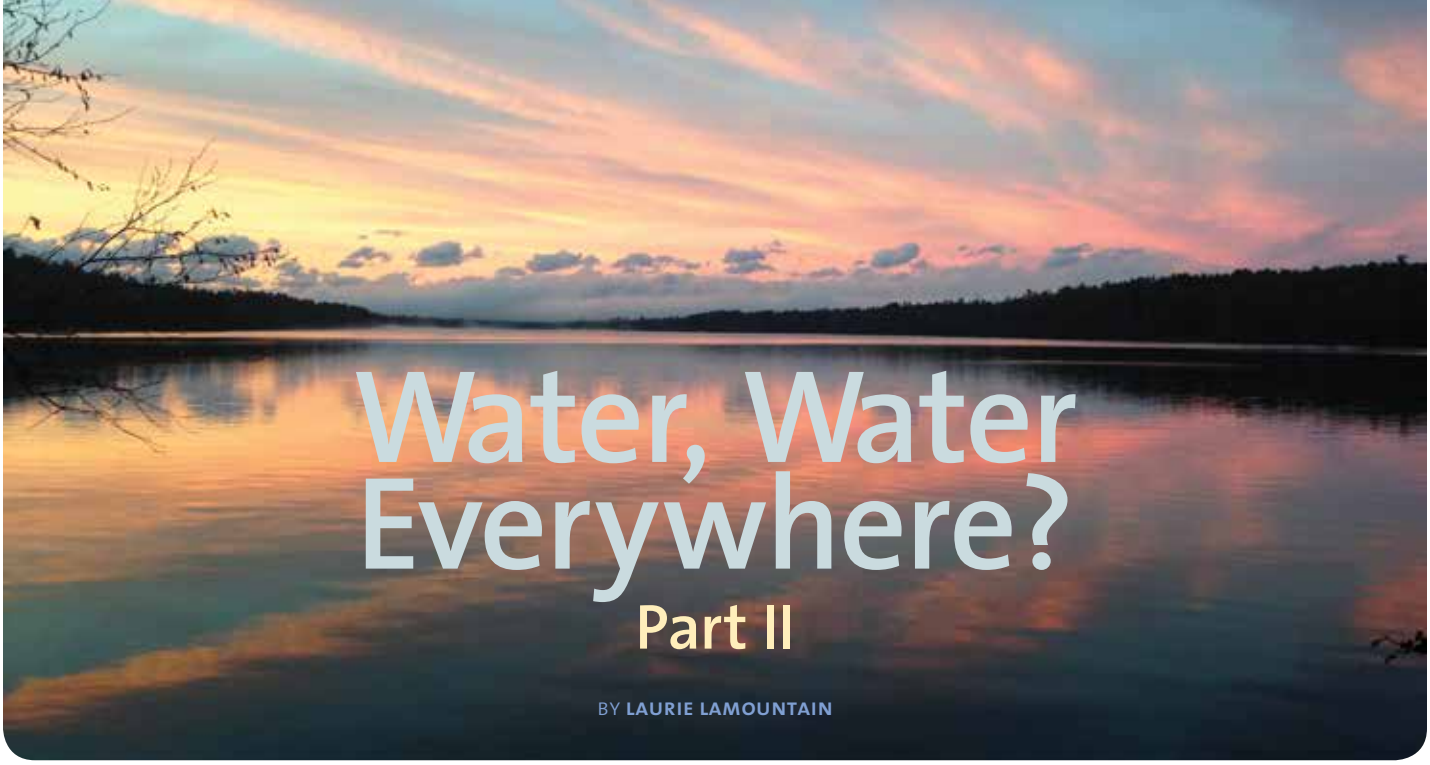

Water, Water Everywhere?

Part II

BY LAURIE LAMOUNTAIN

A body of water is not unlike a vital organ in the human body. It is part of an interconnected, living system that depends on a balanced diet of nutrients, which, in the case of a lake, consists mostly of phosphorus and nitrogen. And just as we are seeing the effect of too much food, or the wrong food, on human health, the same can be said of our lakes.

