

Frog Habitat Series: Ponds

Honestly,
have you ever given the humble pond a proper moment of respect? Could you answer a four year old when she asks, "What is a pond?"

Oddly,
there is a great deal of confusion here, although it comes up in arguments of the friendly sort, when talk of the weather has run its course. Originally, the English term only referred to small bodies of water artificially created for human purposes. After crossing that biggest of ponds (the Atlantic), the term got to be applied rather loosely to any small body of water.

We have it on good authority (wink, wink) that the plants and animals who favor small bodies of water for their homes or restaurants do not care a lick whether the pond be of natural or human origin, and so we shall not be bothered by that distinction either. In fact, we will encourage you to create a pond of your own, but that's for another day.

Tramping or hiking about in the world, you might come across a lovely Scottish lochan or a deep and still Scandinavian tarn—ponds both, by other names (do they smell as sweet?). Now, that begs the question, doesn't it? How do we recognize a pond for a pond, even if we've found one in the middle of Russian tundra?

Here is a nice, simple definition to differentiate a pond from a lake. We'll start with the fact that they are open bodies of water, and while a pond may be deep let's call it a pond if light can reach all the way to its bottom. You might not be able to see the bottom yourself, but if the sun can get there we'll call it a pond.

A little water all by itself does not a pond make, of course. Within that water you'll find fish more often than not, even in the smallest ponds. If you were lucky enough in grade school to bring a bit of pond water back to the microscope, you also know that the clearest water is hardly empty. A drop of water on a glass slide becomes a carnival of acrobats: zooplankton, phytoplankton (algae for one), and bacteria living in a floating, flowing world.

A pond is also its bottom and its shores. Rich accumulations of organic matter cover what is usually a bedrock base. Bacteria thrive there, and larger creatures hide comfortably in the warmth and darkness of the sediments. Maybe these are the frogs and salamanders that move all through the water, hide in the bottom, and move to the pond's shores where reeds and grasses among a great variety of plants grow bountifully from nutrients they sift out of the pond's rich waters.

Beyond the shoreline, larger animals dwell who come to visit and sip from the pool. Trees stretch roots out toward the pond's banks and drop leaves and needles into the water as its own contribution to the cycle.

"Fine and dandy," you might say, "all that life around the pond, and maybe you like to take a swim now and again to cool off. Still, the ponds have taken care of themselves, and frankly, it's the taking care of me that I need to be concerned with, although I love the Earth and all that lives on it." You would be perfectly right to say it, and if the next article in this series doesn't prove that taking care of our own health and happiness might as well start in a pond as anywhere else, then you'll be absolutely right to hop, hop along your own way.

The Frog King Doth Hereby Decree

As a favor to The Frog King himself, we have decided to set out into the world from a starting place atop the lily pad. It is, after all, a very wide world in its extensive wonder, and knowing where to start can be the most difficult decision of all.

We imagine you might feel this way yourself. Who doesn't feel the need to do something about the mess we've made of our little house. But it's so overwhelming! Not a one of us could save the world on our own, and no one can do all of the good things that might be done to comfort Mother Nature and bring her back to right and proper health.

Do I go to a rally in the town square? Plant a dozen trees? Write legislation for my state representative? Separate out my plastics for recycling, but which ones are recyclable?

Even in the age of jet travel and hotel chains that make Singapore feel like Cleveland, Ohio, the world is a place almost too large to imagine—and then only in a quiet hour, not each moment of the day. Greenhouse gases, non-point pollution, renewable resource depletion, and species extinction among other environmental concerns are all global, affect even the strangers we know least in the world as much as they endanger our children, our parents, and our cherished neighbors. These problems snuck up on us like a slowly building storm, and it sometimes feels like all we can do is let it run its course, battering down the hatches and heading for the storm cellar until it has all blown over.

Can't do that. We know we can't but neither do we have the time-energy-patience (even hope?) to confront all the world's problems at once. So let's start somewhere.

Did you know that ponds truly are little worlds of their own? Most are closed systems, with no or little outflow and fed by underground springs. Critters bound to water are generally stuck with one pond, generation after generation. Whatever is brought to the pond stays there, whether it is good for the community or not. That includes fish dropped from the mouths of over-flying birds as well as pollutants that run off from our roads and into the adjacent ponds.

Nearby, somewhere there is a pond you can adopt. Go out, spend some quality time with it, come to call it your own. Save it from drying up and getting buried under if you live in the Southwestern American states. Look into acid rain and mercury pollution in the Northeast. In Britain, get involved with any of a number of local groups that seek to protect the artificial ponds that have been decimated over the past century. The ponds of Asia are being crowded out, used up, and overwhelmed by overflowing population centers.

More articles will follow this one as we explore the ponds. What is a pond, why are they in trouble, what can we do? We'll try to answer all of those questions, together walking hand-in-hand around The Frog King's home.

In the meantime, we want to get to know your ponds, if you already have claimed them. Send us a picture! Or tell us why you've adopted it as your own. Can you see it from the kitchen window? Is it a spot you share with other visitors, and of what sorts?

