadmap to success. The Action Plan is part of the *Izaak Walton League Vision for a Second Century of Conservation* (which may be found at iwla.org/vision). The plan lays out numerous activities and programs, each of which builds on our strengths, including community-based conservation and volunteer science, advocacy for common-sense conservation and connecting people to the outdoors.

Another opportunity to raise the League's visibility and profile in the conservation and outdoor recreation communities during 2024 will be the League's celebration of the 100th anniversary of the Upper Mississippi River National Wildlife and Fish Refuge. Be sure to check out the article regarding the League's role in the creation of the Refuge. If you happen to live in a state bordering the Mississippi, I encourage you to find a way to get involved in one or more of the events planned to celebrate the 100th anniversary.

Chapters and members do not need to do everything in the Second Century Plan; you just need to pick one thing. You can even start out small during 2024 and then build off of that activity the following year.

In closing, whether it be taking on one of the League's volunteer science initiatives or engaging in policy advocacy or outdoor recreation, each single action taken by you will make a difference.

I look forward to building off of 2023's momentum as we seize opportunities in our continued resolve to defend outdoor America. Happy New Year!

Turning Our Vision for the Future into Reality

SCOTT KOVAROVICS | EXECUTIVE DIRECTOR

In 2022, our centennial year, League leaders and members laid out a bold vision for the future of conservation in America. As I reflect on 2023, I want to share just a few examples of how all of us—working together— are making that vision a reality.

Building on our strength in community-based conservation

In February, the League launched Nitrate Watch, our latest volunteer science initiative to test, track and, ultimately, help reduce nitrogen pollution. By mid-October, volunteers from 37 states had submitted over 1,100 test results to the League. We leveraged Nitrate Watch as a hands-on educational tool partnering with the Iowa Division to provide free test kits and simple training to hundreds of Iowa science teachers.

Achieving our goals through policy advocacy

One of the overarching goals in our vision is to transform agriculture by scaling up conservation across tens of millions of acres of land over 10 years. We can spur this transition by influencing policy and funding in the federal Farm Bill. This summer, our staff visited more than 50 House and Senate offices to share our common-sense proposals for enhancing conservation impact through the Farm Bill. League members met with dozens more in district offices to amplify our message.

Defending bedrock protections for natural resources

In the last issue of *Outdoor America,* you read about the U.S. Supreme Court's *Sackett* decision and how it will accelerate drainage of millions of acres of wetlands and result in more pollution in streams that flow to drinking water supplies for one of every three Americans. Protecting natural resources in the future depends on maintaining the progress of the past 100 years, and progress cleaning up our waters is now very much at risk.

The threat to clean water is real, and the League is responding. Our team is mobilizing thousands of volunteers who could be the first to detect pollution in tributary streams or see an excavator draining a wetland.

Longer term, Congress needs

to amend the Clean Water Act to explicitly include streams and wetlands among other waters protected under the law. With our strength at the grassroots level, the League is focused on building pressure on Congress from the bottom up to provide lasting protection for streams, wetlands and our drinking water.

Looking back on 2023, our actions definitely speak louder than words as we work to achieve the League's long-term vision for the future. With this momentum, the League, our members and volunteers can have an even greater impact on conservation in 2024.

Finally, on behalf of your staff, I wish everyone a very happy holiday season and all the best in the new year.

OUTDOOR AMERICA

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Outdoor America is published four times a year by the Izaak Walton League of America, 707 Conservation Lane, Gaithersburg, MD 20878. Phone: (800) IKE-LINE.

All opinions expressed in *Outdoor America* are those of the authors and do not necessarily imply endorsement by the League. Submissions must be accompanied by return postage. We assume no responsibility for lost or damaged manuscripts, slides or photos.

Outdoor America **(ISSN 0021-3314)**

The Izaak Walton League of America – a nonprofit conservation organization – is recognized as a Section 501(c)(3) public charity under the Internal Revenue Code. The League provides equal membership/employment/service opportunities to all eligible persons without regard to race, color, national origin, age, sex or disability. Minimum national dues are $50 for individual and $75 for family memberships, which includes $5 for *Outdoor America* magazine. Magazine subscription is inseparable from dues. Chapter and division dues vary and are set separately. *Outdoor America* is a trademark of the Izaak Walton League of America.

Address Changes:
Send new address (enclosing old label) four weeks in advance to IWLA Membership Dept., 707 Conservation Lane, Gaithersburg, MD 20878-2983.

IZAAK WALTON LEAGUE OF AMERICA MISSION STATEMENT

To conserve, restore and promote the sustainable use and enjoyment of our natural resources, including soil, air, woods, waters and wildlife.

WWW.IWLA.ORG

THE IZAAK WALTON LEAGUE OF AMERICA

MEMBERS WITH QUESTIONS OR CONCERNS ABOUT LEAGUE POLICIES CAN REACH OUT TO THEIR NATIONAL DIRECTOR. FOR CONTACT INFORMATION, CALL THE LEAGUE'S HEADQUARTERS AT (800) IKE-LINE.

MEET THE TEAM: Jessica Gordon

Introducing Jessica Gordon, who joined the Izaak Walton League staff in May as Grassroots Advocacy Manager. Gordon works from her home in Davenport, Iowa.

She describes her role as helping chapters, community groups and volunteer scientists to engage in grassroots conservation advocacy. Part of the work includes establishing and growing relationships with stakeholders in the Midwest and nationwide.

"This work is vital to ensuring that the League not only grows as an organization, but that we further engage our membership and local communities in impactful, collaborative conservation work," she says.

"This position was appealing to me for a variety of reasons. I've been a fierce advocate for the environment since we learned about being good stewards of the earth in Girl Scouts. My advocacy accomplishments also well position me to be impactful and successful in this role, making it even more exciting. The historical significance and the century of conservation work done by current and former Ikes is incredibly inspiring. I'm thrilled to be a small part of it."

Gordon graduated from the University of Northern Iowa with a degree in Political Communication. After spending seven years working on a U.S. Senate staff, she worked as an advocate for community restoration and development, then later in education, disability and inclusion.

Just prior to coming to the League, Gordon was the Education and Diversity, Equity, Access and Inclusion Manager at a small cultural museum in the Quad Cities. Married to husband Mark for nine years, she has three children. In her spare time, Gordon is co-owner of a comedy troupe and loves to travel any chance she can get.

NATIONAL CONVENTION

Cambridge, Maryland

July 14-16, 2024

Everyone is invited to attend our national convention to meet fellow Ikes and learn about conservation priorities and League activities. The location on the scenic Choptank River on Maryland's Eastern Shore offers many sights and activities.

The early bird reception is Sunday July 14. **The convention is two days long, Monday, July 15 and Tuesday, July 16.** This schedule reduces hotel room rates and ensures attendees can travel to Maryland's Eastern Shore during off-peak summer hours.

Mark Your Calendar: 2024 National Convention
July 14-16, Cambridge, Maryland
Hyatt Regency Chesapeake Bay Golf Resort, Spa and Marina

IN MEMORIAM — Remembering Leila Wiles

by Scott Kovarovics

Leila Wiles—lifelong Ike, generous benefactor and unofficial historian of the League—passed away peacefully on November 7, 2023.

Leila volunteered as librarian and unofficial record keeper at the national headquarters for more than 20 years. What she called her "laptop"—actually a three ring binder—documented decades of League history: from the location of every national convention to the names and terms of office of national leaders and League policies adopted on a wide range of conservation issues.

Leila served as a national director from Maryland and was a constant presence at division, chapter and national meetings and events for decades. She and her husband Charlie Wiles were among the most generous supporters and advocates for the League throughout their lifetimes. The League's national headquarters is named the Charles and Leila Wiles National Conservation Center in honor of their decades of work and generosity.

Leila was a Hall of Fame Award recipient, which recognizes members who have achieved a record of outstanding accomplishment in furthering the mission and goals of the League over the course of time. She and her husband were given the League's highest honor in 1996 with the Fifty-Four Founders Award, which is presented to the person, group or institution judged to have made an outstanding contribution over the years to the conservation of America's natural resources.

For so many of us working at the national headquarters, Leila was a friend, mentor and a fountain of facts—a keeper of the Ike flame so to speak. That flame burns brightly today thanks to her hard work, commitment and enduring spirit. We remember her fondly and honor her memory.

Many of you know that Leila and Charlie were the driving force behind creation of the Izaak Walton League Trust. The Trust is an endowment, donations to it are held in perpetuity, and earnings on the Trust balance provide supplemental operating income for the League to achieve its mission nationwide.

To make a donation to the Izaak Walton League Trust in memory of Leila Wiles, mail a check payable to "IWLA" to Izaak Walton League of America, 707 Conservation Lane, Gaithersburg, MD 20878 and include "IWL Trust – Leila Wiles" in the memo line or in a cover letter.

To make a donation online, visit iwla.org/donate, see Dedication, include Leila Wiles in the name of honoree field as well as any message you wish to share with her family. Any online donation specifically honoring Leila will be dedicated to the Trust.

Salt Pollution in Our Fresh Water: A Costly Crisis for Human Health, Infrastructure and Aquatic Life

By ABBY HILEMAN, Salt Watch Coordinator

ISTOCK

We may be on our way to a crisis in our supply of fresh water on Earth due to increased levels of salt. Deicers like road salt serve as one of the main sources of excess salt that pollutes fresh water in the United States.

While we often think water is abundant on Earth, the vast majority is salt water in our oceans. Only three percent is fresh water.

Chloride occurs naturally in the environment—in underground aquifers and coastal saltwater spray, for example. However, increased chloride concentrations nationwide are caused by humans, coming from road salt, water softener discharge, sewage effluent, processing plants and fertilizers. In some regions, irrigation of crops increases the salinization of the soil, which can contribute to higher concentrations in waterways.

Consuming high levels of sodium has been linked to health problems and exacerbating existing conditions such as high blood pressure.

These higher concentrations of chloride in our water deliver a host of problems. The combination of physical, chemical and environmental harms from these salt sources is called "freshwater salinization syndrome."

The amount of salt used to treat icy pavement has grown enormously in recent decades creating a crisis for drinking water supplies, infrastructure and human health.

In a study published in October, 2023 in *Nature Reviews Earth & Environment,* the authors describe the "cascading direct and indirect human health impacts associated with salinization," ranging from hypertension to cancers. And the corrosive role of salt triggers the release of lead and other harmful chemicals in pipes that carry drinking water to American homes, schools and businesses. That was a factor in the toxic levels of lead in the drinking water in Flint, Michigan, which triggered a public health emergency.

Data revealed by the U.S. Geological Survey also in October show sharp spikes in chloride pollution also in the groundwater in regions where a lot of road salt is applied, such as New England, the Midwest and the mid-Atlantic. In the Southwest, decades of irrigation and evaporation have increased the salinization of the soil, which has leached salt into the groundwater.

Because there are remarkably few regulations about levels of salt in drinking water, and because there's also low public awareness about harm caused by chloride pollution, the Izaak Walton League's Salt Watch program plays an outsized role in data collection, public awareness and advocacy for healthy, clean water in the U.S.

We like to say road salt can be too much of a good thing. Salt Watch encourages better application measures to reduce the concentration of salt in water while providing safety on roads, parking lots and sidewalks. In many cases, more salt than is needed is applied to surfaces during icy weather.

When we use the term "salt," we are often referring to sodium chloride, and chloride is the chemical that can be measured in water quality tests. This is the same salt that is used in our food, and it's an essential nutrient for human health.

Several types of salt are used on our roadways, parking lots and sidewalks including:

- sodium chloride
- magnesium chloride
- potassium chloride
- calcium chloride

Sodium chloride is the most common and least expensive. However, all of the other common products above have similar negative effects on our health and environment.

The costs of corroding water pipes

Chloride is incredibly corrosive. Although the initial cost of sodium chloride is low (about $80 per ton), the long-term associated costs of road salt are very high. Chloride can corrode metal, concrete, bridges, vehicles, drainage systems, highway fixtures and drinking water pipes.

Although there are many factors to consider when creating a long-term damage estimate, Fortin Consulting (now Bolton and Menk, Inc.) in 2014 estimated that every ton of salt used in the U.S. costs about $800-$3,300 in infrastructure damage. If we use approximately 20 million tons of road salt each

year, that total in long-term associated costs of road salt pollution would be between $16-$66 billion.

Chloride not only damages infrastructure above ground, it also can corrode our pipes. Water treatment facilities deal with corrosion regularly. A scientist at WSSC Water (Washington Suburban Sanitary Commission, the utility for the Washington, DC region) recently told us, "Water is corrosive. Increased chloride concentrations in waterways increase corrosion."

And of course, as those chloride concentrations increase, corrosion only gets worse, which is why water treatment facilities regularly monitor for chloride and other factors that would increase water's corrosivity.

Salt can accelerate the corrosion of water pipes and leach dangerous chemicals like lead into our drinking water.

