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Luke graduated from Hayward High School, attended UW-Stevens Point for a fisheries degree. Completed his Masters at South Dakota State University. Luke followed up his studies doing research on sea lampreys at Oregon State University and now works in Pinedale, Wyoming for the Wyoming Department of Fish and Wildlife.

Landscapes of Lakeshores and Rivers

Growing up in the Hayward area, I was infatuated by lakes and the fishes that swam them. While I'm always removed from my Midwestern Lakes roots, those roots still have a grip on me. I'm currently an aquatic habitat biologist with the Wyoming Game and Fish Department in Pinedale, Wyoming. Essentially my role with this outfit is to make the world a better place for fish to live in. This is somewhat encompassing, but most of my job involves identifying, planning, and guiding river restoration projects that either improve habitat or migration opportunities for fish, or improves angler access or fishing opportunities. While my training is in Fisheries Management and biology, this position requires an understanding of stream mechanics/hydraulics, plant biology, project management, fish-habitat relationships, and river restoration designs.

While the landscapes, plant communities, and climate differ between my Midwestern roots and my current digs, there is much overlap on how lake and stream environments function in both settings. Anyone who has stood in a river at high water, or a lake with a good chop on the water has an appreciation of the power of moving water. Indeed water moving downhill might be one of the most reliable sources of energy on the planet (one need look no further than the Wisconsin River to see that). Interestingly, people have recently taken to trying to harness wave energy in the world's oceans as well. However, with that energy comes power to move particles, and erode streambanks and lakeshores. That pull you feel against your pant leg is also pulling at rocks, sand and finer particles in these aquatic environments.

Most of us are familiar with the idea that rivers will erode on their outside bends and wave action can do a number on shorelines near our docks. However, in natural or undisturbed systems, *riparian areas* where dry land abuts perennial standing waters contain thick and lush vegetation with robust root systems that effectively buffer these areas against the erosive power of moving water. In fact, in many stream systems, current observed rates of shoreline erosion or streambank migration (erosion of streambanks towards their outside bends over successive years) is measurable at 2-3 orders of magnitude higher than is seen in undisturbed systems. In lake systems, stands of aquatic macrophytes ("weed beds" to use the parlance of our times) work in concert with shoreline vegetation to absorb some of the erosive energy that waves impart upon our lakeshore environs and diminish its erosion potential.

Now, erosion in and of itself is not a "bad" thing. However, if you are a landowner and don't want to see your lakeshore or riverbank constantly being washed away, or if you are a fish and spawning areas are slowly sedimented in and your ability to reproduce is diminished, I suspect you might not like the

consequences it brings. In rivers, excess bank erosion can lead to the “filling in” of pools and generally decreased productivity of the habitat for fish. Shoreline erosion also brings nutrients into the aquatic environment and can contribute to nuisances like algal blooms, decreased water clarity, or the overabundance of undesirable aquatic plants (which referring to as “weeds” seems appropriate).

In my job, we have many sophisticated approaches to addressing excessive bank erosion. However, these approaches are typically just meant to serve as mid-term (5-20 year) remedies to the ultimate problem of recovering healthy and vigorous plants along the shore. They also tend to be much more expensive than “passive” restoration approaches that work to reestablish protective vegetation.

What can you do to help? If you have healthy vegetation along your shoreline, don’t mess with a good thing! In most places (including the state of Wisconsin), ordinances exist that prohibit developing shorelines more than a certain amount. Follow these guidelines. A lawn extending the width of your property straight to the lakeshore, doesn’t do the lake, or its inhabitants, any favors. Plus, if you bought that place to be closer to nature, why not leave a bit of it as nature intended? Also, if you have naturally occurring macrophyte stands (ok... weed beds) in front of your place, let them do some of the work for you. They are also valuable cover areas for fish, and can be dang good places to catch those same fish. If you want to restore your lakeshore, work with the local lake association or natural resources agencies to tailor a plan to re-establish vegetation where it’s supposed to be. It might take a couple years of hard work to be sure that the plants take root, but once they are established, they are typically pretty resilient creatures.

Lastly, know that nobody does it alone. Be a good steward of your lake and a good neighbor to other users. Defend your local lakes like they’re yours. Because even if you don’t own property, those lakes are public domain. Be a proud public land owner, and stand up for healthy waters.