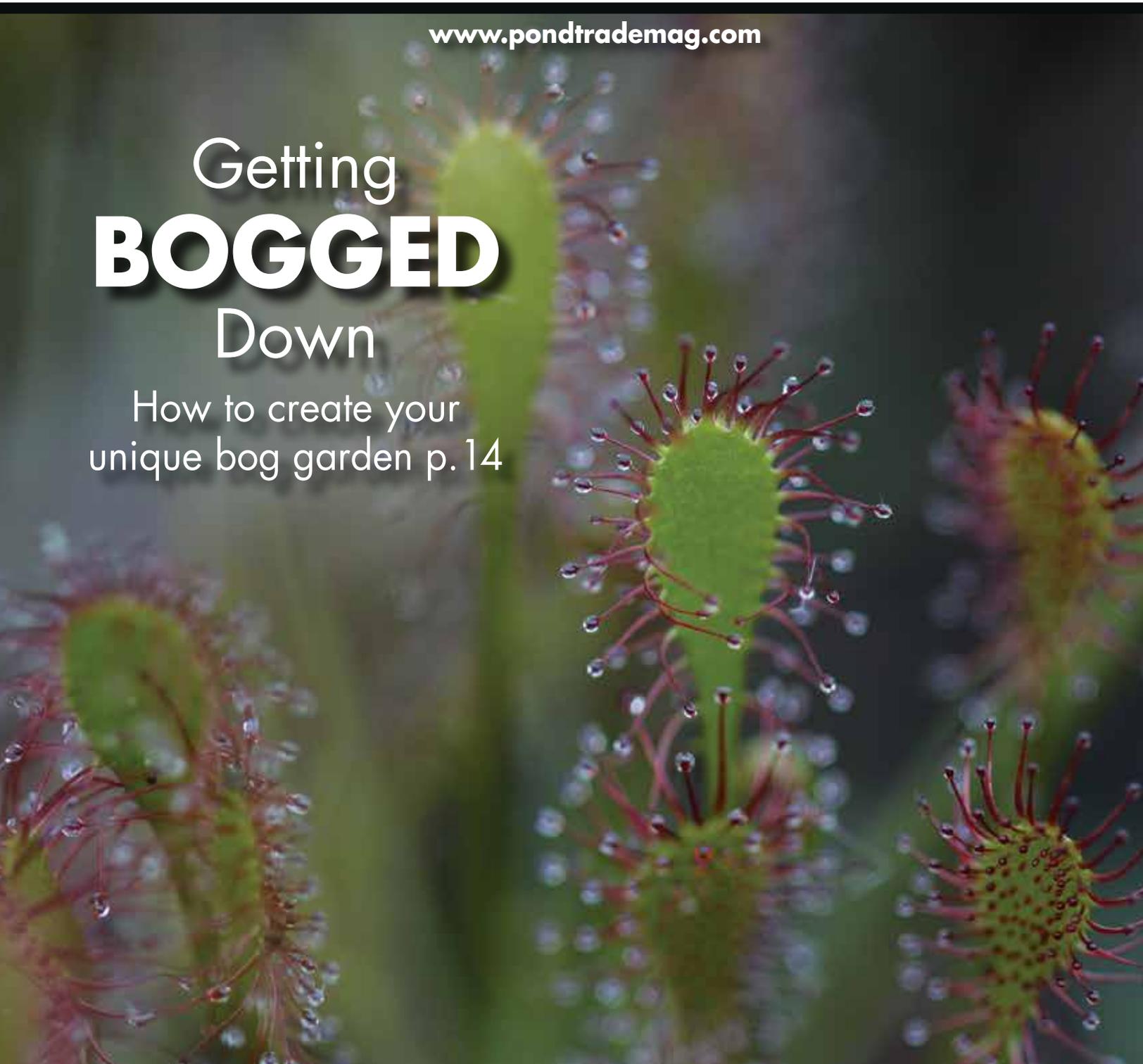


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## Getting **BOGGED** Down

How to create your  
unique bog garden p. 14



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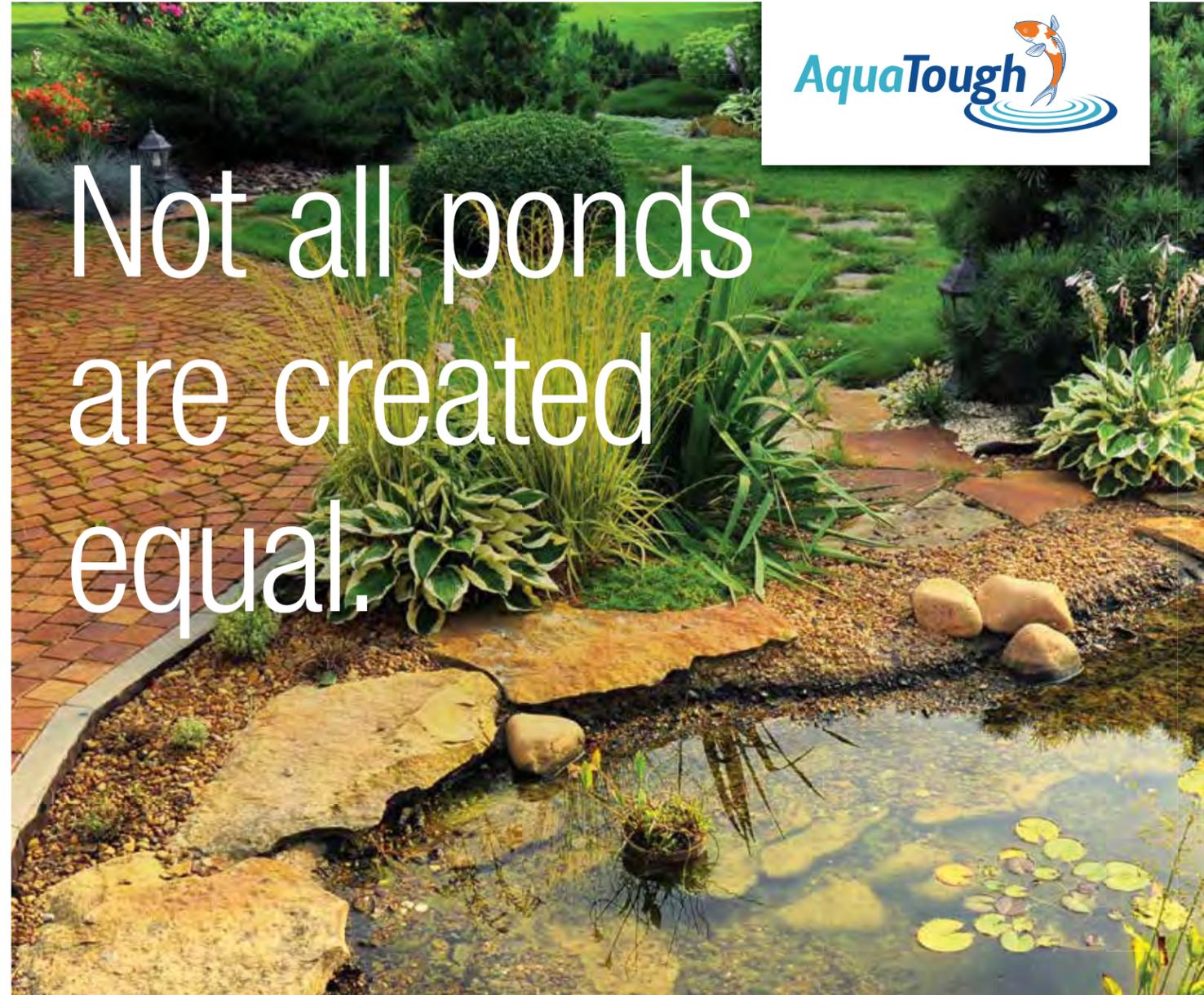
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## 30 Lake it or Leave it