As salt accelerates the corrosion of pipes in our water systems, it leaches metals, including dangerous metals like lead, into our drinking water. To prevent this, water providers routinely add a chemical to the water to prevent pipe corrosion. Utilities must consider not just the disinfectants added at the water treatment plant but corrosive chemicals—such as chloride—that may already be in the source water.

The Flint water crisis is the tip of the iceberg

The water crisis in Flint, Michigan, that first made headlines in 2014, was caused by switching water sources and not adjusting water treatment accordingly. Starting around April of that year, the new source of water for residents was the Flint River. The river at that time had high concentrations of chloride due to road salt runoff from the winter before. As water was being pumped to residents, the water was not adequately treated for the increased corrosivity caused by the high level of chlorides in the river.

After leaving the water treatment facility, water was being dispersed to residents through old pipes made of lead and copper. The added chloride in the water corroded those metals from the pipes after leaving the facility, tragically pumping water laden with heavy metals into the drinking supplies of residents across the city.

The EPA reports that lead in water poses cardiovascular, kidney and reproductive health risks to adults and even low levels of lead in the blood of children can result in:

- behavior and learning problems
- lower IQ and hyperactivity
- slowed growth
- hearing problems
- anemia

Across the U.S., there are between 6 and 10 million water service lines containing lead, according to the EPA. Major cities have investigated replacing these pipes. Cost estimates have averaged $400 million per city and a decade of work. Because of this high cost and time, the pipes are often left in place.

With millions of lead water lines still delivering water to American homes, schools and businesses, the public has a right to know about these lines so they can advocate for investments that will ensure their water is safe. Congress has approved funds to help states and localities accelerate efforts to replace these lines.

By October 2024, the EPA will require all community water systems to submit an initial inventory of lead service lines. Americans will soon be able to visit the agency's website and see where these lines are.

How chloride harms the environment

In the environment, chloride can dry out and kill vegetation, compact soil and become toxic to freshwater aquatic life. Because organisms that live in fresh water aren't adapted to sudden chemistry changes (especially those that make water salty), increased chloride in waterways can be deadly to aquatic life.

Chloride is naturally present in the environment. Chloride concentrations between 1 and 100 ppm (mg/L) are "normal" in most freshwater waterways. (100 parts per million, or ppm, is roughly equal to 100 milligrams per liter, or mg/L.) The Stroud Water Research Center in Avalon, Pa., has been conducting surveys of waterways throughout the region for many years and has determined that for

The corrosive effect of road salt on these water pipes in Flint, Michigan contributed to dangerous levels of lead leaching into the city's drinking water.

PIXABAY

some areas, like Maryland, chloride naturally occurs at much lower concentrations, even below 50 ppm.

In areas with large amounts of impervious surfaces (pavement and concrete), chloride concentrations in streams, lakes and drinking water reservoirs tend to be higher. These areas are often heavily salted during the winter months and the impervious surfaces don't allow chloride to soak into the ground before entering nearby waterways. This causes the chloride concentrations in local waters to be elevated. If you look at the map on our Salt Watch results webpage (iwla.org/saltwatchresults), you'll notice that northern cities often display higher salt concentration.

We apply about 20 million tons of road salt to pavement each year.

In general, larger organisms like fish seem to be less sensitive to chloride than smaller organisms including macroinvertebrates and daphnia (sometimes called water fleas). Those smaller organisms play a vital role in the health of the ecosystem by controlling algae and being a food source for larger organisms. If they are removed from the environment due to road salt pollution, the entire food web can be destabilized and algae can be left unchecked, leading to eutrophication events that end up depleting waterways of oxygen.

If chloride is present in freshwater systems at 230 ppm over a period of a few days, that concentration is high enough to be toxic to freshwater aquatic life.

Rising levels of salt and radium in groundwater

Data presented by the U.S. Geological Survey (USGS) in October 2023 show sharp spikes in groundwater salinization. Assessing a large sample of data from more than three decades, USGS hydrologist Bruce Lindsey said, "Chloride and sodium had statistically significant increases more frequently than any other [potential pollutants] that we have on our list." The fact that the increase has accumulated over decades means it may also take decades to recover, he said.

Hot spots for salt pollution were found in Northeastern and Midwest regions, "particularly around urban areas where there's cold weather and a lot of road salt," Lindsey said. "We obtained data on road salt application and found correlations between these increases in chloride and sodium… [and] the road salt application rates."

Reporting from an October 18 conference, the Geological Society of America said Lindsey and his colleagues also uncovered a new and alarming danger. A mixture of low pH and high salinity in a southern New Jersey aquifer has "mobilized the radium—a radioactive element which is harmful to humans."

How safe is bottled water?

Believe it or not, the Safe Drinking Water Act does not apply to bottled water. Municipal or public tap water is regulated by the EPA and bottled water is regulated by the FDA (Food and Drug Administration). The EPA has tighter restrictions and inspection regimens. Public tap water regulations also require disclosure of consumer information, and promptly notifies consumers about any drinking water standard violations.

The FDA requires water-bottling plants to implement water quality standards followed by suppliers of tap water. In contrast to the EPA regulations of public drinking water utilities, the FDA does not require disclosure of consumer information for bottled water on packaging, cannot require bottled water to be analyzed by certified labs and in the past has fallen short in keeping up with EPA regulations for new contaminants. However, many brands of bottled water are sourced from tap water, so they were initially regulated by the EPA, and later they were regulated by the FDA.

At 860 ppm or above, chloride can be toxic to freshwater life in just a few hours.

But at lower concentrations, chloride can still be harmful to freshwater life. A 2007 study published in *Ecological Indicators* by Meador and Carlisle found chloride tolerance to be as low as 3.1 ppm for some species of brook trout. Sensitive species like amphibians can also be affected, especially as they often breed in waterways formed by seasonal snowmelt that have no drainage or discharge point for the water. If road salt enters those waterways, the chloride will be trapped in those depressions and will only increase over time.

Let's keep pollutants out of waterways in the first place. Treatment plants, like this one in northern Virginia, can only do so much.

The impact of 20 million tons of salt

Even if we quit using road salt today, the salt already in the ground can endure for decades, and the salt content in our streams will rise as salt continues to percolate through the soil.

In some areas, chloride has infiltrated groundwater, giving high chloride results year-round. In other areas, chloride is so present in the soil that spikes can occur during drought conditions when water levels are low and there isn't as much water to dilute the chloride infiltrating the waterway.

Even at low concentrations, chloride can be harmful to freshwater life.

Road salt was first used in the United States in New Hampshire in 1938 as an experimental treatment for ice on roadways. After World War II, the U.S. greatly expanded highway systems across the country and to reduce ice, the use of salt began to soar.

By the mid-1950s, the U.S. was using roughly one million tons of road salt every year. This number increased to 10 million tons by 1970. Today, we apply about 20 million tons of road salt to pavement each year, depending on the winter conditions. Road salt has become a vital part of keeping northern communities safe during the winter.

A strain on drinking water utilities

When chloride concentrations in source water used for drinking reach or exceed 250 mg/L (250 ppm), EPA requires public water suppliers to reduce chloride below this level before pumping it to the consumer.

So when too much salt is applied during the winter, the high concentration puts huge strains on our public drinking water utilities. Chloride and sodium cannot simply be filtered out of our water with the filtration equipment or processes commonly used by water utilities—they need to go through a specialized process like reverse osmosis, which is incredibly expensive and requires specialized equipment.

At the current rate of road salt application, chloride concentrations have been increasing each year. In the Washington DC region, WSSC Water, which serves nearly two million residents, has determined that chloride concentrations over the past 30 years have increased considerably in two waterways that supply WSSC's drinking water. The Potomac River has seen a 200 percent increase over the past 30 years and the Patuxent River Reservoir has seen a 260 percent increase in chloride over the same period.

MICHAEL REINEMER

WHAT YOU CAN DO

The Izaak Walton League created Salt Watch in 2018 to enable volunteers to test chloride levels in local waterways, report the results to a national database and advocate for policies and practices that reduce the use of salt as a de-icer.

Go to saltwatch.org to sign the Salt Watch pledge and request a free Salt Watch kit. It's easy to check how much salt is in your local stream using chloride test strips, which provide an instant reading. Start collecting data now to get a long-term look at chloride levels and the health of your water. By testing with Salt Watch, you will join thousands of other clean water advocates across the country in road salt monitoring and learning more about what is happening in your own back yard.

On the League's Salt Watch website, you can download our advocacy guide to learn more about some of the different groups involved in road salt in your community. The guide provides examples of how transportation professionals are trying to reduce road salt pollution while maintaining public safety during winter weather. You will also find sample letters to your government officials and information you can use to get the conversation started in your community, including flyers, yard sign templates and fact sheets. Educating yourself and your neighbors also makes a big impact.

For residents in the snow belt, there are many ways to make a difference in your own home or your community. One easy way is to Shovel, Scatter, and Sweep!

- Shovel early and often to prevent snow from turning into ice.
- Scatter salt judiciously. One 12-oz. mug holds enough salt to treat a 20-foot-long driveway or 10 sidewalk squares (about two parking spaces).
- Sweep up any excess salt that was spilled or left behind after a storm. This salt can be stored in a closed container and reused during the next storm event.

If you are part of an HOA or condo association or hire contracted road salt applicators, you can look at the agreement you have with your applicators and make sure that they aren't being paid by the bag or number of pounds of salt that they are applying each year. You can also encourage contracted "for hire" road salt applicators to take a road salt certification course that some states offer.

You can also alert someone (like a local watershed group or your Department of Environmental Protection) if you see a salt spill or too much salt being applied in an area. It's good to also let them know about uncovered piles of salt. According to an article by the University of Rhode Island, "uncovered salt piles lose about 20 percent of their salt each year, much of which finds its way into nearby waterways." Something similar can occur for salt piles that are covered but not contained.

SALT WATCH℠
IZAAK WALTON LEAGUE OF AMERICA

A BRIEF HISTORY OF WATER TREATMENT

Water treatment began as early as 4000 B.C. in Ancient Greece as a means of improving the taste, appearance and odor of drinking water by methods of filtering and boiling. Ancient Greeks wanted to reduce turbidity or "visible cloudiness" of the water. By 1500 B.C., the Egyptians started using alum to settle particles out of water. Filtration was established in the 1700s to achieve some level of water clarity.

By the 1800s, filtration with sand was widely used across Europe. It wasn't until 1855 that waterborne illnesses were discovered after Dr. John Snow linked a cholera outbreak to a sewage-contaminated public well. By the late 1880s, Louis Pasteur demonstrated "germ theory" that explains how diseases could be spread by microbes in water. In the early 1900s, drinking water treatment systems were built across the United States to remove particulates, thereby removing disease-causing microbes.

Chlorine was introduced in 1908 to disinfect drinking water leaving water treatment facilities, drastically reducing waterborne disease outbreaks. Federal regulation of drinking water began in 1914 with a limited number of systems.

Water standards were revised and expanded by the Public Health Service in 1925, 1946 and 1962. In the 1962 revision and expansion, 28 substances were regulated.

In 1974, with enactment of the Safe Drinking Water Act (SDWA), all 50 states adopted (as either regulations or guidelines) the Public Health Service standards. Today, the EPA has legal limits set for more than 90 contaminants in drinking water including microorganisms, disinfectants, disinfection byproducts, inorganic chemicals, organic chemicals and radionuclides.

While not addressing drinking water directly, the Izaak Walton League has served as a leader in clean water advocacy from its earliest years. During the 1920s and '30s, the League led a national push to build sewage treatment plants in every community, and chapters across the U.S. helped to make that happen. For instance, the Sioux Falls Chapter in South Dakota persuaded voters to approve a bond to create the city's water treatment plant. In 1927, President Calvin Coolidge commissioned the League to conduct the nation's first survey of water pollution, which found that raw sewage was commonly dumped into waterways. Responding to the findings, seven states passed laws designed to reduce water pollution.

WHERE DOES YOUR DRINKING WATER COME FROM?

At a time when we have access to so much information at our fingertips and the ability to connect with most anyone across the globe, in many ways we are more disconnected than ever before. Simple concepts like where our food and water come from do not always have simple answers. Asking students, "where does your drinking water come from?" elicits answers such as "from the faucet," "from the drinking water fountain" or "from bottled water."

While those answers might be the last stage before we put a glass or bottle of water to our lips, the journey of water to our tap is more complex.

At the most basic level, our drinking water comes from the water cycle—from rain, streams and groundwater. Water is then pulled from large water bodies, such as lakes, rivers and aquifers, by water treatment facilities to treat and pump to the consumer.

As water reaches a water treatment plant, that water goes through several steps to make sure it is safe for the consumer. Coagulation, flocculation, sedimentation, filtration and disinfection are some of those steps.