Naturally introduced nutrients from rocks, soil and organic material exist in generally low concentrations in clean waters, however, the introduction of phosphorus and nitrogen from road run-off, fertilizers, soil disruption and failing septic systems (think of them as junk food for lakes) can lead to nutrient overload, which in turn encourages the overgrowth of algae and aquatic plant life. Algae has its place and purpose in lake ecology, just as a small amount of fat does in the body, but only to a point. In a balanced body of water, it's part of the food chain that exists within a lake; in a lake with nutrient overload, it can spell ecologic and economic disaster for both the waterbody and the region.

Lakes with nutrient overload are termed Eutrophic and are not very inviting to humans. Anyone who has tried to swim in a warm, weedy pond with a mucky bottom knows what I'm talking about. Ogliotrophic lakes have low nutrient levels and tend to be the clearest, with rocky or sandy bottoms and very little algae. Mesotrophic lakes land somewhere in the middle. In extreme cases of nutrient overload, a lake is termed Hypereutrophic.

Here in western Maine, we are blessed with such an abundance of pristine lakes, ponds and rivers that we've come to believe they are a given, but the effects of climate and population change are urgently challenging that belief. As pristine as Maine's waters may seem, science reveals a murkier side. A Landsat survey showed that the clarity of Maine's lakes declined 20% between 1995 and 2010.

Warmer water means higher bacteria levels and more opportunity for algal blooms. Rising temperatures have brought earlier ice-out dates and nearly a month more of open water with the attendant impact of boating and recreation. Heavy downpours have significantly increased the level of pollutants entering the lakes.

Despite the effects of climate change, or perhaps because of it, there are more and more people drawn to Maine by the lure of our clean air and water. The tiny camps of yesteryear that dotted the shores of our lakes and ponds have been replaced with multiple-story houses with garages. And unlike those tiny camps, that more often than not were built on posts and pillars, these houses have full foundations and require the use of heavy machinery that compact the subsoil and inhibit its capacity for growth and absorption.

Organizations like Lakes Environmental Association in Bridgton, which has a regional focus, and Maine Lakes Society in Belgrade Lakes, which is statewide, are actively monitoring and reacting to these changes. While some things are beyond our control, there is much that can and is being done to preserve and protect the quality and health of the lakes we love. LEA and MLS agree that prevention, best served by education and collaboration, is the best option. Once again, what works for humans, works for lakes. Treatment is often too little, too late and very expensive.

Colin Holme, the assistant director at Lakes Environmental Association, points out that all LEA staff members participate in some education. In fact, education accounts for more than half of what they do, and it's not just through scheduled programming for children and adults. Volunteers are critical to the process, and whether they are monitoring the water temperature and quality of area lakes, which LEA has been doing on a bi-weekly basis from May to October for the past forty years, or inspecting them for invasive plant life, there's a learning curve for all of them. Then there is the matter of educating homeowners and contractors concerning the effects of development on water quality.

Holme states that of the two major factors affecting our lakes adversely, water quality deterioration is the more difficult for people to grasp. The threat of invasive plants is easier to comprehend and combat because its means of introduction is obvious and its presence readily apparent. The insidious manner in which land development and climate change affect our lakes and streams is much more complex. Setback restrictions on new construction and expansion restrictions on existing

structures are important and necessary additions to the process, but phosphorus is still making its way into our lakes.

"Each time you manipulate the land, through construction or landscaping, there's impact. And it's not just people who live on the lake; we're all part of the problem. It all goes down to the lake eventually. Everyone needs to play a part in their protection. As lakes get less clear, property values go down. If lakefront homeowners pay less property tax as a result, the taxes are redistributed to the inland homeowners," says Holme.

He also cites the role tourism plays in our economy and the dire consequences poor water quality would have on it.

"If we're willing to spend money on more house, more rooms, more storage space, we need to be able to spend money on why we're living here. There needs to be a realization by everyone that there's impact from our use of the land, and there needs to be ways to mitigate it. And it's worth doing. If we want these lakes to be clean for our children and grandchildren, we need to do something now."

In its "Handbook for Lake Protection," the Maine Lakes Society illustrates how the transfluent nature of water puts the responsibility of protecting it on all of us—not just lakefront homeowners. "Imagine you live three miles from a lake. Picture a drop of rainwater landing in your yard. This drop doesn't soak in, but runs across the lawn and down the driveway to a roadside ditch where it joins lots of other drops as it flows into a culvert under that road. The water is out of sight, but it keep on running downhill through the culvert to a stream that feeds the lake."