**Tim Wood**, the first two-time Water Artisans of the Year winner, sits on the board of directors for the Society of Lake Management Professionals. In this issue, he lends his expertise in diffused aeration systems and explains what to say and what not to say when offering these ecosystem enhancers to your customers.

## 40 Crystal Clear Pond Revisited

About four years ago, **Mike White** wrote a cover story for us that explored undergravel filtration. It sparked a spirited discussion on our website and generated a lot of buzz. So, we asked Mike to revisit the concept and answer some of the most-asked questions about this low-maintenance filtration option.

## 47 The Copper Effect

Copper is one of the most naturally occurring elements, yet it is often characterized by controversy. **Patrick Simmsgeiger** dispels some of the myths that surround copper, and specifically the chelated variety, when utilized in ponds to manage out-of-control algae blooms.

## 52 Mixing Koi Populations LANGUAGE OF KOI

It's a cardinal rule of koi keeping — you can't have just one. But what happens when you introduce new koi to a pond that already has established residents? **Ben Plonski** takes you through a step-by-step process to make sure the integration goes smoothly. As the saying goes, an ounce of prevention is worth a pound of cure.

## 61 Coming Full Circle

Polyurea as a sealing agent is a common theme in **Kent Wallace's** regular Best Pond Practices segment in POND Trade. In this issue, he takes us back 19 years to his first pond build and the evolution of his work with polyurea in pond construction. When applied correctly, it can be a pond liner's best friend.

## 66 Water Garden Expo

Every February, the water-gardening industry convenes in Shawnee, Oklahoma, for Pondliner's premiere trade show and networking event. Our **Lora Lee Gelles** braved the snow and ice to compile a photo recap of this year's festivities.



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## 8 Out With the Pool, in With the Pond POND CONSTRUCTION

**Robert Kramer** didn't necessarily enjoy demolishing his customer's luxurious pool, but the enchanting pond and roaring waterfalls that rose from the rubble exceeded all expectations.

## 14 Getting Bugged Down COVER STORY

Even if you're a master gardener, odds are you might not have a lot of experience with bog gardens. Allow **Jamie Beyer** to take you on a tour of this fascinating niche in water gardening, featuring carnivorous plants and a wide variety of unique organisms.

## 23 Just Passing Through

Unless you've been living under a rock, you've heard about the recent changes in federal tax laws. But do they affect your pond business? **Mark Battersby** combs through the new regulations.



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# Upcoming Events

2018

June 26 - 28

**SuperZoo 2017**

Mandalay Bay Convention Center  
Las Vegas, Nevada  
www.superzoo.org

August 14-16

**IGC Show**

Navy Pier Festival Hall  
Chicago, Illinois  
www.igcshow.com

August 22 - 26

**Pondemonium**

Q Center  
St. Charles, Illinois  
www.pondemonium.com

August 28 - 29

**Your Pond Farm**

**Bear Creek Mountain Resort**  
Lehigh Valley, Pennsylvania  
www.yourpondfarm.com

September 5 - 6

**Atlantic Professional Conference**

Bertram Inn & Conference Center  
Cleveland, Ohio  
atlanticwatergardens.com/apc-adc-program

September 13 - 16

**IWGS Symposium**

San Angelo Visitors Center Complex  
San Angelo, Texas  
www.iwgs.org

September 14 - 16

**St. Louis Koi Show, hosted by slwgs.org**

Timberwinds Nursery  
Ellisville, Missouri  
www.nmzna.net sponsored by Anjon Mfg.

October 17 - 19

**Hardscapes / GIE+EXPO 2018**

Exposition Center  
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www.gie-expo.com  
www.hardscapena.com

October 31 - November 2

**International Pool | Spa | Patio Expo**

Mandalay Bay Convention Center  
Las Vegas, Nevada  
www.poolspapatio.com

December 3 - 7

**Irrigation Show 2018**

Long Beach Convention Center  
Long Beach, California  
www.irrigation.org

Are you attending an event that you think others should know about? Are you hosting an event and want more people to come? Send event info to [llgelles@pondtrademag.com](mailto:llgelles@pondtrademag.com).

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# Publisher's Perspective

## It's the Most Wonderful Time of the Year...

I know that's the title of an Andy Williams Christmas song, and I realize that many people consider Christmas the most magical time of the year. But I beg to disagree.