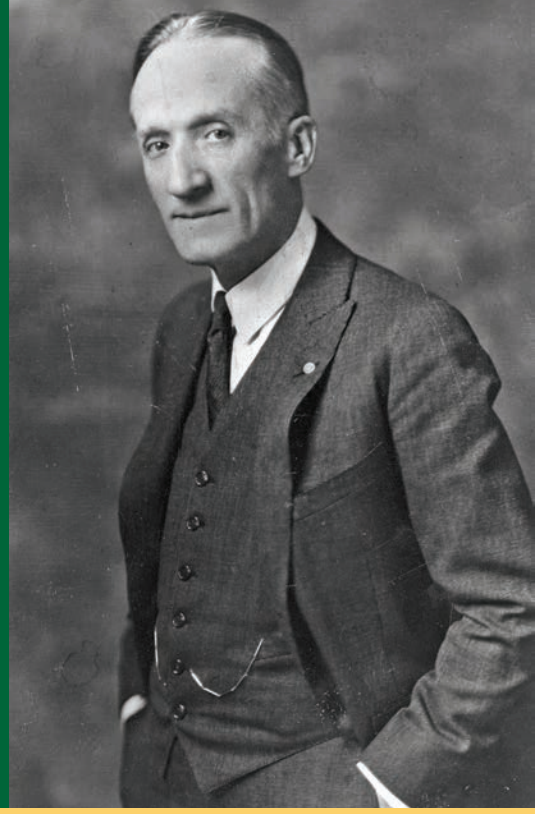
Coagulation is a process that involves injecting positively charged chemicals to neutralize any negatively charged particles in the waterways. Flocculation involves mixing the water to form heavier particles. Sedimentation separates solids from the water. Filtration filters out any remaining solids from the water. Disinfection usually involves adding chemical disinfectants, such as chlorine, to kill any remaining parasites, bacteria and viruses. Obviously, this is a very simplified explanation of what is involved at a water filtration plant, but you get the picture. Water goes through a lot of steps before it arrives in your spigot.

But not everyone gets water from a water treatment facility. Many receive their water via wells or springs. Those water sources are not regulated by the EPA, and people who get water from those sources are responsible for doing their own water testing. This can leave millions of people each year at risk of contaminants they may not even know exist!

IWLA

2024 marks the 100th anniversary of the Upper Mississippi River National Wildlife and Fish Refuge.

The refuge was a monumental achievement of the Izaak Walton League of America under the exuberant leadership of its first president, Will Dilg.



The League's first president, Will Dilg, led the successful and unprecedented effort to protect the upper Mississippi bottomlands as a national wildlife refuge.

Today, this refuge protects 240,000 acres of the Mississippi floodplain and wetlands along 261 miles of the river, from Wabasha, Minnesota, to Rock Island, Illinois. In the early 1920s, those bottomlands had been targeted for development. If not for a sweeping national campaign waged by the League, these wetlands would have been drained, destroying that vital habitat for waterfowl, fish and wildlife along the river.

The League succeeded against all odds. The size and scope of this federal refuge was unprecedented, as was the breadth and depth of the grassroots effort. To long-established conservation organizations in the U.S., it was shocking that the upstart Izaak Walton League could exercise so much clout in Washington in its third year of existence.

The campaign to protect the upper Mississippi didn't just establish the largest wildlife refuge of its time, it created the template for the modern conservation movement that helped produce a wave of grassroots actions that would ultimately drive dozens of major conservation achievements in the decades that followed.

One hundred years later, the refuge continues to provide essential habitat for fish and wildlife in the region. But the Mississippi River in the 21st century still faces challenges and threats—including pollution, invasive species and modifications of the river to enhance barge navigation.

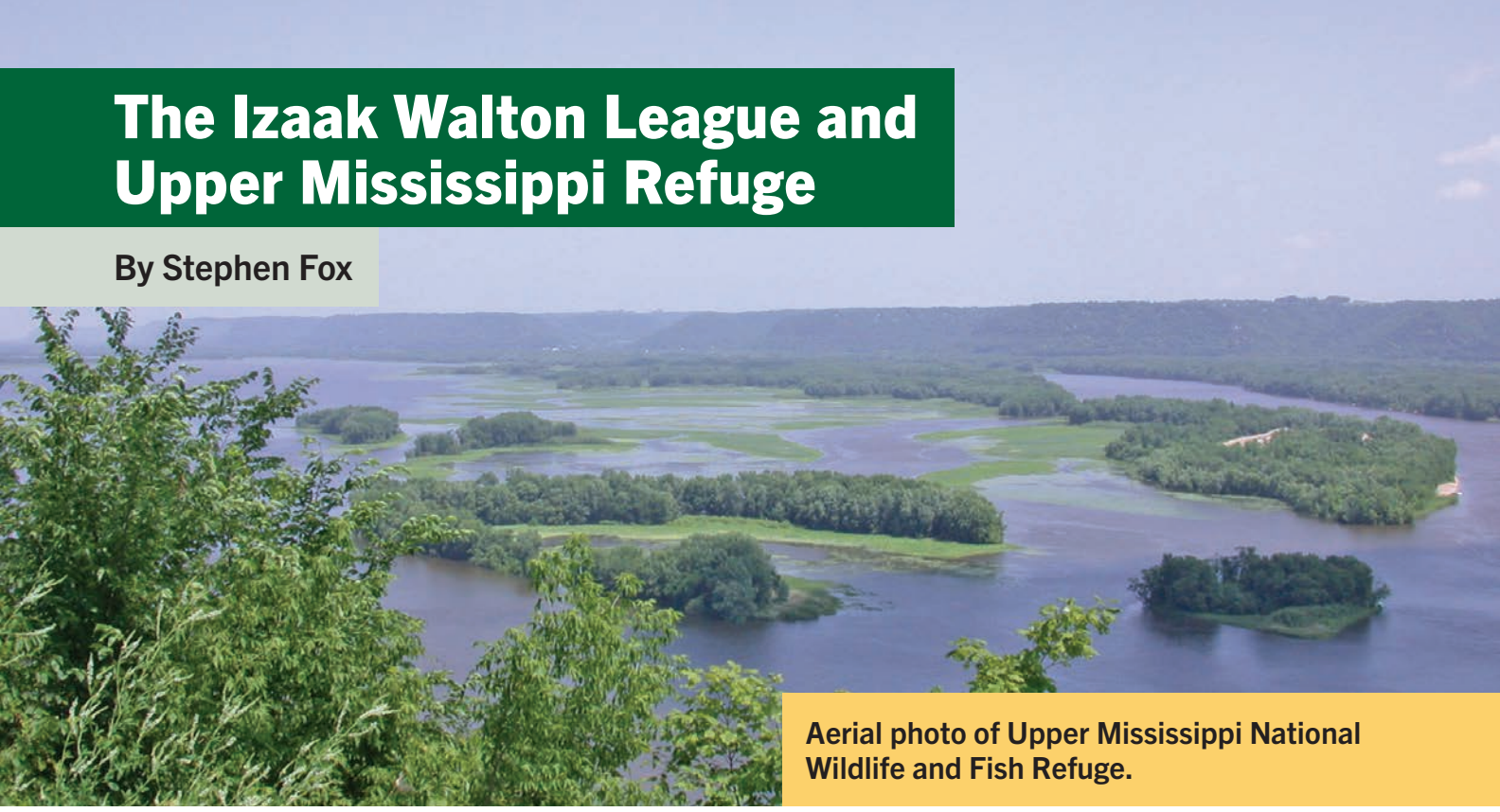
During 2024, the League will celebrate the refuge anniversary with the U.S. Fish and Wildlife Service, League chapters and other partners in the region. And we will explore the river's continuing, urgent needs for stewardship and advocacy. To learn more, visit iwla.org/upperMiss.

Historian Stephen R. Fox wrote an article titled "The Will of Dilg" that chronicled the Upper Mississippi Refuge campaign and was published in the Winter 2001 issue of *Outdoor America.* That article, excerpted below, is based on a book Fox published in 1981, *The American Conservation Movement.* The 2001 article was printed with permission from the University of Wisconsin Press.

Michael Reinemer, Editor

The Izaak Walton League and Upper Mississippi Refuge

By Stephen Fox



Aerial photo of Upper Mississippi National Wildlife and Fish Refuge.

On January 14, 1922, a group of 54 hunters and fishermen sat down to lunch at the Chicago Athletic Association. They were mostly business and professional people of middle income. They met to swap stories and discuss ways of meeting the latest crises in wildlife populations. Someone suggested they form a new conservation group; the idea took hold. In March they opened a headquarters in Chicago. In the next five months, as membership dues flowed in from around the Midwest, they twice had to move to larger quarters. The group was named the Izaak Walton League after the "patron saint" of sport fishermen.

The campaign to protect the upper Mississippi didn't just establish the largest wildlife refuge of its time, it created the template for the modern conservation movement.

The central figure in the League was a fifty-three-year-old advertising man named Will H. Dilg. "Since boyhood," he admitted, "the call of black bass waters has been my chief weakness." In 1921 the Outlook had published his enraptured celebration of a recent invention, the cork-bodied black bass fly. He had a worn, emaciated face set off by a long jaw and penetrating eyes. He talked fast, unstoppably, in a voice that carried. Well dressed and carrying a cane, he cut a figure of

GARY J. WEGE; REFUGE MAP-USFWS

River otters are among the animals that find a home in the Upper Mississippi refuge.

USFWS (2)

urban sophistication. His favorite idiom was the expansive hyperbole of boosterism.

Just beneath this surface Dilg had a second, more authentic personality: darker-hued, yet sentimental and nostalgic. According to one story, he was driven to found the Izaak Walton League by the death of his young son. In his grief he decided to devote himself to saving the outdoors experience for other young boys. Be that as it may, he did strike many observers as a man possessed by some messianic purpose. "I am weary of civilization's madness," he declared, "and I yearn for the harmonious gladness of the woods and of the streams."

In August 1922 he launched a monthly magazine, at first called the Izaak Walton League Monthly and then (after October 1923) *Outdoor America.* Under Dilg's direction it quickly became the most comprehensive journal in the conservation movement.

At the time, the Sierra Club addressed itself to mountaineering and national park matters; Pinchot's National Conservation Association covered forestry and power development; the Audubon Association discussed birds and other wildlife. The old groups guarded their respective domains and no one asked the large questions. Except Dilg. With a fine impartiality, he asked all sorts of questions.

Most of the articles in *Outdoor America* reflected his own priorities—water pollution and the indiscriminate drainage of marsh areas (because of their effect on fishing conditions) and the problems of forest fires and reforestation. In addition, Dilg opened his magazine to diverse points of view within the conservation movement, making it a unique forum of conflicting opinion. The magazine also carried regular monthly departments on camping, bird lore, fly casting, firearms, and even (briefly) a women's section.

Outdoor America was thus already unprecedented in its field. But Dilg thought big, and he was not shy. Aiming to make his magazine the first conservation journal with a mass audience, he flattered and badgered writers of large reputation into contributing work for no pay. The writers who succumbed to such blandishments included Zane Grey, Mary Roberts Rinehart, Emerson Hough, Irvin S. Cobb, Albert Bigelow Paine, Gene Stratton Porter, David Starr Jordan, and Henry Van Dyke. John Held, Jr., contributed occasional drawings and cover paintings.

Dilg thought big, and he was not shy.

In the March 1924 issue, Theodore Dreiser recalled his boyhood in Indiana and his favorite fishing spot on the Tippecanoe River. Dreiser was not simply indulging the nostalgia of middle age for a lost, idyllic youth. He was sounding one of *Outdoor America's* major themes: a fretful looking back to the old fishing hole and a dawning sense that modern progress was polluting it, filling it in, paving it over. The lament was not merely for lost youth but for a lost America.

During the 1920s the fraternal service organizations—Lions, Kiwanis, Rotary, and others—were growing fast. Dilg appropriated their methods,

addressing members as "brother sportsmen," promising friendship and the warm glow of disinterested public service for common goals. In March 1923, the League hired as executive secretary a man who previously had been office manager at Kiwanis national headquarters. By design, a typical chapter of the League resembled not one of the older conservation groups but rather a Rotary Club that liked to go fishing.

At a time when the Sierra Club, the American Game Protective Association (AGPA), and the Audubon Association each had a membership of 7,000 or less, the Izaak Walton League had more than 100,000 members within three years of its founding. In the month of February 1924, 52 new chapters were formed; in March, another 118; in April, another 124. The local chapters in turn formed state divisions. It was a phenomenon—the first conservation group with a mass membership. Although concentrated in the Midwest, practically every state was represented.

As the wildlife conservation movement returned to a period of activism and campaigns for legislation, the Izaak Walton League held the wild cards. It brought new pressures on Congress through its sheer size and because it spoke for a different area of the country. It had Will Dilg as well, with his mercurial personality and headlong enthusiasm.

The first years after World War I brought a crisis in migratory waterfowl populations. Ducks and geese found themselves squeezed between shrinking habitats and more hunters. The marshes and river bottoms that provided feeding and breeding grounds were being drained for human development.

[T]he bill was passed unanimously. Coolidge signed it on the following day and presented the pen to Dilg. The upstarts from Chicago had made their point.