Since 1970, MLS's mission has been to preserve the benefits of Maine lakes for future generations by catalyzing and connecting grassroots lake associations, lake users, activists and policy makers in the shared mission of strengthening the resistance of lake ecosystems to destabilizing threats. Whether by visiting a lakefront homeowner and showing them tangible ways they can make their property more lake-friendly, or empowering realtors with information they can pass on to prospective homebuyers, or by taking an active role in Augusta, they are not unlike that drop of water that makes its way to the lake through many channels.

Their flagship program, LakeSmart, is one of the most effective lake protection programs out there. Driven by deep concern for the state of her own lake, LakeSmart program director Maggie Shannon has become a tireless activist in defense of all of Maine's lakes. She uses the term "capacity building" to describe how MLS and its LakeSmart program works. Lakefront homeowners meet with trained volunteers who conduct on-site evaluations and offer them cost-effective strategies for protecting lake water quality and their property values. Giving homeowners and lake associations a blueprint and the tools for addressing the challenges facing freshwater systems is the most effective means to creating sustainable lakeshore protection practices.

In an article she wrote for the MLS fall/winter newsletter, Shannon reported that "2015 was our third season running the program, and it was an exciting year for LakeSmart. 191 homeowners on 31 lakes requested and received a LakeSmart visit from trained volunteers. 107 LakeSmart Awards and 84 Commendations resulted, an all-time high for the program."

Lakes Alive! is an MLS education program that makes their 30-foot floating classroom, the Melinda Ann, available to lake associations, schools, summer camps and community organizations interested in learning the science of how lakes work. With both programs, the goal is to move beyond information to action; to make better lake stewards of all of us.

Looking ahead, both MLS and LEA take an active role in our schools by making sure lake education is included in the classroom curriculum. Today's youth will become tomorrow's educators.

On an immediate level, the Maine Volunteer Lake Monitoring Program (VLMP), nonprofit partner of the Maine Department of Environmental Protection, has more than 1,000 volunteers who currently monitor more than 500 Maine lakes. For information, contact vlmp@mainevlmplorg. Likewise, LEA monitors 37 lakes in our lakes region. Contact colin@leamaine.org to learn more.

"The bright side of dealing with global warming, if there is one," concludes Holme, "is that the traditional solutions to lake water quality problems—things like leaving vegetated buffers and doing infiltration—are the same solutions for climate change. We can protect our lakes from climate change by doing more of the things we're already doing."

The same can be said of land conservation. Studies suggest that water quality begins to decline after 15% of the forest within a watershed is converted to alternative uses. Making sure that we don't reach that tipping point by forfeiting our forests to development also serves that end. All of which points to the interconnectedness of nature. There's no such thing as protecting one natural resource. That's a good thing.

Part I of this article appeared in our summer 2015 issue. To read a complete, on-line version, visit our Web site at lakelivingmaine.com and click on the Back Issues tab. ☼

There is a lot you can do!

Don't mow to the shoreline. Leave 15 to 30 feet unmowed. Keep your lawn, garden and other cleared areas small. Leave pine needles and the natural duff layer within 100' of the lake.

Cover cultivated areas with mulch. Not only will this prevent runoff, but it will also retain water, meaning you won't have to water your garden as often.

Use fertilizers only if a soil test indicates the need. Then, follow the directions for application. Choose fertilizers that are phosphorus-free; there are many brands available. Avoid weed and feed fertilizers because they contain pesticides that could harm aquatic life if they get into the lake. Both herbicides and pesticides are easily carried by runoff into lakes and drinking water supplies.

Plant a buffer or encourage growth of native vegetation along the shore next to the lake.

Control storm water run-off from buildings, paths, driveways and road. Check your property on a rainy day and fix runoff sites by planting native vegetation, placing gravel and small stones, or constructing swales and rain gardens to capture runoff and soak it into the ground.

Don't stress your septic system. Check your system yearly and follow your service provider's recommendations for pumping. Use phosphorus-free cleaners and detergents. Stagger laundry loads. Minimize water use.

Use lake-friendly materials for docks. Instead of pressure-treated wood that contains toxic chemicals, choose cedar, cypress, plastic or aluminum.

If there's no beach, don't create one. It's bad for the lakes and it's against Maine law.

Get in the know about LakeSmart and get it operating on your lake.

Are you LakeSmart? Find out about it at www.mainelakessociety.org