For me, springtime is the most wonderful time of the year. Everything feels so renewed when the trees bud, the flowers emerge, and most importantly, water begins to flow through our ponds again!



But this spring, as I write my column, my dog is snuggled up, snoring loudly at my feet. There's a dusting of snow on the ground outside. Hey, it's mid-April! I sort of feel like I'm getting cheated this year. It's been a rough start, weather-wise, for a lot of people around the country, but all we need is for spring to start working some of its magic.

May and June are prime months of pond season, so I have to believe there is a lot of magic on the horizon. So let's enjoy it! Clean out those ponds of yesteryear. Sell a bunch of new ponds and waterfalls. Let's get this party started!

As you've already noticed, we've got a jam-packed issue for you, with nine features that run the gamut from finance to filtration and from algacides to polyurea. Check out Tim Wood's article on pg. 30 about diffused aeration systems and lake management. You'll learn a lot about what these systems can and can't do, and it might make you consider collaborating with a lake-management professional to expand and diversify your service portfolio.

Our cover story is also a must-read. Jamie Beyer hosts a colorful tour through the wonderful, wet world of bog gardening on pg. 14. Bogs offer a unique option that can enhance a pond's ecosystem by inviting a whole host of fascinating creatures and plants — some of them carnivorous.

Make sure you check out my great collection of photos from Pondliner's very successful Water Garden Expo, which was held at the end of February. I had a blast as always, and I really enjoyed meeting a lot of new faces in the pond industry (and seeing all the familiar ones, too). Odds are you'll see a familiar face or two over on pg. 66.

Here's to a successful pond season and the belated arrival of some magical spring weather!

Happy PONDering!

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**POND Trade Magazine** is published bi-monthly, starting in January, for \$41.70 per year by LG Publishing, Inc., POND Trade Magazine, PO BOX 2721, Orland Park, IL 60462. Qualified applicants may subscribe at no cost at [www.pondtrademag.com](http://www.pondtrademag.com). Postage is paid at Orland Park, IL and additional offices. For new subscriptions, additional copies and address changes, please call 708/873-1921 or email [llgelles@pondtrademag.com](mailto:llgelles@pondtrademag.com).

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When you have to work around existing structures, the goal is to create the illusion that the new water feature always existed in that space. But it goes without saying that hauling 15 tons of rock and boulder up a hillside without damaging the wooden stairs was not a simple task.



Part of me really hated to destroy such a beautiful pool, but this enchanting space just begs for a tranquil pond, doesn't it?

## Out With the Pool, in With the Pond

A lonely swimming pool transforms into a centerpiece pond

by **Robert Kramer**,  
Pacific Dreamscapes

About five years ago, I received an interesting call from someone asking if we were in the business of building ponds from existing swimming pools. This person's children were now grown and no longer used the pool for swimming. She was paying her pool guy to clean and maintain a pool that was now seldom used, and she had always dreamed of having a fish pond. I had actually never done this before, but as I'm

always looking for new ways to expand my knowledge of pond construction, I replied, "Yes, we can do that!"

Since I still had a few weeks left on an existing project, I had some time to do a lot of research. Most of the websites I found seemed to suggest just putting koi fish in a pool and calling it a pond, despite the fact that there were no aquatic plants, boulders or any interesting levels and contours — not to mention that light-blue concrete bottom!

### Think Outside the Pool

I had to use my imagination and think about how we



Surrounding a small waterfall with ferns is a great way to create a natural-looking water feature.

could turn what was actually a very beautiful pool into an alluring koi pond. At this point, I had been building water features for about seven years, and this would be my biggest challenge to date. I had attended a pond seminar in 2003 hosted by Aquascape and immediately got hooked on building water features. I grew to understand the basic concepts of pump sizing and pond filtration, but how could I apply these principles to a concrete pond?

After coming to the realization that it would be almost impossible to attach the skimmer to concrete, I approached the customer and suggested that we completely demolish her pool and start from scratch. Luckily, she was very understanding that for this pool to look like a natural pond, we would have to use a rubber liner with natural rock and boulders.

### Breaking Ground

We spent the first few days jackhammering her lovely pool into a pile of rubble. We didn't have to completely remove the bottom of the pool; we just punched holes in the concrete for proper drainage. Next, we brought in many tons

of screened topsoil to cover the bottom and sides. After thoroughly compacting the soil, we were able to begin the artistic phase of this conversion.

We started by carving out different contours to the sides and bottoms. Since this had been a fairly large pool, I had enough room to include a few terraces and a planting shelf around the perimeter of the pond. This would give me a place to plant the aquatic grasses, reeds and plants that I envisioned would make this pond look as natural as possible.

After getting the shape and depth of the pond the way I wanted, we installed a felt underlayment to protect the liner. It took seven of us to lift and install the liner. (How heavy can a rubber liner be, you ask? Actually, for this pond, we needed a 50-by-50-foot liner, which is just over 800 pounds!)

Once the liner was in place and attached, then came the back-breaking phase of rocking in the pond. Altogether we installed approximately 25 tons of rock and boulders. Since some of the drop-offs in the pond would be almost 3 feet, I had to use some very large boulders inside the

pond. Trying to use rock that was too small for that height would just increase the risk of the wall collapsing later on. After completely rocking in the pond, we added a few tons of pebbles to cover the liner at the bottom. This would give the beneficial bacteria a place to colonize and break down the complex organic compounds in the pond sludge. Then came a few large boulders for the edges of the pond that would be big enough to for the owner to sit on and put her feet in the water.

### Filtration

Considering the size of this pond, I decided to use two skimmers, one for each end of the pond. I used an Aquasurge 4,000-to-8,000-gph pump in each of the skimmers. These pumps come with a remote control, so the waterfalls can be easily adjusted, allowing the owner to enjoy the pond with low or high waterfall flows.