At the same time, a cluster of broad social changes—better roads, more automobiles, shorter workweeks, more vacation time, extra cash—sent more hunters into the field than ever before. In 1911, 1.5 million state hunting licenses were issued. That figure increased

Birds congregate on a sandbar in the Upper Mississippi National Wildlife and Fish Refuge.

to 4.5 million in 1922 and 6.5 million in 1928. Thus the debate among conservationists: whether to save habitats or check hunting. The debate became embittered in part because no one truly understood the situation. Wildlife management was not yet a science. The first, tentative waterfowl census was not published until 1930.

A threat to the bottomlands

Out in Chicago, meantime, Dilg played one of his wild cards. In the summer of 1923 he learned of a private development plan to drain a 300-mile stretch of river bottoms on the Upper Mississippi, from Lake Pepin in Minnesota to Rock Island, Illinois. This section of the river supported large populations of wildlife and songbirds, and provided spawning grounds for Dilg's beloved black bass. For over two decades he had spent at least sixty days each year fishing the area. Now developers were threatening his favorite fishing spot.

Dilg therefore offered an ambitious solution: turn the whole 300 miles into a federal wildlife refuge financed by a congressional appropriation of $1.5 million. The largest previous sum voted by Congress for a wildlife preserve had been $40,000 for a Montana bison range in 1909.

J. Horace McFarland, [conservation leader and founder of the American Civic Association] who knew his way around Washington, told Dilg his chances were "not quite so thick as tissue paper." A new hand at the business, Dilg did not know enough to be discouraged.

With the help of Senator Medill McCormack of Illinois he went to the White House and for forty minutes urged the scheme on President Coolidge. Dilg in full cry was hard to resist; Coolidge promised to sign the bill if Dilg could push it through Congress. It was introduced by McCormack in the Senate and by Harry Hawes of Missouri in the House. Hawes, a fisherman in the Dilg sense of the word, was the bill's main evangelist. Dilg secured the endorsement of the General Federation of Women's Clubs, with its 2 million members, and set out for Washington to pursue his campaign on the spot.

From a suite at the New Willard Hotel he deployed his forces, wheeling and dealing in a way that astonished the wildlife establishment. "He had a staff of assistants, he had many callers, his messengers constantly came and went," Pearson recalled. "He conducted his campaign on an expensive scale heretofore unknown in conservation circles."

Dilg found a crucial ally in Herbert Hoover, Secretary of Commerce and the rising star of the Republican Party. Amid the earnest pursuits of this dour Quaker's life, fishing stood out as one of his solitary amusements. He belonged to the Izaak Walton League and contributed occasionally to *Outdoor America.*

J. Horace McFarland, who knew his way around Washington, told Dilg his chances were "not quite so thick as tissue paper."

Once, on an inspection tour of Yellowstone National Park, the gregarious park superintendent tried to engage Hoover in conversation during breakfast. Hoover sat there and ate and said not a word. Later, out on the lake, the superintendent rattled on about the park, the lake, the forest. Still no word from Hoover. Then he opened an elaborate tackle box—a gift in recognition of his honorary presidency of the Walton League—and launched a monologue. "He talked about fishing in various countries of the world, Australia through Scandinavia," the superintendent said later. "He talked almost all the way down the lake."

With his bill passed by the House, and needing a vote in the Senate, Dilg went to see his fellow angler. The two men then called on Coolidge, who approved a parliamentary maneuver that cleared the way for a vote. Endorsed by Robert La Follette and other key senators, the bill was passed unanimously.

Coolidge signed it on the following day and presented the pen to Dilg. The upstarts from Chicago had made their point. "Dilg's name swept the country from coast to coast," [National Audubon Society Founder T. Gilbert Pearson] recalled. "Wherever two or more sportsmen met, Dilg and the Izaak Walton League were discussed." It was the height of Will Dilg's career in conservation.

Take advantage of discount prices for the League's 100th anniversary items. This includes denim, flannel, long-sleeve and tee shirts, hoodies, water bottles, tumblers, playing cards and more. Find items and prices online.

ALL GEAR
VISIT:
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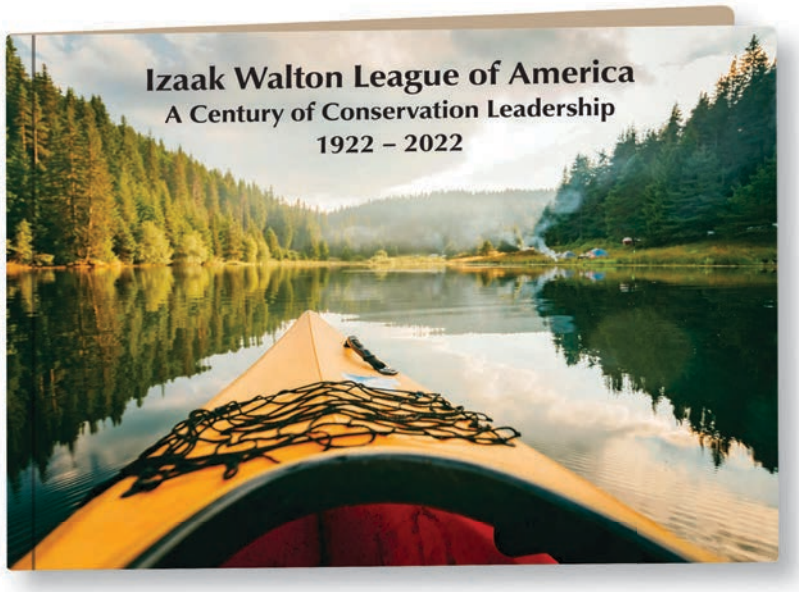


This softcover book provides more than 250 pages of historic images, including many that have not been seen in decades. Special appendices list all known chapters since 1922, convention dates and locations, profiles of the 54 founders and much more.

Quantities and sizes are limited. Order yours today!
Visit iwla.org/shop to order while supplies last.

Your Endowment in Action

2023 National Conservation Scholarships Awarded

Each year, the Izaak Walton League awards two $2,500 national scholarships to complement scholarships offered by League chapters and divisions. The national scholarships help pay for the education of future conservation leaders, supporting college students pursuing degrees in natural resources and related studies. They are made possible and fully funded through a generous annual grant from the Izaak Walton League of America Endowment.

The scholarship review committee selected the following students to receive the League's National Conservation Scholarships for the 2023-2024 school year. Their thoughts about conservation follow.

Kayla M. Reed

Fisheries and Water Resources/Aquatic Sciences
University of Wisconsin – Stevens Point

Conservation Philosophy:

"All aspects of natural resources should be managed in conjunction with one another. No matter what type of natural resources management is being practiced, they all help to conserve the natural environment we all love to go out to enjoy and explore. From foresters, to fish and wildlife biologists, to soil conservationists and beyond, all of these management duties need to take one another into consideration to make sure that they are properly conserving our great planet to the best of their abilities."

Critical Conservation Issues:

"I have been exposed to quite a few conservation issues ranging from land and water use to pollution on the ground, in the air, and in the water. Each one of these problems will lead to another catastrophe if no proper action is taken to help remediate these critical issues.

"However, issues concerning water pique my interest the most. The depletion of freshwater resources will lead to many negative impacts. Less water in our aquifers will impact spring-fed systems, such as smaller streams and tributaries. With less groundwater available, many streams will lose depth. Lowering water levels will also impact lakes and rivers. This can negatively impact many species living within these aquatic ecosystems."

More About Kayla Reed:

An avid outdoorswoman, Reed plans to earn her master's degree to become a fisheries biologist, and she hopes to land this position in the Midwest. She also hopes to be able to use her job to reach out to the public, especially young students, to promote the importance of water resources conservation and healthy aquatic ecosystems.

National Conservation Scholarships

Charlotte A. Johnson

Environmental Engineering
Montana State University

Conservation Philosophy:

"Utilizing natural resources is critical to maintaining the current quality of life in America, along with enabling continued innovation. While these natural resources are needed, the extraction of these materials, such as through mining and logging, can and should be done in a manner that minimizes its effects on the environment.

"In addition, while recreational areas preserve natural landscapes, these lands are not without human impact. Though public and private use of resources has drawbacks, the impact can be minimized with sustainable conservation practices."

Critical Conservation Issues:

"While there are numerous conservation issues facing North America such as climate change, greenhouse gas emissions, and pollution, I believe waste production and management is a big issue. Addressing the feasibility of recycling, along with counteracting Americans' view of waste, are the first steps toward addressing this problem.

"Although efforts have been made to promote recycling, feasibility and public education are hurdles present today. For example, making new plastic is considerably cheaper than reusing recycled materials. Finding ways to reduce the costs of recycling associated with the amount of water and energy used would encourage more businesses to use recycled materials."

More About Charlotte Johnson:

Her plans are to pursue a career where she can help others improve their lives and bring clean water to people across the world. At the same time, Johnson plans to explore ways to reuse waste materials, rather than sending them to landfills.

League Looks for Conservation Scholars for 2024 Awards

Know a conservation-minded college student who could use an extra $2,500 for tuition and expenses? Learn more about specific requirements and find the application form on the League's website at iwla.org/scholarship.

The next application cycle begins January 1, 2024, with a deadline of May 15, 2024.

Every member of the Izaak Walton League of America is also a member of the Endowment, which raises funds for grants to League chapters and divisions. The Endowment holds its annual meeting at the League's national convention.

Your generous gift today wi

In 2022, our centennial year, leaders and members of the Izaak Walton League laid out a bold vision for the future of conservation in America. You can be proud to know that this past year, all of us worked hard together to make this vision a reality.

Your donation of $25, $50 or more today will sustain and expand the impact we have achieved in 2023!

Building on Our Strength in Community-based Conservation

In February, the League launched Nitrate Watch to test, track and reduce nitrate pollution that contaminates our drinking water, damages our economy and harms human health. In just a few months, volunteers from 27 states submitted more than 1,300 test results to the League, which we share with the public.

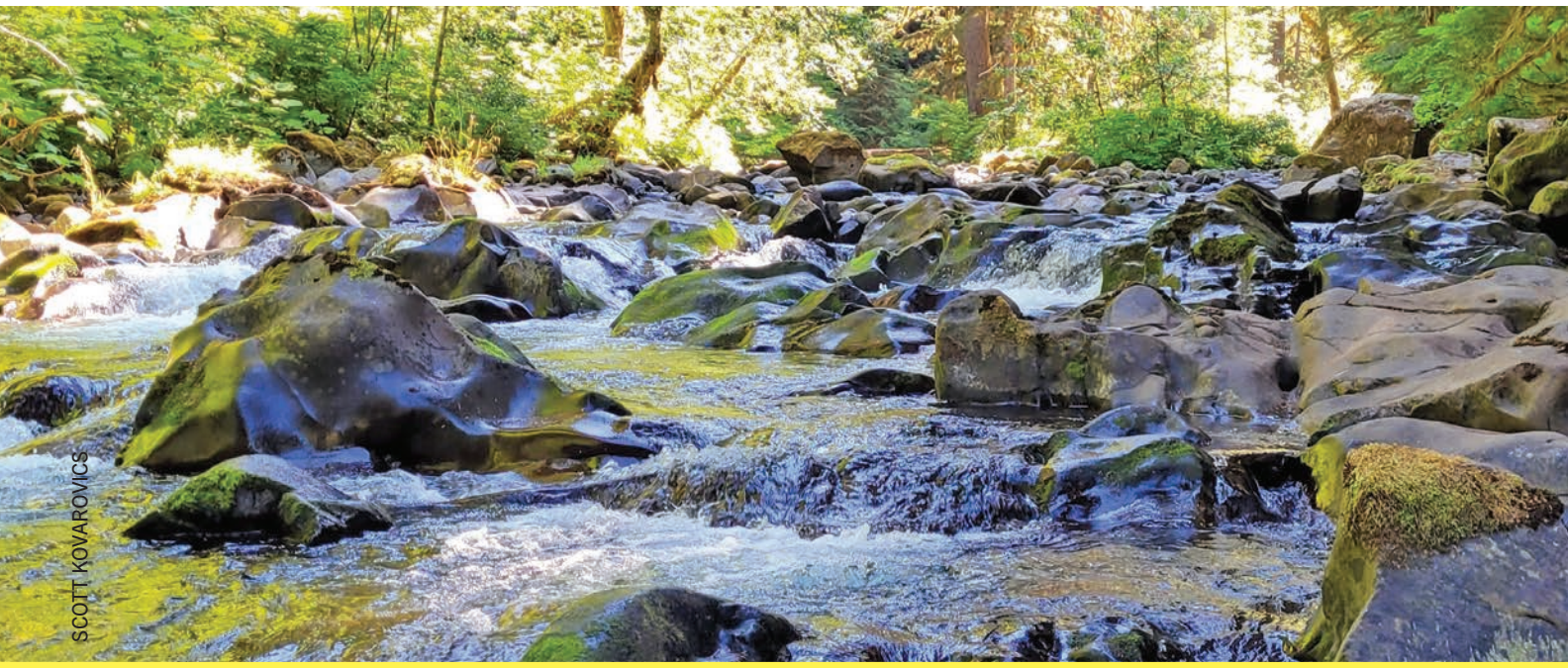
Achieving Our Goals Through Policy Advocacy

Last summer, our staff visited more than 50 House and Senate offices to share our common-sense proposals to ramp up conservation impact through the Farm Bill, which has the potential to be the most important clean water, public health and climate-resiliency legislation approved by Congress.