The Problem with Being a Pond

If you enjoy the company of stilt-legged shorebirds, shimmering fish, whispering cattails, and charming woodland critters, if you enjoy the feel of the sunlight dancing across your back, then you might be well-suited to the life of a pond.

Then again, a pond's life is not as copasetic as long had been the case. Long, in this case, being in the order of billions of years. Really, that's quite long enough to pull quite an act together. Ponds, as an important part of the entire wetlands system, became efficient biomes that formed, were filled in, froze, thawed, were buried under, and sometimes they were left behind by retreating glaciers. Millennia of practice taught ponds to attract all the creatures necessary to create a little world that could support itself, in abundance, while filtering the water, taking carbon out of the air, mitigating the effects of destructive flooding, and creating more land for the plants and animals that preferred a dryer climate.

Nowadays, however, there is just too much to do. Not only was there the old work, recycling all of the dying into new life, but the human population surrounding a pond is now pouring in extra work that needs to be done—pronto! By covering up so much space with buildings and roads, filling in millions of ponds in the process, there is at the same time more material running off into fewer ponds. Then the humans are tossing extra nitrogen and phosphorus onto the land, too much of which is immediately washed into ponds and other bodies of water before it ever does the work humans intend for it. Instead, it is left for the ponds to process, on top of all the other work it had been assigned to do for the previous millennia. The stress of life as a pond these days will kill you.

Yes, a pond has a little extra capacity, but that level is being quickly exceeded. This is a process called eutrophication—too much of a good thing. By pumping too much nitrogen and phosphorus into you, your life as a pond becomes overwhelmed with plant life. The plants, especially fast-expanding creatures like algae, love the extra nutrients. They multiply enormously — blocking out light to the rest of the pond — then die in the normal course of things and are eaten up by bacteria that use all your available oxygen in the process, suffocating the animal life that once entertained your waters.

Ponds aren't the only place eutrophication happens. You hear about algae blooms in coastal waters that kill marine life in the area from oxygen starvation as well. But as a pond you also have to be concerned about humans using up too much of the local water for their agriculture, or an engineer condemning you to be filled in, or human practices that cause you to become inhospitably salty. If you are downwind from a coal plant, the rain that was once so refreshing now falls on you full of acid and mercury, making you crystal clear—but completely dead.

No, life ain't easy for a pond, and you had begun to give up hope, but then a group of folks came to your banks one day and offered to do what they could to help.

We'll talk about them next time.

Did You Even Know How Well You Love Ponds?

If our cities were more like ponds, what a world this would be!

I'm serious, although you'll have some reservations about a pond's occasional, how do you say? Sliminess? Not exactly what we want for our homes, but the pond is a perfect place in this world, and here is why. Ponds take care of themselves, everyone else, and still have a little left over to spare.

A pond has water, the essential material for life, as our astronomers these days are reminding us in their search for other worlds that might try to rival ours in the natural wonder of life. Where there is water, there could be life they tell us, and the pond is a magnificent example of that potential. Ponds teem with life and with the natural cycle of death that feeds that life. Nutrients feed the tiniest microbes. Green plants — from tiny phytoplankton to strapping alder trees

— crowd the pond with new green flesh inspired by the sun and formed out of the carbon that would otherwise be overheating our atmosphere. Plants bring the herbivores that bring the omnivores and carnivores. A pond can be as rich and varied as the justly prized rainforests of the world.

Like the rainforests, a pond is more than merely a home to a complex family of interdependent creatures. Ponds are our water filters, our levees, and our future farms.

Under heavy rains or swift, seasonal melts, ponds will hold and slowly release waters that would otherwise flood our towns and valleys. The kaleidoscopic carnival of microscopic critters in pond water chomp away at everything in the water, including the phosphorus and nitrogen, even the heavy metals we don't want to drink, removing those things from the water that eventually enters the larger reservoirs we eventually draw from to slake our thirsts and cleanse our homes.

The slime of the pond is the muck that is filtered out of our lives. And in hundreds or thousands of years that muck and the silt that accumulates in ponds eventually heaps up until the pond is filled right in and the muck and slime have become the soil of a new forest or farm.

I said ponds have a little left over to spare in their cornucopia of abilities, but only just so much. The next article in this series will talk about what happens when a little capacity meets a whole lot of what we have to offer.

Help for Ailing Ponds

Two pieces of legislation lead the way in protections for the ponds, directly helpful in America but as the vanguards of international legislation as well.

The first is the Clean Water Act. Written in 1972 and importantly amended in '77, the legislation officially known as the Federal Water Pollution Control Act Amendments granted the EPA authority to regulate polluting discharges into American waters, establish water quality standards, punish unauthorized discharges of waste into navigable waters, and create and govern water treatment systems across the country.