Another thing I wanted to incorporate into this pond was a wetland for added filtration. I chose a part of the yard that had never actually been a part of this space and constructed it there. This would soon

After the swimming pool had been drained and demolished (below, left), we brought in several tons of screened topsoil. Creating various levels and unique contours gave the pond a much more interesting look. The top terrace acts as a planting shelf. This level is usually about 8 to 10 inches deep to accommodate different aquatic grasses and reeds. After carving the levels and contours (below, middle), we installed the underlayment and pond liner. Next, we rocked in the liner and covered the bottom with smooth pebbles, which greatly increase the surface area and become a media for beneficial bacteria to colonize. The finished product (below, right) was a beautiful pond that looked like Mother Nature created it herself.



**As I stood back and envisioned the whole thing, I realized that if we could start the larger waterfall farther up the hill, she could also enjoy the water feature while sitting on her deck just outside her back door.**



One of the favorite places for goldfish to swim is in the shallows of the pond wetland.

become one of the customer's favorite parts of the pond, since it gave her room to add her favorite pond plants.

### Surprise Falls

Things were really coming together at this point, and the customer was starting to get excited about how the pond was shaping up. I decided to install a small waterfall near the wetlands and a larger one at the base of the hill that the house was built on. As I stood back and envisioned the whole thing, I realized that if we could start the larger waterfall farther up the hill, she could also enjoy the water feature while sitting on her deck just outside her back door.

At this stage, the customer thankfully believed me when I said I wasn't trying to deplete her bank account; I just wanted this to be the best water feature she had ever seen. With her blessing, we began to build a waterfall and stream that would rise about 15 feet higher than the original one. At the top, we placed our biofalls filtration unit, which branched off into two different paths. One led into a small, 4-by-6 pond that came right up to her deck. The

other stream cascaded down into a group of waterfalls, which then led to the main stream that flowed right alongside the steps leading from her back deck down to the main pond.

Some of the boulders we used were between 300 and 400 pounds. After many hours of dragging them up the hill, we finally got to the easy part — putting as many hoses as possible into the stream and turning on the water! As the water was running, we planted our waterlilies and other plants. After a few hours of washing off the rock and boulders and filling up the pond, we were able to turn on the pumps and trim the excess liner from the edges.

The results were better than I had hoped for! My crew and I enjoyed the sound of waterfalls for the duration of the project. We installed pavers around the pond and into a patio sitting area near the wetlands. We also built a wooden bridge to span the narrow part of the pond that divided the wetlands from the deeper part of the pond. From this bridge, the customer now enjoys feeding her goldfish and koi.

It's been several years now since this project was completed, and I am still able

to periodically check in with the customer. I enjoy listening to her talk about how much she loves her pond and her fish. What was once a large pool that was rarely used is now a beautiful koi pond that is enjoyed around the clock! ☺

### About the Author

**Robert Kramer II** has always had a fascination with nature, whether plants, animals or their habitats. In 1998, Robert created Pacific Dreamscapes to fulfill his desire of bringing the beauty of nature to the yards of San Diego County homes. In 2001, he graduated from Cuyamaca College with associate degrees in landscape design, landscape technology, irrigation technology, arboriculture, greenhouse technology and golf and sports turf management.



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Pitcher plant, or Sarracenia, is a type of carnivorous plant that traps insects in its trumpet-shaped leaves. It gets some of its nutrients from the decomposition of insects in these traps. This plant grows very well in an acidic bog.

# GETTING **BOGGED** DOWN

How to create your own unique bog garden

by **Jamie Beyer,**

Midwest Waterscapes

*Photos by Robert Briggs of Lincoln View Farm, Boone, Iowa*

**T**here are many different kinds of gardens — vegetable gardens, flower gardens, rock gardens, butterfly gardens and, of course, water gardens, just to name a few. But a type of garden that many people do not regularly consider is a bog garden, or gardening with plants that like “wet feet.” Bog gardens are normally associated with a water garden, as they’re typically right next to one or a part of its edge. However, they can stand alone and be unique gardens themselves. This type of garden in nature is similar to a marsh, with all the plants that like to grow there. However, the marshes or bogs in our landscapes are created by retaining water with a membrane.

## **Bog Gardens 101**

Bog gardening is different from water gardening in several ways. Plants in a bog garden normally like wet feet, so to speak, for most of the year, but they do best with only a little water over the crown. More than 2 to 3 inches of water over their crowns is not tolerated for very long, depending on the variety of plant. They can take periodic flooding for short periods when most of the plant is under water, but only for a few days or so. Typically, these plants cannot tolerate dry soil at all. Most bog plants are herbaceous, which means that they die back to the ground in freezing weather.