Defending Bedrock Protections for Natural Resources

The U.S. Supreme Court's unprecedented decision in *Sackett v. EPA* will accelerate the loss of precious wetlands and send more pollution into streams that supply drinking water to one in three Americans. Our team has already begun to mobilize volunteers to detect pollution in tributary streams and report on questionable wetland draining activity.

Looking back on 2023, our actions definitely speak louder than words as we work to achieve the League's vision for the future.



SCOTT KOVAROVICS

Thank you for your support!

ill help us succeed in 2024!

Your tax-deductible gift of $25 or $50 will help the League build on our achievements in 2023—and maximize our impact in 2024 and beyond.

Putting Volunteer Data into Action: Water monitoring through Salt Watch and Nitrate Watch provides a powerful tool to achieve our ultimate goals—to reduce pollution in the first place, protect our drinking water and restore degraded streams and wetlands.

With your help, we'll put data to action in more communities nationwide in 2024, starting with Salt Watch.

Expanding the Reach of Volunteer Science: Through the hard work of our staff and incredible partners, the League has engaged thousands of new volunteer scientists over the past few years.

With your generous gift, the League will expand Nitrate Watch outreach from the agricultural heartland into the Great Lakes and mid-Atlantic states.

Advocating for Clean Water: A commitment to protect clean water and wetlands has united generations of League members over the past century. Today, we renew our commitment to safeguard clean water following the Supreme Court's *Sackett* decision.

With your support, the League will mobilize water quality monitors providing a rapid response capability and **intensify advocacy to amend the Clean Water Act** to provide lasting protections for streams, wetlands and drinking water nationwide.

The League is taking steps right now to meet our conservation goals, and your support will build momentum in the early weeks and months of 2024. This is our commitment to conservation—one that you can reinforce—when you **help launch the next year of conservation success with a generous gift of $25, $50 or more if possible today.**

ISTOCK

To make a tax-deductible donation, mail a check payable to:
"IWLA" to Izaak Walton League of America, 707 Conservation Lane, Gaithersburg, MD 20878.
Or donate online at www.iwla.org/donate.

League's Water Monitoring Programs Boost Volunteer Optimism

By MICHAEL REINEMER, Editor

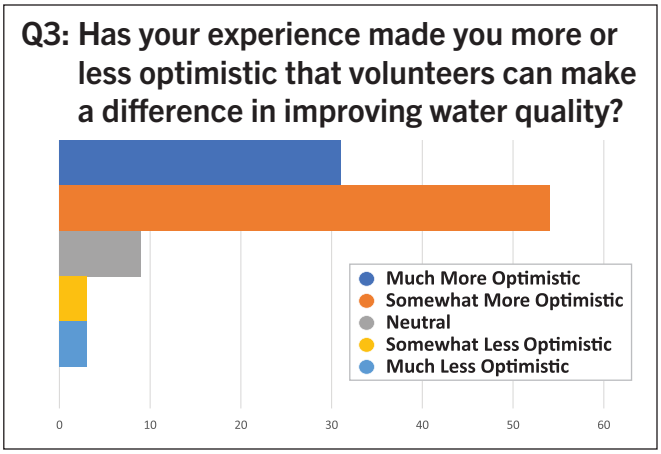
For decades, the Izaak Walton League's clean water programs have produced widespread action, engagement and cleaner water. Our volunteer water monitors say there are additional benefits: the League's volunteer science programs help to foster hope and confidence in the participants' ability to tackle the challenges of water pollution.

That benefit was confirmed in a recent survey conducted by the League of volunteer water monitors across the county. In October, the League asked participants about their experience. Of the 54 volunteers who responded, the vast majority said as a result of their experience, they have greater optimism.

Asked whether their experience has made them more or less optimistic that volunteers can make a difference in improving water quality, 87 percent said more optimistic (31 percent said "much more," 56 percent said "somewhat more").

Asked whether their experience has made them more or less optimistic about the role of volunteer science in raising public awareness about water quality, 85 percent said more optimistic (30 percent said "much more optimistic").

Nearly 9 out of 10 water monitors said their experience has made them more optimistic about volunteers making a difference in water quality.



The League's primary water monitoring programs are Save Our Streams, created in 1969, Salt Watch (2018) and Nitrate Watch (2023).

Volunteers describe their experiences

Kevin Misener is a long-time volunteer in North Potomac, Maryland, who has tested waterways using virtually all of the League monitoring programs. He says the people he meets while testing water are interested and concerned about the results, whether that's a chloride reading or macroinvertebrates he has identified in the stream.

He says, "If we were just collecting data to squirrel away, it wouldn't serve any purpose. But instead we can raise awareness about very specific concerns and very actionable responses that regular people can do to help—things like reducing their own road salt use or advocating for better stormwater controls around our watersheds."

Misener, who focuses most of his monitoring on Seneca Creek in Montgomery County, Maryland, encourages others to take part in the process, and he writes articles for local publications and blogs.

There's a flip side to checking waterways for pollution, Misener says. "Monitoring data also allows groups like Seneca Creek Watershed Partners to point to portions of our watershed that have been protected and show off the low salt levels, low nitrate levels and corresponding excellent habitat and biotic index scores as examples of why we encourage environmental preservation and stewardship."

Art Foltz, from Fredericksburg, Virginia, monitors water in Mine Run using Save Our Streams, Nitrate

Watch and Salt Watch. That creek feeds into Mott's Reservoir, which serves as a water supply for the City of Fredericksburg.

He believes monitoring provides a "frontline defense in identifying contaminants and toxins entering our water supply. Biannual sampling of benthic macroinvertebrates coupled with sodium chloride and nitrate checks of our streams is an excellent quantitative process that measures the health of our water... I feel confident that the water entering the city reservoir from the stream I monitor is free of harmful contaminants."

Foltz, member of the League's Fredericksburg-Rappahannock Chapter, adds Save Our Streams is also interesting and fun. "When you tell people about the process, they want to help and bring their children out to help."

Prepared to take action

Most of the volunteers (65 percent) said they feel equipped to take action if their monitoring exposes problems with water quality; 35 percent said they don't feel equipped.

And many do take action.

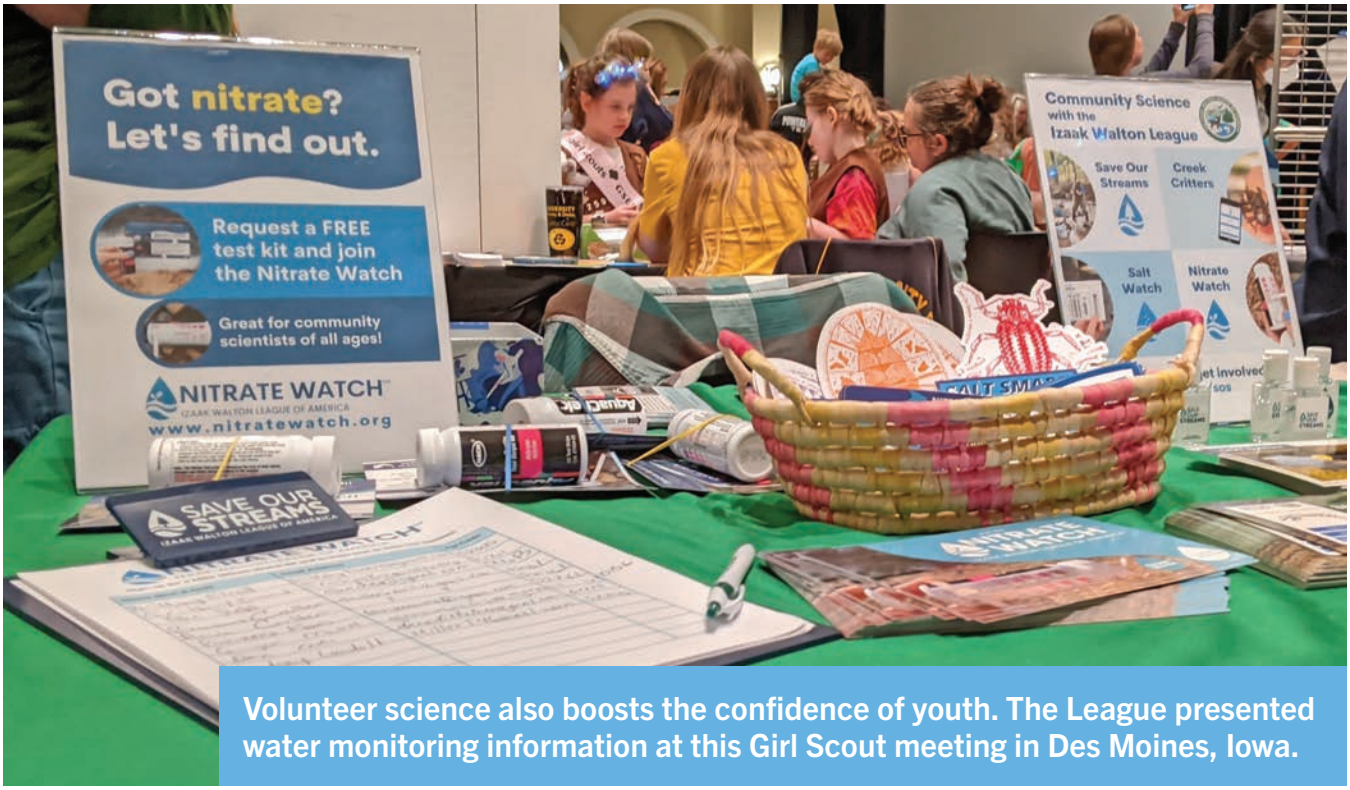
"Volunteer monitors aren't just filling data gaps, they are often a first line of defense when it comes to diagnosing the water quality problems that harm our environmental and public health across the country," says Samantha Puckett (Briggs), Clean Water Program Director at the Izaak Walton League.

Water monitoring provides a "frontline defense in identifying contaminants and toxins entering our water supply." — Art Foltz

"Now, the League is working to leverage these efforts, communicate results and equip monitors with the tools they need to become positive changemakers in their communities."

Linda May Fitzgerald, who monitors water in eastern Iowa, contacts legislators and has had letters to the editor published about water quality. One Connecticut volunteer who collects water data for the EPA and the state's Department of Energy and Environmental Protection said he has used that data from Salt Watch and Nitrate Watch when discussing water quality with other organizations.

Ken Yonek in Washington County, Pennsylvania, worked in the chemical industry for many years, so data collection is second nature to him. He monitors



Volunteer science also boosts the confidence of youth. The League presented water monitoring information at this Girl Scout meeting in Des Moines, Iowa.

IWLA

At public outreach events, Jessica Driver, right, shares her knowledge and concerns about stream health in Pittsylvania County, Virginia.

SURVEY METHOD: A SNAPSHOT OF THE LEAGUE'S WATER MONITORS

An email survey of water monitor volunteers was conducted in October and November 2023. Of the 54 volunteers who responded to the survey, all had participated in at least one of the League's programs, which include Salt Watch, Save Our Streams (including the Virginia SOS and chemical monitoring programs), Nitrate Watch, Creek Critters and Stream Selfie.

Most of the respondents (69 percent) are boomers (59 or older). Eleven percent are Generation X and 15 percent are millennials. Some of the volunteers also participate in monitoring not affiliated with the League, such as WiseH2O, a Trout Unlimited program, and monitoring programs run by state agencies.

several streams including Catfish Run, which empties into the Piney Forks branch of Peters Creek.

He was surprised to find Catfish Run had chloride readings at or above 230 ppm (a toxic level for chronic exposure for aquatic life) early in the winter before substantial salt application in the area. The readings were much higher than Piney Forks or Peters Creek, which drain much larger areas. Yonek suspects that the high readings are "the effect of some groundwater contamination into Catfish Run or some consistent, accidental discharge from waste water lines or some other source.

"We'll continue gathering data and ultimately, present this to both park and municipal authorities."

"The fact that my results come from that local stream in that local park where you walk the trail or go to see a Little League game makes it more personal." – Allen Baker

Several respondents reported that when they have alerted local agencies about a water problem, they did not get a satisfying response. Those who did not feel prepared to take action said more guidelines about taking action would be welcome. And several respondents said their water tests have not revealed bad water quality so they haven't needed to take any action yet.

Local data conveys local credibility

As a result of their experience, 92 percent of respondents said they were more likely to recommend volunteer science programs like the League's to friends and family (65 percent said "much more likely," 27 percent said somewhat more).

Allen Baker, who lives in Harrisonburg, Virginia, believes that "results from citizen scientists carry more weight with local folks than something disseminated by some far-off government agency. The fact that my results come from that local stream in that local park where you walk the trail or go to see a Little League game makes it more personal.