The second greatest protection for American waters was the Safe Drinking Water Act. Originally written in 1974 and amended in '86 and '96, the act applies its rules and regulations to over 160,000 public water systems—wells, reservoirs, springs, lakes, and aquifers as well as the watershed sources of all these bodies of water. Under the act, the EPA was required to establish maximum contaminant levels on a wide variety of chemicals, particles, minerals, and other substances that contaminated our drinking water supply. It also gave the agency teeth to enforce those laws and provide remediation systems for areas where the basic need for safe water was not being met.

Between the two, point source pollution was massively constricted and largely eliminated. It was a remarkable success in the history of environmental protection, on a par with the national parks system.

What remains to threaten the ponds and other wetlands are largely non-point pollutions, emissions and contamination that occurs in everyday activities—the sort we all create on a daily basis. Instead of a pipe running out of a chemical plant and straight into a stream, what we worry about most these days is the small portion of environmental poisoning each of us contributes on a daily basis. Our cars poison the roads and air, we spill chemicals and distribute too much fertilizer on our lawns. Then rain brings those poisons back to the pond.

We don't mean any harm, but in the next article we'll see just where we stand beside our ponds.

State of the Pond Address

My fellow water consumers, the state of our ponds is not what it once was, but if we hang together they can and will be better.

The U.S. Department of the Interior conducted a study into American wetlands, including ponds across the country, and the difference in their status between 1780 and 1980. This 200-year study found that in the land that has now become the 50 states, there were in 1780, 392 million acres of wetlands. By 1980 that number was down by 53%. Less than half remained. Hawaii and Alaska were less ravaged, but the lower 48 lost 60 acres an hour¹

If that were not enough, a state and federal survey evaluated 43% of America's lakes, ponds, and reservoirs—nearly half of those representative bodies of water were impaired for drinking, fishing, or recreating. Those numbers still do not reflect the full problem, as they did not necessarily include lakes or ponds with mercury, PCB, or other chemical contaminant advisories against eating fish pulled from those waters.²

Our ponds are not healthy. Neither are there nearly so many as Mother Nature had, in her long-proven wisdom, designed. Yet we are not so young and foolish in the world as once we were, and our careless disregard of wetlands resources is a juvenile habit we are ready to leave behind. We, the stewards of the waters, can change. We can save the ponds.

Sources:

¹Dahl, T.E . "WETLANDS LOSSES IN THE UNITED STATES 1780'S TO 1980" U.S . Department of the Interior, Fish and Wildlife Service, Washington, D.C . 1990.

²Various. "2000 National Water Quality Report" EPA. Washington, D.C. 2000. of wetland, every hour for the past 200 years.

What Can We Do To Help?

Have we convinced you to take a fieldtrip to your nearest pond, offering at least your respect if not your humblest apologies and promises of future friendship? Would it help to hear about the compounds derived from pond scum that may be able to fight Alzheimer's? Or that the same slimy pond residue might be a potent source of bio-fuel to help replace the hazards of oil?

Wouldn't we all like to leave the world a better place, to earn a nameplate on one of the benches in Mother Nature's cathedral? Here are some ideas for showing our ponds a little more love.

Protect a Pond

- Join or create a group that provides stewardship and protection for one or many of the ponds in your area.
- Use biodegradable products that won't kill what's living (everything gets washed into our waters eventually).
- Avoid the use of anything with added phosphates (at one time, they even made your whites whiter). Check your dishwasher detergent!
- Use compost instead of synthetic fertilizer in your lawns and gardens.
- Take a little extra time to dispose of motor oil, batteries, electronics, paints, and other household chemicals and equipment properly. Your hometown is likely to have an annual cleanup day to make your job easier.
- Drive less, if you can. Our roads are covered in poisons that are washed into nearby wetlands and rivers.
- Talk to your local and state legislators about improving local wetlands protection.

Build Your Own Pond

If we've built over them, washed them out, killed them, and filled them in — and we did — we can certainly recreate any number of ponds ourselves. The endangered stoneflies and frogs will never know the difference between a kettle pond 100,000 years old and a plastic-bottomed pond you assemble in your backyard. A little water, some plants, an object or two to give the pond interest, and a bucketful of pond water and you're on your way!

For a few thousand dollars, you could hire a dozer to excavate a site of several acres in expanse. Most likely, your balcony or yard are rather less than even half an acre, but a pond in a bucket, artfully constructed, can be just as pleasing — to you as well as the plants and critters you invite into it. Plenty of websites will lead you to your own:

- You can practically buy your own ready-made pond. There are companies that sell "pond supplies." Give it a google. Otherwise, check out:
 - The basics of design here (for an in-ground pond with a plastic liner)
 - The plants you could establish in your pond (for choosing the proper, local plants that will please and invite your wild neighbors)
 - This guidebook (if you are really serious about a big pond, the USDA provides a great guide)
 - Better Homes and Gardens , which has the outline of a pond-in-a-bucket

Can we save the ponds all by ourselves? Well, one person might be able to save one pond, yes. On the other hand, we're not alone in this, and the ponds aren't so defenseless themselves. Let's just agree to give them a fair fight when it comes to their own survival, and maybe even a helping hand.