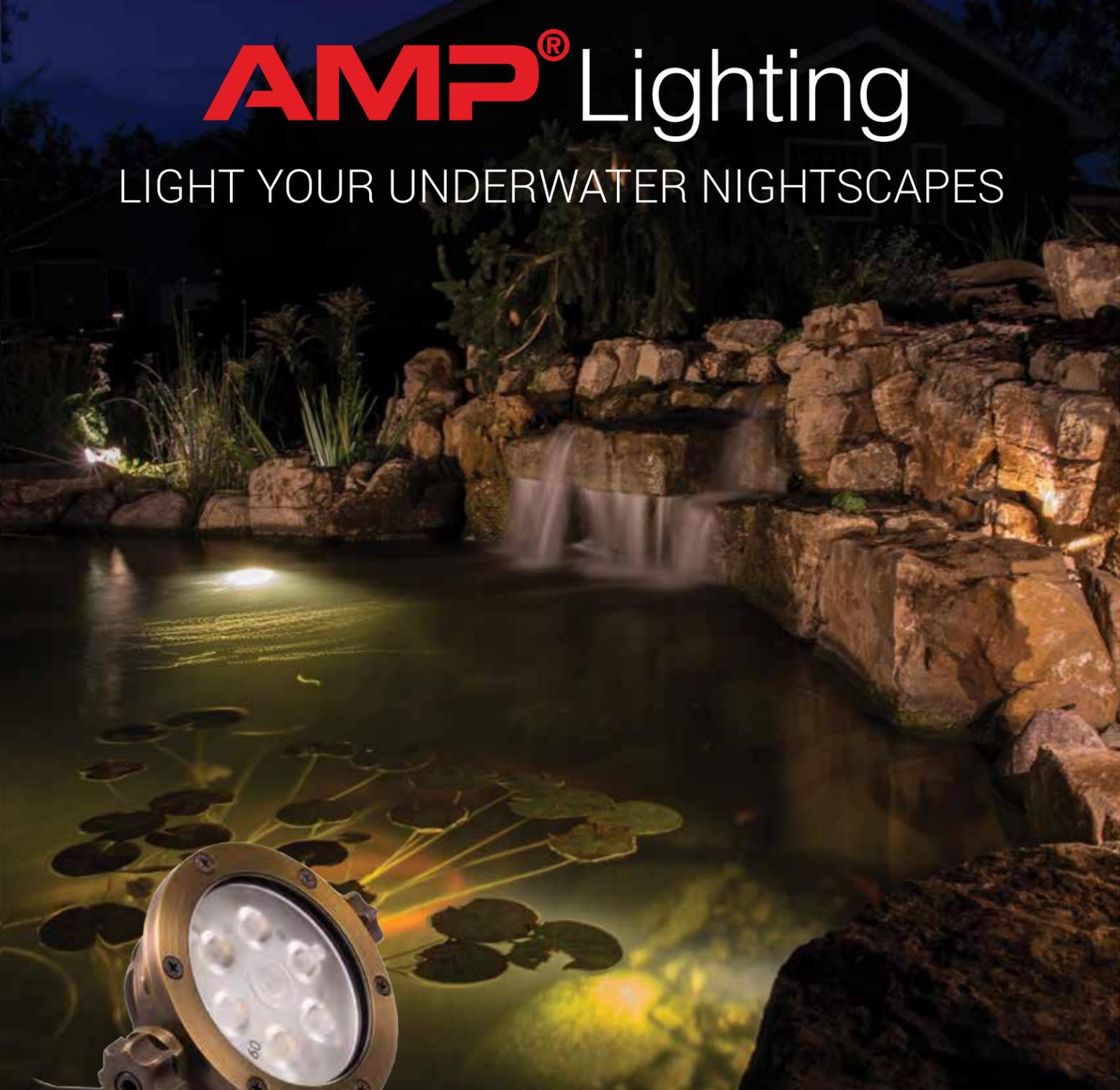
An aspect that is critical for the health of all plants, including bog plants, is that their roots need oxygen. Aerated water contains dissolved oxygen and is vital for



“A Carnivore Among Carnivores.” An American toad sits in wait for insects that are attracted to a carnivorous plant called sundew, or *Drosera*. The droplets at the ends of the short stalks on the leaves are sticky. When an insect comes in contact with these droplets, it gets caught. These stalks curl into themselves, permanently trapping the insect for digestion.

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A carnivorous bog garden can stand alone, with a few species of Sarracenia, sundew and others.

the plants' roots. Decomposing organic matter uses up oxygen at a rate that is dependent on temperature and the present bacteria. In fertile soils, there is always organic matter, so as water flows through them, the oxygen is used for decomposition. If the flow of water is stopped due to restricted drainage, oxygen levels will drop, the soils will become stagnant and the plant roots will slowly die. So, we want to create some water flow through and around the soil. In a natural bog, there is always some drainage through the soil, since there is not a membrane or liner that contains the water.

A bog needs to be shallow enough for water to flow over plant crowns. In deeper bogs, the water should slowly flow through the root systems. The slow flow of water can be accomplished by punching holes in the membrane that contains the bog soil. Alternatively, you can install a drainage system that can be monitored and drained at periodic intervals. Personally, I like to punch the holes, but the confusing part is

determining how many holes are enough.

### Edging & Standalone Bogs

I consider bogs next to ponds that share the water of the pond more of an edging bog. These are relatively shallow, and the water flows over the plant crowns. This flow of water brings the necessary oxygen to the plant roots. There are no holes in the bottom of this type of bog, since they share water with the pond.

Bogs that stand alone or serve as an overflow point should have holes cut into the membrane that contains the soil. Cut holes that measure ¼ to 3/8 inches about every 2 to 3 square feet. If the surrounding soil does not drain well, like heavy clay for example, more holes can be cut. But if the soil is sandy, fewer holes will be necessary. If you are unsure of how many holes to create, cut just a few and see how quickly the water drains. You can always punch more holes by hammering ½-inch rebar down through the soil mix and

into the membrane. You will want the soil to be consistently moist, with standing water draining away within a week or less.

Standalone bogs are perfect in a low spot in a landscape. I would never site a water garden in this area, because one heavy rainstorm would dump too much water at once, altering the water chemistry drastically. This type of standalone bog would be considered more of a rain garden. Depending on the situation, these may not need a membrane to retain the water, since they may have a constant source of water.

### Prepping the Groundwork

Bog plants need at least 50 percent sunlight. These plants have evolved in full-sun conditions, so we should attempt to duplicate those conditions as closely as possible. You should dig the bog at least 12 inches deep, but I actually prefer a depth of 18 to 24 inches. This allows the bog to have access to more nutrients over a longer period

of time. Like I mentioned earlier, it can be a standalone bog or situated next to a water garden. If given a choice, I prefer to site them as though they are part of the water garden, as an edge or the overflow point on the far edge of a pool.

For the membrane, I like to use old, repurposed EPDM 40-mil liner for both the standalone and the overflow bogs. If there happens to be a few holes, this is OK as long as there are only a few. As an alternative, you can use two layers of 6-mil black poly plastic. As long as it is covered by your mixed soil and not exposed to UV rays from sunlight, it will last many years. However, if I had a choice and a few extra dollars, I would always use the EPDM, since it is more durable without being that much more expensive.