"If my monitoring results show someone a facet of water quality they had never considered, such as winter salt usage, they might be prompted to alter their personal habits and in turn make a difference." Baker is a member of the Rockingham-Harrisonburg (Virginia) Chapter of the League.

Studies underscore the benefits of volunteer science

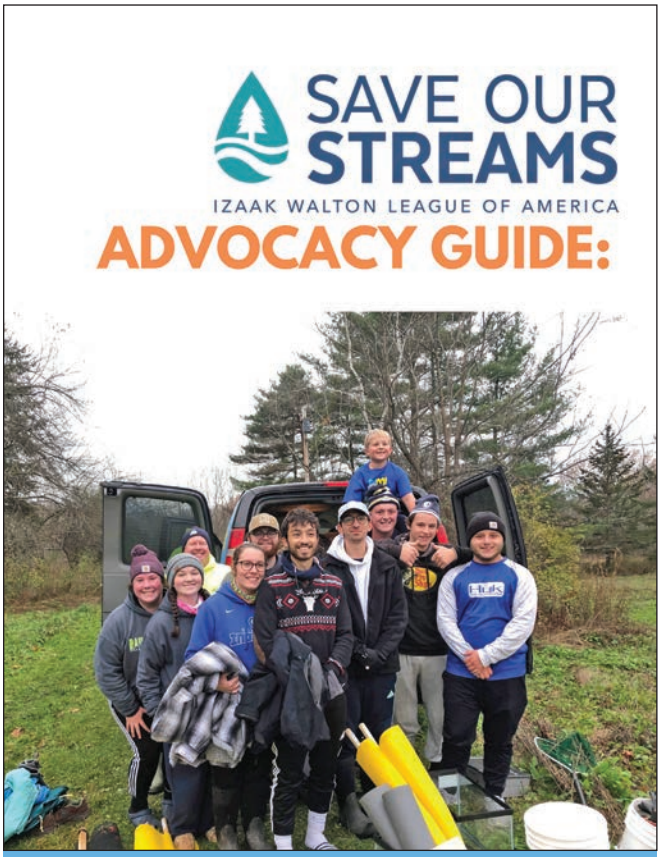
Published research backs up the League's survey findings that suggest that being active in these water monitoring programs increases confidence and optimism about the ability to improve the health of the environment.

A 2018 study found that community science can empower participants by providing an avenue into "civic participation and involving people in policy-relevant debates and decision-making processes," (*Biological Conservation,* September 2018, Tabea Turrini, Daniel Dorler, Richter, Heigl, Bonn).

A paper focused on the impact of volunteer science on youth concluded that programs that include rigorous data collection, sharing findings with external audiences and examination of complex environmental systems "can foster youth participation in current conservation actions, and build their capacity for future conservation actions," (*Biological Conservation,* April 2017, Ballard, Dixon and Harris).

"Now, the League is working to leverage these efforts, communicate results and equip monitors with the tools they need to become positive changemakers in their communities." — Sam Puckett (Briggs)

And a recent assessment of the Girl Scouts' "Think Like a Citizen Scientist" activity in the SciStarter program found that in addition to science knowledge and skills, this activity resulted in "development of science confidence and identity, and the adoption of civic action and advocacy behaviors" (*Environmental Education Research,* July 2023, Smith, Cooper, Busch et al).



The League's Save Our Streams Advocacy Guide is designed to teach and empower volunteers to become effective clean water advocates.

Volunteers stir a ripple effect

Jessica Driver, who lives in Java, Virginia, says she monitors an unnamed tributary that empties into Sandy Creek and the Dan River in Danville. She has used Salt Watch, Creek Critters, Nitrate Watch and Save Our Streams programs, which have made her "somewhat more optimistic" about the power of volunteer science. She works with the Dan River Basin Association to "take the knowledge of my stream health and concerns to the public at outreach events.

"We bring macro-invertebrates and games to events and tell people about how they can help their local basin. We also pick up trash when we are monitoring, and the last time we were out, a gentleman on a 4-wheeler was doing the same. He said he had watched us for years, every Sunday cleaning up and wanted to help! Our impact may be small, but it has definitely helped those around us realize the value of clean water."

IWLA

In Their Own Words: High School Students Journey to Tinker Creek

By BRUCE INGRAM

BRUCE INGRAM

Being the water gave the students a direct experience with the aquatic life and an inspiration for writing about it.

"And tell them they have to leave their cell phones back in the room," said Sarah Beth Milko, my assistant principal at Lord Botetourt High School in Daleville, Virginia.

Those were her final instructions when she granted my request to take my English 10 Honors and Creative Writing classes on a nature walk to Tinker Creek, a small stream that flows along the perimeter of the school grounds. Milko had already agreed to my idea that having students write a journal chronicling their experiences would be a worthwhile assignment.

Getting youth outdoors

It's no secret that many of our nation's young people have become obsessed with their phones and social media. One of the many downsides of this is fewer connections to nature's glories. On our pilgrimage, these activities resonated with the students, based on their journal responses—which I have excerpted here, offset in the shaded boxes.

One of the first activities on the nature hike was listening. I asked

the students to stop walking, close their eyes and listen to bird songs. When they did so, I pointed out the "peter, peter, peter" lyrics of a tufted titmouse and the "cheer, cheer, cheer, wordy, wordy" tune of a cardinal.

I then asked the students if they knew why birds sing. The universal response, of course, was because they're "happy." I corrected them explaining that the male titmouse and cardinal were either looking for a mate, communicating with their mate or telling other males of their species "to get your butt out of here," which produced an outburst of laughter.

The birds could be saying
the vilest, most menacing insults
to one another, or they could
be looking for a partner.
We are none the wiser as we
simply admire their singing.

The song of the birds all in
different timing and tune blended
well despite being distinct in melody.
All was a peaceful harmony.

A small field lies between the campus and creek, so I next stopped there and told my students it was time for a snack…did anyone see anything to eat? Being new to nature, understandably they responded with puzzled looks. So I quickly gathered up some dandelions, broadleaf plantain and garlic mustard and announced that we had all the makings for a healthy salad.

To my joy, a junior female then asked for permission to gather her own wild edibles and said she would put them in her salad when we had our lunch break.

Izaak Walton League Resources: Engaging Youth in the Outdoors

Spending time outside makes us happier and healthier, and you don't have to live in the wilderness to experience the benefits of nature. Explore the Izaak Walton League's nature-based activities and resources for families and kids of all ages.

Visit iwla.org/outdoor-recreation/youth.

The institutionalized learning style
faded when the class stepped outside.
It sparked an idea: learning does not have to
be dull or confined to the walls of a classroom.
It does not have to come from a textbook
or a bright screen that is a killer to the eyes.

Learning can come from the
shallow waters of a creek,
the tastes of wild plants and even
a snapping turtle hidden in the sludge.
The eastern tiger swallowtails were so
beautiful and
I loved watching them dance
around each other
while the class learned about
the different natural edibles.

Our next stop was Tinker Creek, and I was a little worried that the students would be hesitant to enter the water, even though earlier I told them to wear old tennis shoes because they might want to seine for creek creatures. Indeed, when I asked if any of them had ever waded a creek, more bewildered countenances appeared.

At last, two bold senior females ventured into the stream, and like a dam that has been breached, other young people entered, too, until most of the class frolicked about.

I had a blast splashing
around in the water and
finding all of the different
creatures who call the creek home.

Just nature, the splashes of water and
the voices of acquaintances having fun.

Finding critters

The next lesson involved us actually finding and identifying aquatic creatures. I had asked Tim Miller, the local Project Wild volunteer, to accompany us because of his expertise concerning invertebrates, minnows and crayfish. Tim toted nets, field guides and nature-related handouts streamside.

Soon, a succession of young people brought their net contents to Tim for him to identify. He used the mayfly and caddis larva, for example, to discuss the food chain and the importance of clean water and a healthy riparian zone.

Another highpoint was when a student stumbled across a yearling snapping turtle—definitely the day's most exciting discovery. I explained that one day this tiny turtle would be among the alpha predators on the creek, patiently waiting in the mud to ambush whatever it could swallow. Oohs and aahs resulted.

I enjoyed learning how to search for mussels and aquatic insects with a net and sifting through rocks to find snails.

My favorite catch was the crane fly larva, which was a thick, slimy worm. Even though the creature was terrifying to look at, I still felt accomplished with my catch.

Later while the students gathered to eat lunch, Tim and I identified native trees and their importance to the ecosystem. We also pointed out invasive plants such as autumn olive and bush honeysuckle and why they presented environmental threats.

I had long forgotten the beauty nature possesses. The variety of life that we've chosen to ignore blooms past my comprehension.

How each leaf holds a purpose and then dies unknowing makes me wonder if humans are as such.

Finally, my favorite journal entry confirmed that the field trip and assignment had been successful.

One thing I noticed was how many times I went to pick up my phone, only for it not to be there. I felt a little lost without it, but I was happier overall getting hands-on experiences with my classmates and enjoying the scenery around me.

Overall, I had a really nice time being guided through nature and down toward the back of LB's property, and would gladly do it again, in or outside of the school day.

After some hesitation, the students took to the water and began an exploration of aquatic life.

BRUCE INGRAM

KEEP THE GOOD TIMES GOING

RENEW your League membership for 2024!

…the sports action…

…the quiet times…

…the family time…

…the conservation to protect natural resources…

ISTOCK (3); IWLA ELGIN CHAPTER

Don't let all the good times pass you by! Your chapter and the Izaak Walton League **need you** to help us stay strong and bring you all the outdoor activities and conservation programs you enjoy.

Return your dues payment to your chapter today!

POLICY PULSE

Secure Durable Protections for Our Waterways—Tell Congress to Support the Clean Water Act of 2023, H.R. 5983

By JARED MOTT, Conservation Director

ISTOCK

In October, the Clean Water Act of 2023 was introduced in the U.S. House of Representatives to reverse the damage done by the Supreme Court's *Sackett v EPA* decision and reinstate clean water protections agreed upon by both political parties and implemented by President Ronald Reagan.

The bill amends the Clean Water Act of 1972 to clarify that all natural waters, including wetlands and tributary streams, are protected by the Act. The Izaak Walton League emphatically supports the bill.

Lead sponsors of the bill include Representatives Rick Larsen (D-Wash.), Grace Napolitano (D-Calif.), Don Beyer (D-Va.) and Melanie Stansbury (D-NM).

Why legislation is needed

Ignoring the clear purpose of the law, congressional intent and science, the narrow majority in *Sackett* defined the types of waters covered by the Clean Water Act more narrowly than any previous decision and more narrowly than Congress clearly intended, and the way EPA and the Army Corps have implemented the law for decades.

The scope of the damage from the *Sackett* decision was not fully known until the EPA and Army Corps of Engineers revised their Clean Water Act regulations over the summer, as required by the decision.

Some of the key changes to the regulations follow:

- If a wetland does not have a continuous surface water connection to a river, lake or the ocean, it can be drained and filled without a Clean Water Act permit. The EPA estimates that 60 million acres of wetlands in the United States do not have a continuous surface connection; therefore, they can be drained and filled without limit under the Clean Water Act.
- For generations, going back to the 1800s, federal law has protected waters that cross state lines. Now, in an unprecedented rollback, the EPA and Army Corps have removed "interstate wetlands" from the definition of "interstate waters" that are covered by the Clean Water Act. Now these wetlands, which affect water quality, migratory wildlife and drinking water supplies in other states, are not afforded the same protection as other interstate waters.
- The harm from this decision extends well beyond wetlands, also stripping protection for tributary streams, which feed into the nation's drinking water supply. The agencies' regulations now safeguard tributaries of larger waters only if those tributaries "are relatively permanent, standing or continuously flowing bodies of water." This excludes ephemeral streams (which only flow after rains or melting snow) and many intermittent streams (which do not flow perennially).

Only congressional action can fully restore durable protections to our nation's waterways.

Only congressional action can fully restore durable protections to the nation's waterways. The Clean Water Act of 2023 specifically targets the rollbacks in protections EPA was forced to implement after *Sackett.*

The legislation has already gathered more than 100 cosponsors in the House of Representatives, but it will likely need overwhelming bipartisan support to successfully pass.

Ask your U.S. Representative to support this critical legislation by signing the action alert at www.iwla.org/advocacy.

Vital Conservation Programs Get Extension

In November, President Biden signed an extension for the 2018 Farm Bill. The existing law, the Agriculture Improvement Act of 2018, had expired on September 30 as the House of Representatives and Senate failed to pass a new bill in time.

As the League has pointed out, this law is about agriculture but it affects everyone. With better investments in conservation programs, the Farm Bill could provide a meaningful improvements to our health, water quality and climate.

While the brief lapse due to expiration of the 2018 Farm Bill had short-term impacts, more consequential repercussions loomed at the beginning of the new year if the extension had not been approved. Without an extension or authority from a new bill, commodity programs would have reverted to out-of-date "permanent laws" that were established in the 1930s.