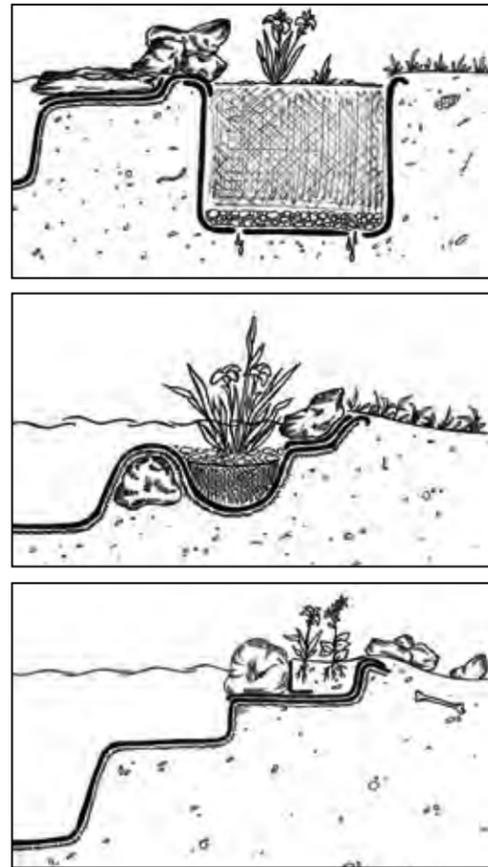
The planting soil for traditional bogs and their plants should be a simple ratio of equal parts garden soil, peat moss,

sharp sand or washed grit, and genuine compost. These components need to be mixed completely before being added to the bog. Place a 2-inch layer of ¾-inch washed granite rock at the very bottom of the bog before adding your soil mixture. This allows the water to flow to the holes.

### Ideal Plantings

Good plants to use would be cardinal flower, blue lobelia and marsh marigold, to name a few. Varieties of plants that are considered invasive or aggressive need to be avoided. Most bog grasses are invasive; however, there are a few grass-like plants like golden sedge that work very well. All cattail varieties and equisetums will take over a bog after a few years, so avoid these — unless you want that, of course.

Keep in mind that any plant that is not invasive will be quickly overrun by the



Drawings by Jamie Beyer, Midwest Waterscapes

All three of these edging bogs (right) demonstrate different ways of creating them. The top drawing is sited where the water garden will overflow when it rains or is overfilled. The water will slowly drain out of this design, allowing oxygen to reach the roots of the plants. The other two drawings are relatively shallow, with water flowing over their plant crowns. This allows oxygen to reach the roots of the bog plants. There are no holes in the liner of the bogs shown in the bottom two drawings.

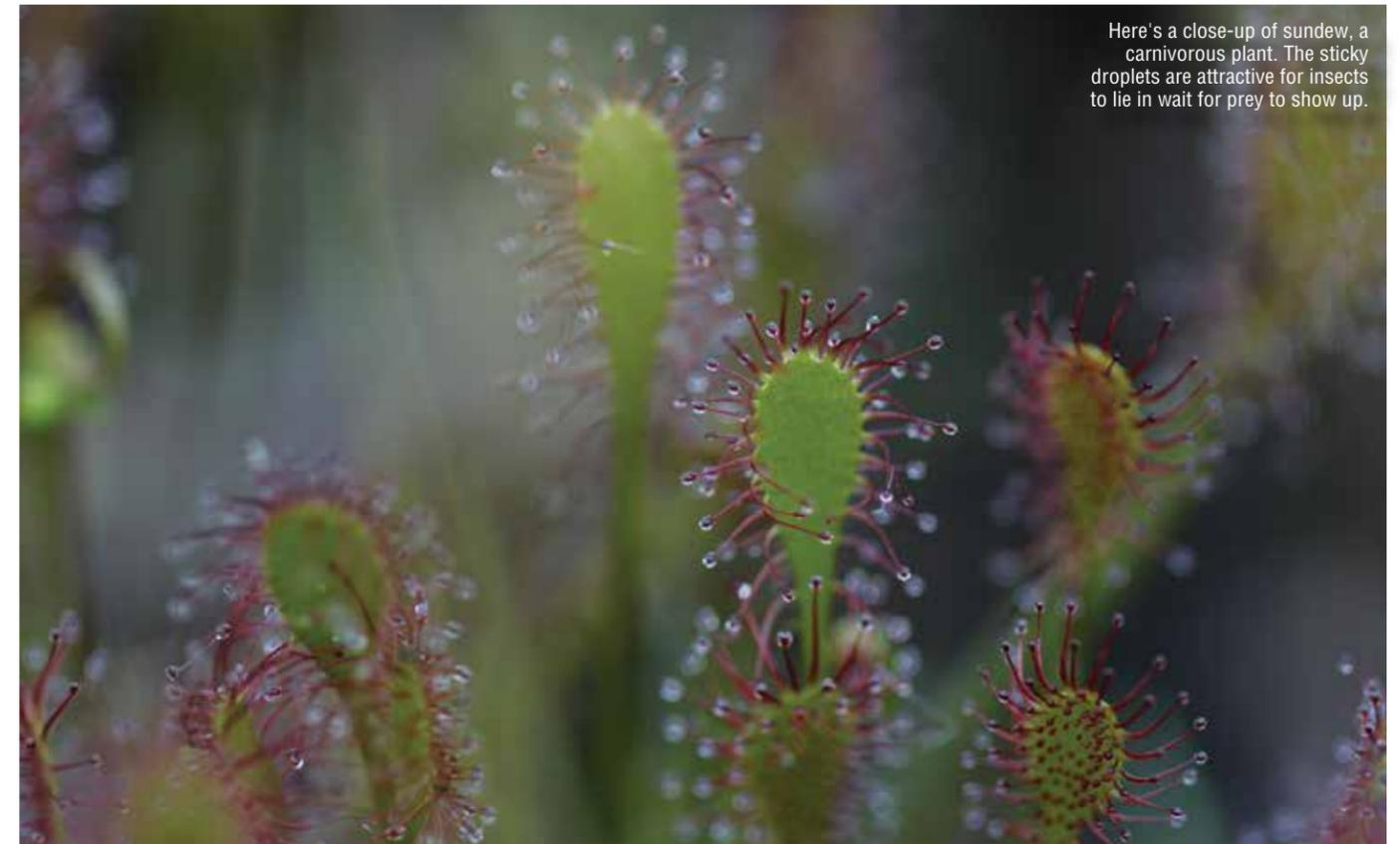
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Here's a close-up of sundew, a carnivorous plant. The sticky droplets are attractive for insects to lie in wait for prey to show up.

more aggressive plants and will die out. Avoid Iris pseudacorus, but most other iris species would probably be OK. I have tried to contain aggressive varieties of plants by planting them in pots that have holes in the bottom. As mentioned earlier, the plant roots still need drainage and access to moisture. However, the rhizomes of most of these plants will find the holes and escape, so they should be closely monitored if you choose this route.