The extension was championed by bipartisan leadership from both the agriculture committees and extends the provisions of the 2018 Farm Bill through September 30, 2024. It re-established legal authority and funding for important conservation programs like the Conservation Reserve Program, which could not enroll new acres until an extension or new Farm Bill were passed.

A vital next step for Congress early in 2024 is passing a new Farm Bill that prioritizes conservation.

The League will continue to work with lawmakers to drive changes needed to make the next Farm Bill what we envision: a clean water and soil health bill that protects drinking water, fights climate change and restores wildlife habitat.

You can read more about our priorities for the Farm Bill at our website, www.iwla.org.

CLEAN WATER CORNER

Paint the Plow: An Artistic Spin on Volunteer Engagement

By SAMANTHA PUCKETT (BRIGGS) and ABBY HILEMAN

This fall, the Salt Watch team embarked on a new and creative way to spread smart salting messaging throughout a community—Paint the Plow!

Thanks to a grant from the Chesapeake Bay Trust and Montgomery County Department of Environmental Protection, Clean Water Program staff at the Izaak Walton League worked with Montgomery County Department of Transportation and community partners in Maryland to…you guessed it, paint snowplow blades.

Not only is Paint the Plow a fun art project, it is a creative way to engage new partners and volunteers in conservation activities. League staff reached out to local high school art teachers offering plows as a project for them, and we also promoted the project to groups that have shown interest in water quality in Montgomery County. Simple emails, phone calls and a flyer were all we needed to engage the community in this program.

We had partners from all over the County participating, such as Quince Orchard, Blake, Damascus, Watkins Mill and Wheaton high schools, Nature Forward and the Smith Center, Friends of Cabin John Creek, Little Falls Watershed Alliance, the Lois Green-Sligo Chapter of the Izaak Walton League and Scout Troop 944—plus League staff even designed and painted one plow.

FAVPNG

Simple process, easy to replicate

The process was simple. League staff coordinated with partners to get them a snowplow blade dropped off at a location of their choosing, and we provided them with the paint and other materials needed to execute a design. Then the partners painted smart salt messaging on the plow. And in return for our coordination efforts, we have had the pleasure of seeing some truly creative environmentalists, students and partners take off running.

Now all of our plows have been picked up, and they will be back on actual working snowplows run by the Montgomery County Department of Transportation. We are looking forward to seeing these plows in action and are excited to see how the Paint the Plow program drums up new interest in Salt Watch.

If you are interested in starting a Paint the Plow program in your community, send us an email at saltwatch@iwla.org. We can provide our supplies lists, some slogans to use and information to help your initiative run smoothly.

To learn more about road salt pollution and how we can work together to reduce it, visit saltwatch.org.

THE DEFENDERS CHAPTER ACHIEVEMENT AWARD

The Izaak Walton League's Defenders Chapter Achievement Award is named after the League's motto: "Defenders of Soil, Air, Woods, Waters and Wildlife." Based on your activities in the last calendar year, your chapter might be eligible to receive this national recognition for your many ongoing efforts and accomplishments.

To be eligible for this annual award designation, your chapter must have met criteria in five of the following categories during 2023: membership, financial contributions, education, conservation, youth involvement and communication.

Initial recognition of your chapter's 2023 accomplishments will be made at the 2024 IWLA National Convention, and will be published in a future issue of *Outdoor America*.

Applications for both awards were mailed in January to each chapter president, secretary and awards chair. For additional information or an application form, please contact the IWLA Chapter Relations Department toll-free at (800) IKE-LINE, extension 216, or email awards@iwla.org. Forms are also available online at www.iwla.org/awards. **Applications must be postmarked no later than March 15, 2024.**

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Arlington-Fairfax Chapter, Virginia
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Berkeley County Chapter, West Virginia
Bethesda-Chevy Chase Chapter, Maryland
Bill Cook Chapter, Wisconsin
Brown County Chapter, Wisconsin
Bush Lake Chapter, Minnesota
Cass County Chapter, Minnesota
Central New York Chapter, New York
Des Moines Chapter, Iowa
Dwight Lydell Chapter, Michigan
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Frederick #1 Chapter, Maryland
Fredericksburg-Rappahannock Chapter, Virginia
Grand Island Chapter, Nebraska *
Hamilton Chapter, Ohio
Kampeska Chapter, South Dakota
Lincoln Chapter, Nebraska
Linn County Chapter, Iowa
Lois Green-Sligo Chapter, Maryland
Loudoun County Chapter, Virginia
McCook Lake Chapter, South Dakota *
Mid-Shore Chapter, Maryland
Minnesota Valley Chapter, Minnesota
Mountaineer Chapter, West Virginia
New London Chapter, Minnesota
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Owatonna Chapter, Minnesota
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Tiffin-Seneca County Chapter, Ohio
W.J. McCabe Chapter, Minnesota
Walter J. Breckenridge Chapter, Minnesota
Warren County Chapter, Iowa
Warren County Chapter, Virginia *
Wayne County Chapter, Ohio
Wes Libby - Northern Lakes Chapter, Minnesota
Wildlife Achievement Chapter, Maryland *
Will Dilg Chapter, Minnesota
York Chapter #67, Pennsylvania

**20-year recognition recipient*

THE TOBIN AWARD FOR OUTSTANDING VOLUNTEERS

Who are the dedicated Ikes among your division or chapter members? You know—the ones who show up for all the meetings, sign up first for work crews, help maintain the grounds and make the organization run more smoothly? They are your chapter's most generous members and they deserve a hearty thanks.

The Judge John W. Tobin Volunteer Appreciation Award, established in 1976 by past IWLA President John Tobin, is the perfect way to recognize that special member. Every chapter is encouraged to present a Tobin Award to one of its members each year. The award not only recognizes a member's conservation commitment, but also demonstrates the connection between chapters and national as it is presented by a national director during a chapter meeting.

Make sure your chapter selects its Tobin Award winner by March 15!

CONSERVATION CURRENTS

Enjoying *Outdoor America?*

If you look forward to the Izaak Walton League's magazine landing in your mailbox four times a year, you'll love opening *Conservation Currents* every month. Our flagship e-newsletter is packed with updates on the League's programs and activities, plus notable news you may have missed and opportunities to take action on conservation causes you care about.

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ALEX GRICHENKO

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Contact us today for information about including the Izaak Walton League in your will or naming the League as the beneficiary for insurance or other investments.

Wildfire Smoke Spreads Health Hazards Across U.S.

By LISA BALLARD

This human-caused wildfire on Mount Maurice near Red Lodge, Montana, burned 21,000 acres, threatening our lungs as well as property.

JACK BALLARD

The smoke was so thick that it totally obscured a hillside only a quarter-mile away. "Impossible," I thought, peering into the opaque gray air from a lakeside cabin. "This is the Adirondack Mountains, not the Sierra Nevada."

But the eastern United States is no longer immune to lung-clogging wildfire smoke. Last summer, wildfires in eastern Canada blanketed the northeastern United States in a toxic haze such that New York City was among the worst-rated cities in the world for air quality. In places like the Adirondack Park in upstate New York, where tuberculosis patients used to "cure" in the clear mountain air, people like me were now spending days indoors monitoring air quality reports.

Air quality reports? If someone from that region knew of them before last summer, they had never bothered with them. But I had.

The eastern United States is no longer immune to lung-clogging wildfire smoke.

Poor air quality at my home in Red Lodge, Montana, was a big reason why I normally cherished an annual summer trip to the Adirondacks, where I could paddle and hike to my lungs' delight. Nowadays, Montana and much of the West have only two seasons—winter and wildfire. Twice in the last decade, out-of-control infernos burned to within a few miles of my house. But mostly we get the smoke from California, the Pacific Northwest and western Canada, carried on the prevailing winds. Relief finally comes when the first snowfall pushes the particulates to the ground. For outdoorsy folks, it's a dilemma. Stay inside and go stir-crazy, or venture out and cough for the next three days.

Wildfire trouble has brewed in the East for several years now. You would think that the frequent rainfall on the East Coast would tamp it down, but weather

patterns have changed. Areas like the Everglades and the sub-arctic tundra in northern Quebec, historically moist regions, are more susceptible to drought and thus wildfire. And the blazes, regardless of where they are, have become more ferocious in terms of both acreage burned and heat intensity, too much for firefighters to control and for the average rain shower to put out.

As a result, smoke from a thousand miles away might linger in places where it didn't a decade ago. Even in the nation's capital, Washington, DC, residents had long, hazy periods during the summer of 2023 where smoke lingered from wildfires in North Carolina, and then from the massive Canadian fires.

How bad is it?

For many years after the U.S. Congress enacted the Clean Air Act in 1970 and its amendments in 1977 and 1990, we made great progress toward improving air quality. Regulations required motor vehicles and factories to spew less pollutants, allowing us to breathe easier.

A painted trillium emerges from wildfire ashes on the forest floor in the Linville Gorge Wilderness Area in western North Carolina.

MICHAEL REINEMER

However, a 2022 study published in the scientific journal *Nature* found that, since the early 2000s, the western United States has lost up to 50 percent of those gains—due primarily to wildfire smoke. And Oregon and Nevada have such poor average air quality that they have net zero gains.

Air quality improvement has either greatly slowed down or reversed in at least 35 of our 50 states, mainly due to wildfires. This is a national phenomenon and not one we can regulate our way out of.

"We had had so much success, and wildfires, just in five to six years, are really unraveling a lot of this progress," said Marshall Burke, professor of earth system science at Stanford University and the study's lead scientist, in an interview with the *Washington Post* (September 23, 2023).

The study, which compiled data from across the country, showed that air quality improvement has either greatly slowed down or reversed in at least 35 of our 50 states, mainly due to wildfires. This is a national phenomenon and not one we can regulate our way out of. You can't fine or imprison a bolt of lightning that ignites a forest or grassland. What's more, no two wildfires are alike in duration, intensity, acreage burned and where the smoke travels.

Effects of climate change

In a way, living with more wildfire smoke is living with climate change. According to the National Oceanic and Atmospheric Administration, as our climate warms, drought becomes more prevalent. Trees, shrubs, grasses and other organic matter are drier and thus more flammable. Wildfires are happening more commonly in areas where they used to be rare or easier to control. For example, last summer the devastating fire that leveled Lahaina, Hawaii, moved so quickly and with such heat that it killed 97 people.

Ironically, our efforts to suppress all wildfires over the last century are contributing to their larger size and intensity. Small wildfires—typically under 1,000 acres—have been a regular occurrence for millennia and Mother Nature's way of renewing herself. In a forest habitat, if a wildfire occurs when plants

MICHAEL REINEMER

Prescribed burns can preserve or improve habitat and reduce risk. But to truly reduce the risk of large wildfires, the regulatory, financial and labor hurdles would be high.

How to Protect Property When Flames Flare Up

The USDA has the following three guidelines for reducing a home's risk of burning during a wildfire based on the distance from your house:

1. Zero to 5 feet, including your house:

- **Use ignition-resistant (non-wood) siding, roofing, decking, vents, eaves and windows.**
- **Don't store combustible items under your deck.**
- **Remove flammable vegetation and mulch from under and around your deck and house.**
- **Keep gutters and roof clear of debris.**

2. 5 to 30 feet from your home:

- **Manage landscaping to ensure fuel sources are not continuous like a hedge. Space slows fire down.**
- **Remove tree branches that overhang your house or deck.**
- **Use metal fencing (not wood), especially if it attaches to your home.**

3. 30-100+ feet from your home:

- **Prune trees and shrubs to keep flames lower to the ground.**
- **Leave space between trees and other combustibles to slow or stop the path of a blaze toward your home.**

are dormant, it's a natural process to which native plants are adapted. The fire cleans out the conifers, allowing more sunlight in and thus enabling shrub species and wildflowers to proliferate. However, while we heeded for decades Smokey Bear's plea to prevent forest fires, excessive organic matter—fallen trees, leaf litter and other flammable material—has accumulated on forest floors, creating a tinderbox.

Climate change exacerbates the problem. For every degree a region warms up, the area burned when a wildfire ignites is likely to double. The stats are staggering. This year as of October, fires have burned a total of over 317,000 acres in California alone. During the summer of 2023, the blazes in Canada scorched nine million acres. And that's only the tip of the torch.

The risk of breathing in particulates

You don't need to be in the path of a fire to suffer severe health problems from it. Another study by Marshall Burke, published in the *Proceedings of the National Academy of Sciences,* tracked data in California from 2006 to 2017 and found a 30 percent increase in emergency room visits for acute respiratory issues during the week following wildfires where dense smoke blanketed an area.

The long-term effects of wildfire smoke on human health are still being studied, but the initial research is sobering. For example, in 2017, Seeley Lake, Montana, was immersed for several weeks in the smoke of the unquenchable Rice Ridge Fire. Research by the University of Montana revealed that two years later, residents had decreased lung functionality.

Another study by researchers at the University of California San Diego, that also looked at hospital admissions, concluded that breathing wildfire smoke can be up to 10 times more harmful than inhaling other air pollutants.

According to EPA, wildfire smoke is made up of a combination of gases, including carbon monoxide, hazardous air pollutants like polycyclic aromatic hydrocarbons (PAHs), water vapor and particulate matter (PM). The PM from wildfires is especially bad for us. At 2.5 microns or less in diameter, these particles are four times smaller than a flake of mold or pollen, and about 25 times smaller than the diameter of a human hair.

When the PM produced by a wildfire becomes dense enough, the air looks hazy. That's a warning worth heeding. Wildfire PM is so small that it can penetrate deep into our lungs and enter our bloodstream, increasing the risk of cardiovascular and respiratory complications. The more intense the fire, the higher the danger. What's more, these minute particles are easily borne by wind.

Particulate matter in wildfire smoke is so small it can penetrate deep into our lungs and enter our bloodstream, increasing the risk of cardiovascular and respiratory complications.

What can we do?

Two summers ago, a massive wildfire burned to the edge of my community in Montana. Mount Maurice, the peak that we can see from our living room, looked like an erupting volcano. We had no warning. Then the wind miraculously shifted, turning the fire back on itself. Without fuel, it sputtered out. Lucky us. Many others, like in Lahaina, are not so fortunate.

The fire on Mount Maurice burned 21,000 acres. It was human-caused and preventable. A spark from a motorcycle ignited the flames.

One of the cardinal rules for preventing wildfires is keeping a vehicle away from dry grass. Other rules: never leave a campfire unattended, and make sure it's completely extinguished and cool before abandoning it.

Wildlife and Wildfire

In general, wildfire that's not too intense or widespread is a natural process that plants and animals in traditionally wildfire-prone areas have evolved with and depend upon for keeping their habitats healthy.

Fire affects different species in different ways, depending on the size of their home range, whether they migrate or not, in what season the fire occurs, its size and how hot it burns. For example, elk, which are generally transient, going from higher-elevation summer range to lower-elevation winter range, might need to move faster or delay if there's a wildfire. Small game like rabbits, reptiles and amphibians take shelter below ground.

Fish live underwater, so they're safe from a wildfire, right? It depends. A healthy riparian area provides shade, stable banks and a constant supply of woody debris for the fish habitat. If a fire severely burns the streambanks or burns very hot on the surrounding hillsides, it loosens the soil. If it rains, the soil, ash and sediments wash into the stream, and fish have a hard time breathing.

Some plants benefit from wildfires. "Shrubs are critically important, especially to non-game species," says Jill Randall, Wyoming Game and Fish Department Habitat Biologist. "They love berries. Many of those early shrubs are in the rose family, like raspberries, which re-sprout soon after a fire. These plants have adapted to fire. They take advantage of the opportunity from that disturbance."

To habitat specialists like Randall, a fire that burns in a mosaic pattern is ideal. It clears out the old, dense conifers, allowing wildlife-friendly, diverse plant communities to flourish. Even animal species that might be negatively impacted by the fire at first typically recover over the long term—if the plant life that grows up after fire is native to that ecosystem.

Unfortunately, not all plants that appear immediately after a wildfire are beneficial. Aggressive noxious weeds often infiltrate a forest or prairie post-inferno, which not only crowds out native plants but also makes the habitat more susceptible to fire. Cheatgrass is particularly problematic.

LISA BALLARD

Fireweed, a fire-dependent wildflower, blossoms in a recently burned area near Humboldt Peak, Colorado.

Of course, there are naturally occurring fires, usually caused by lightning. The number-one way to prevent these potential blazes (and all wildfires) is through controlled or prescribed burns. Controlled burns also create smoke, but typically much less, so it is worth the health risk compared to an uncontrollable inferno that incinerates everything in its path.

A bigger challenge is the scale at which controlled burns would need to occur to truly reduce the risk of wildfire. The regulatory, financial and manpower hurdles are high.

Forest thinning and forest management through logging might be another way to control wildfire, but not if downed tree trunks, branches and other unwanted parts of the trees are left on the forest floor, where they can become fuel for wildfires. Even if great care is given to eliminating that potential fuel, scientists disagree whether forest thinning and other actions like planting native, fire-resistant and climate-change resistant trees really work.

Those who believe proper forest management reduces the risk of a catastrophic wildfire are proponents of removing trees with root rot and other evidence of disease to allow the healthier, more fire-resistant trees to grow stronger. Others say, "why bother," pointing to the fact that when wind and warm air dry out the flora on the landscape, a wildfire will burn it all anyway, even across clear cuts, rivers and ridgelines that previously served as fire breaks.

In recent years, Washington has recognized the staggering cost of wildfires and now devotes more dedicated resources to tackling the immediate problem of responding to fires as well as the long-term need to curb carbon emissions that contribute to climate change.

At least for the moment, as we ponder solutions, we can breathe deeply. Wildfire season is still a few months away.

Lisa Ballard is an Ike from Red Lodge, Montana, and a long-time contributor to Outdoor America. *An award-winning writer and photographer, she is an advocate of maintaining a healthy environment and getting people of all ages outdoors. www.LisaBallardOutdoors.com.*

What to Do When the Air Gets Smoky

1. Stay indoors with the doors and windows closed.
2. Use a high-efficiency air filtration system in your home.
3. Close the air-intake from the outside on your air conditioner, and make sure the filter is clean.
4. Be a couch potato. Exercise raises how much particle pollution you breathe into your lungs.
5. Wear an N95 mask. Lesser-quality masks don't filter microscopic particles.
6. Live healthily. If you get enough sleep, stay hydrated and eat a good diet, you'll lessen your vulnerability.
7. If you need to drive somewhere, set your vehicle's ventilation system to the recirculation mode.
8. Avoid burning candles, lighting fireplaces, using gas stoves, smoking and vacuuming, which add or stir up air pollutants inside your home.

Wildfire Can Affect Mental Health Too

Though we worry about our physical health when wildfire smoke fills the air, it's harmful to our mental well-being, too. A study of rural counties in the United States, published in 2023 in *Proceedings of the National Academy of Sciences,* found that a 10 percent increase in wildfire-produced particles in the air led to an average 1.5 percent increase in monthly suicide rates. Rural populations were the target of the study because they tend to have higher suicide rates and spend more time outdoors.

The American Lung Association says smoke from wildfires can harm anyone nearby and even many miles downwind. Breathing smoke can shorten lives and cause heart attacks, asthma attacks and other dangerous health effects. For more information, visit lung.org/wildfires.

Air Quality Index (AQI) for Particle Pollution

Daily AQI	Levels of Concern	Values of Index	Description of Air Quality
Green	Good	0 to 50	Air quality is satisfactory, and air pollution poses little or no risk.
Yellow	Moderate	51 to 100	Air quality is acceptable. However, there may be a risk for some people, particularly those who are unusually sensitive to air pollution.
Orange	Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is less likely to be affected.
Red	Unhealthy	151 to 200	Some members of the general public may experience health effects; members of sensitive groups may experience more serious health effects.
Purple	Very Unhealthy	201 to 300	Health alert: The risk of health effects is increased for everyone.
Maroon	Hazardous	301 and higher	Health warning of emergency conditions: everyone is more likely to be affected.

EPA

JOIN THE

SALT WATCH™

IZAAK WALTON LEAGUE OF AMERICA

1 teaspoon of salt

permanently pollutes 5 gallons of water

KEEP IT FRESH (NOT SALTY) WITH SALT WATCH

www.SaltWatch.org

This national community science project:

- Provides ***free*** water testing kits to identify chloride pollution
- Compiles volunteer data from across the country
- Educates the public on responsible salt application
- Helps volunteers advocate for smart salting

It is easy to participate and become a clean water advocate for your community!

HOW TO GET STARTED

1. Request a ***free*** kit at **SaltWatch.org**
2. Collect chloride readings at the lake, stream, or drinking water source of your choosing
3. Upload your results to our national database, the Clean Water Hub
4. Share your findings with your community!

Pay it forward! Visit **iwla.org/sponsorakit** and help us reach even more clean water advocates!

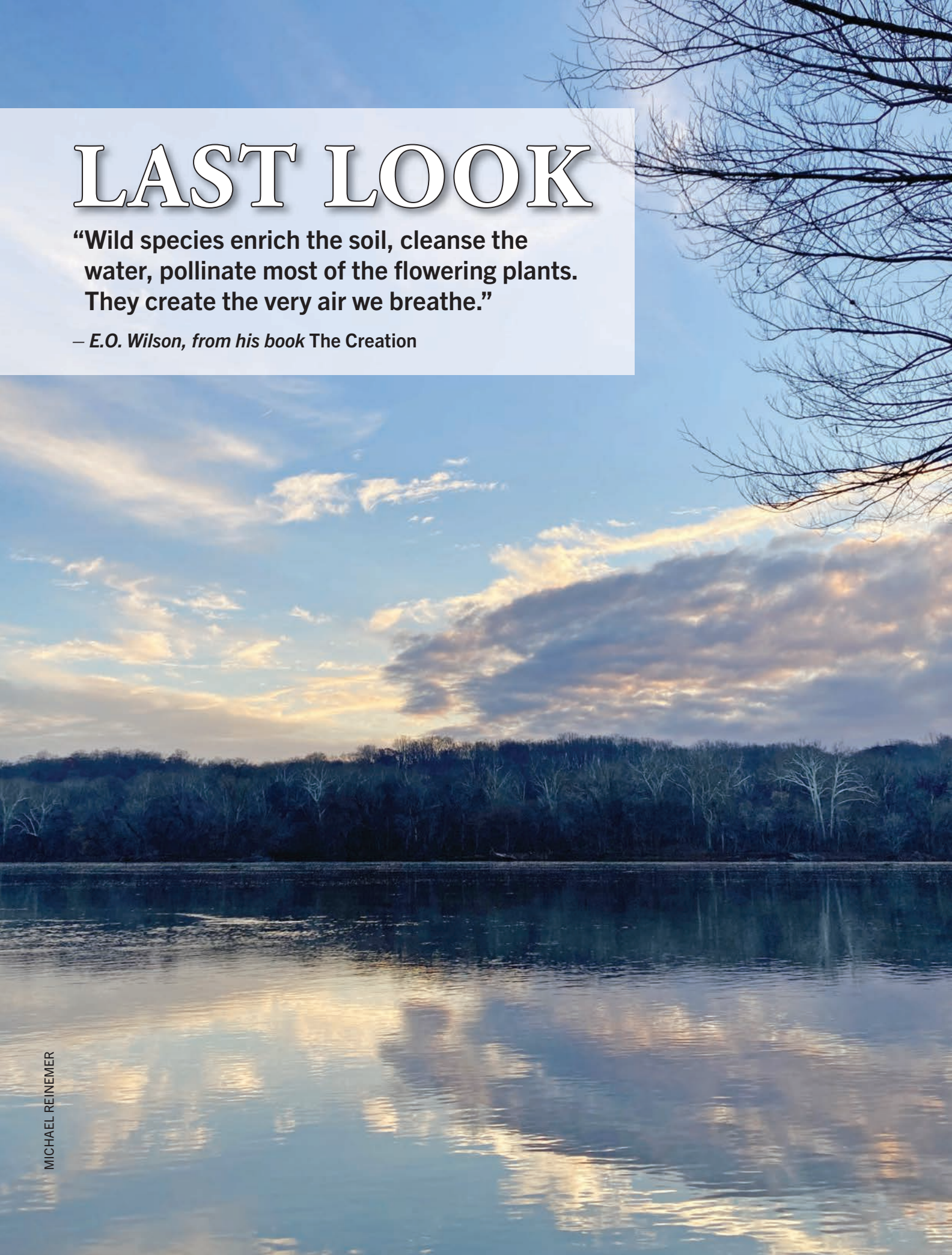
Request your free kit!

Pay it forward

LAST LOOK

"Wild species enrich the soil, cleanse the water, pollinate most of the flowering plants. They create the very air we breathe."

– ***E.O. Wilson, from his book*** **The Creation**



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NITRATE WATCH℠

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NITRATE: A THREAT TO PUBLIC HEALTH AND WATER QUALITY

When excess nitrate from sources like fertilizer and animal waste ends up in waterways, human health and the environment are put at risk. High levels of nitrate in streams and lakes causes algae blooms, fish kills, and the formation of dead zones. In drinking water, nitrate contamination is linked to health conditions like blue baby syndrome, thyroid disease, colon cancer, and birth defects.

Nitrate Watch volunteers are documenting nitrate pollution and advocating for solutions nationwide.
YOU can join them!

HOW TO GET STARTED:

1. Request a ***free*** kit at **www.NitrateWatch.org**
2. Collect nitrate readings at the lake, stream, or drinking water source of your choosing
3. Upload your results to our national database, the Clean Water Hub
4. Share your findings with your community!

Pay it forward! Visit **iwla.org/NitrateSponsor** to sponsor a kit and help us reach even more clean water advocates!