Bogs that have invasive plants purposely planted in them can actually have an interesting beauty in their own way. Try planting many varieties of aggressive plants and observe the results. You'll find that the plants really "duke it out" (my friendly expression). Let the most aggressive plants in this situation win. Usually there are two or three that will become dominant. In these

duke-it-out bogs, I would not waste any money and time on adding non-aggressive plants. The limits of the bog itself will contain these plants, so their



This standalone carnivorous bog features many types of insect-eating plants.

aggressiveness will be tamed. These invasive bogs will need very little weeding, since every available square inch will be occupied by plants.

An absolutely beautiful

standalone bog can be created for carnivorous plants. These plants, as most of you may know, get a lot of their nutrients from consuming insects

that they catch in various ways. Just learning the different techniques that these plants use to capture insects is captivating, and being able to watch them in action adds to the lure of creat-

ing a carnivorous bog. Plants like Venus flytraps, sundews and various Sarracenia varieties are fun and absolutely beautiful. Some varieties can become large and potentially outcompete the smaller plants.

### Soil Preservation

The soil of a carnivorous plant bog needs to be on the acidic side. According to a very experienced bog creator, Bob Briggs of Lincoln View Farm in Ames, Iowa, you should use three parts peat moss to one part medium poultry grit. This grit needs to be a sharp, insoluble stone. Of course, these components need to be mixed well before being added to the created bog. The grit allows the oxygen an additional way to reach the plant roots. This soil mix is one of the only different options as far as the design goes. You will still need the drainage and the depth.



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A sly cat uses this carnivorous pitcher plant as a place to hide.



The carnivorous Sarracenia, or pitcher plant, waits for insects to be attracted to its pitchers, which are partially filled with fluid that will help digest its prey.

To overwinter these plants here in the Midwest, Bob says to mulch with a 6-inch layer of coarse leaves, cattail straw or soybean straw. Most of these carnivorous species are marginally hardy for us, but they will do fine with the mulch. For those in warmer regions, you're lucky not to have to worry so much about this.

Just like any perennial bed, bogs will need to be kept weeded. Some of the duke-it-out bogs will need less weeding than others, since almost all the space will be taken up by plants. Plant your bogs heavily, and there will be fewer weeds. Weeds pull easily from the muddy soil, but use caution to avoid inadvertently pulling up some of the more delicate,

smaller bog plants. It is also difficult to walk in your bog, so create narrow bogs whose centers can be easily reached. You can also use stepping stones in wider bogs. As the organic matter of the bog decomposes over time, periodic additions of compost mixed with peat moss can be used to top it off. In carnivorous gardens, use only peat moss.

Bog gardens are a unique way of gardening that most gardeners have not yet explored. Whether you use carnivorous plants, duke-it-out aggressive plants or marginal plants that are difficult to grow in deeper water, the choices are many, and the results can be quite rewarding. ☘

## About the Author



Water gardening has been a passion of **Jamie Beyer's** for more than 50 years, and he has worked on more than 1,000 ponds. He owns several very large ponds with many different kinds of water plants and fish. Jamie has a master's degree in fish and wildlife biology and is a Lifetime Master Gardener. He is the founder and former president of the Central Iowa Water Garden Association. He has a broad background in fisheries, the dynamics of water, horticulture and aquatic and wildlife ecology. He currently owns Midwest Waterscapes, a consulting and installation business, where he specializes in water gardens, fountains and ponds.



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## Just Passing Through

New rules and tips for handling pass-through income tax

by Mark Battersby

Pass-through business entities, garden pond professionals operating as partnerships, limited liability companies (LLCs), S corporations and sole proprietorships have long been extremely popular. In fact, one form of pass-through business entity, the S corporation, is currently the most used business entity. LLCs are also frequently chosen for pass-through income purposes.

Unfortunately, thanks to the recently enacted reforms under December's Tax Cuts and Jobs Act (TCJA), the owners of many small businesses operating as pass-through entities will face personal tax rates as high as 29.6 percent — far above the new 21-percent corporate tax rate. There's little wonder that many have begun considering switching to the basic C corporation for their pond operations.

### Passing Through Businesses

In addition to profits being taxed only once — not at the business level, but rather only when passing through the owner's tax returns — many pond professionals choose to operate as so-called pass-through business entities because of the protection from personal liability.

As mentioned, under the just-passed TCJA, the tax rate for incorporated businesses will be reduced from 35 percent to 21 percent for the 2018 tax year and thereafter. Unlike the TCJA's temporary provisions for individuals that largely expire in 2026,



the business tax cuts are, for the most part, permanent.

### S Corporations vs. LLCs

If you have an incorporated business electing to operate as an S corporation, or if you are a pond professional who has chosen another form of pass-through entity, your business income is taxed only once, similar to the manner in which a sole proprietor is taxed. By electing to operate as a pass-through entity, a pond professional can benefit from the legal advantages available to businesses with a corporate structure, as well as the tax advantages available to a sole proprietorship.

One of the best features of a pass-through entity like an S corporation is the tax savings for both the pond business and its shareholders. While members of an LLC are subject to employment tax on the entire net income of the business, only the wages of the S corporation shareholder who is an employee are subject to employment tax.

The remaining income is paid to the owner as a distribution, which is taxed at a lower rate, if at all.

An S corporation designation allows a business to have an independent life separate from its shareholders. If a shareholder leaves the pond business or sells his or her shares, the S corporation can continue doing business relatively undisturbed. Similar rules now also apply to partnerships. Maintaining the business as a distinct, separate entity defines clear lines between the shareholders and the business, which improves liability protection for the shareholders.

An LLC, on the other hand, is a business structure that combines the pass-through taxation of a partnership or sole proprietorship with the limited liability of a corporation. As is the case with pond business owners in partnerships and sole proprietorships, LLC members report business profits and losses on their personal income tax returns, as the LLC itself is not a separate taxable entity.

### Other Partnership Taxes

As a general rule, the losses from a pass-through entity cannot be claimed by the shareholder or partner if they are in excess of the amount they have invested — or their “basis.” And, not too surprisingly, there are several tax issues that pass-through businesses must consider.

Partners, for example, are considered to be self-employed, not employees of the business. They are required to file a Schedule SE with their Form 1040 and pay self-employment taxes. Because of this self-employed status, each partner is also responsible for paying his or her share of Social Security taxes and Medicare.

Partners are responsible for paying double what a normal employee would pay, because employers normally match employees’ contributions. Of course, the partners’ tax burden is reduced by an allowance for one-half of the self-employment tax, which can be deducted from taxable income.

While pass-through entities are gener-

ally not subject to federal income tax, they may be liable for and required to make estimated tax payments based on entity-level taxes, such as gain built in from an entity change, so-called “BIG” taxes, LIFO recapture, a tax on passive income, voluntary and involuntary terminations and a tax on earnings accumulated rather than paid out.

### A Closer Look at the TCJA

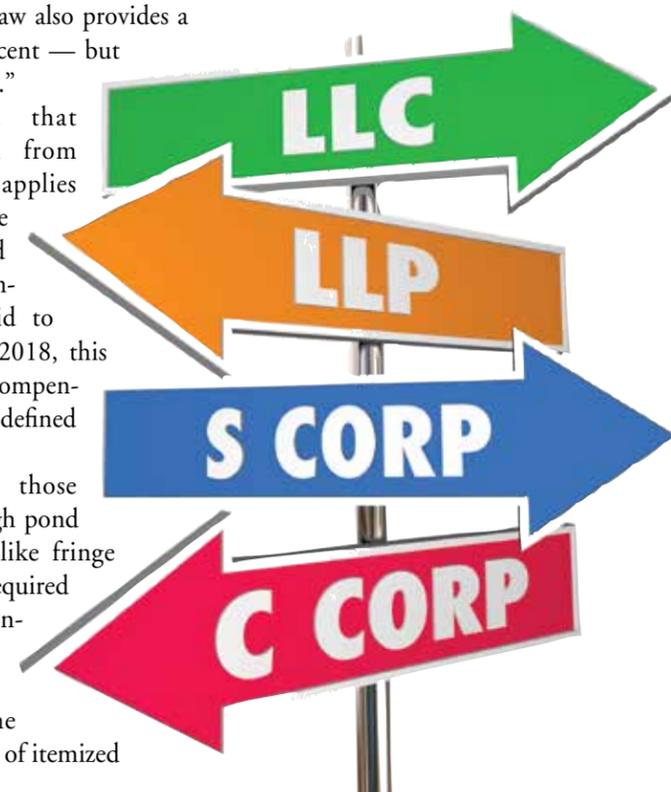
The TCJA created a 20-percent deduction that applies to the first \$315,000 of income (or half of this for single taxpayers) earned by pond retailers, distributors and builders operating as S corporations, partnerships, LLCs and sole proprietorships. All businesses under the income thresholds, regardless of whether they are service professionals or not, can take advantage of the 20-percent deduction.

However, the TCJA places limits on who can qualify for the pass-through deduction, with strong safeguards to ensure that so-called “wage income” does not receive the lower marginal tax rates for business

income. For pass-through income above the threshold, the new law also provides a deduction up to 20 percent — but only for “business profits.”

In other words, that 20-percent deduction from pass-through income applies only to business income that has been reduced by the amount of reasonable compensation paid to the owner. As of May 2018, this so-called “reasonable” compensation has not yet been defined by our lawmakers.

On the downside, those operating as pass-through pond businesses lose things like fringe benefits. They are also required to pay themselves “reasonable” compensation and deal with other restrictions. There’s also the elimination of a number of itemized personal deductions.



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Currently, the vast majority of pass-through business owners can no longer deduct state and local income taxes and are permitted to write off only \$10,000 of their property taxes. A regular C corporation faces no similar deduction restrictions.

## Switching to Corporate Form

In the eyes of many experts, there is no longer a reason to operate a pond business as an S corporation or other pass-through entity. However, converting from a pass-through entity to a regular C corporation can be a complicated process, requiring quite a few adjustments.

Going the other way, a sale of assets by an S corporation that was formerly a C corporation during the "recognition period" is subject to the already mentioned BIG or built-in-gains tax. The BIG tax is imposed on the incorporated business at the highest corporate tax rate, based on the appreciation in asset value that existed on the date the corporation became an S corporation. The shareholders may then be subject to a second tax on the distribution of the sale proceeds.

This "double tax" created by the imposition of the built-in gain rules can be eliminated if the corporation holds and sells assets only after the 10-year recognition period has expired. Naturally, the longer the recognition period, the tougher it is to do.

Under the former rules, distributions

made by a S corporation converting to a regular C corporation during the post-termination transition period (PTTP) can be tax-free to the shareholders. Distributed funds from those accumulated adjustment accounts can also reduce the adjusted basis of the stock.

Under the new TCJA rules, the adjustment of a terminated S corporation (even if it's only changing accounting methods) is taken into account ratably during a six-year period, beginning with the year of change.

## Decisions, Decisions

The annual tax return provides an opportunity to reconsider the options available to some pond retailers, distributors and builders. Entities with more than one shareholder or member can elect corporate status on its annual tax returns. Thus, an entity that is a partnership under state laws may elect to be taxed as a C corporation or S corporation for federal taxes by using Form 8832 (Entity Classification Election). Unfortunately, under those so-called "check-the-box"

regulations, entities formed under a state's corporate laws are automatically classified as corporations and may not elect to be treated as any other type of entity.

## Changing Business Entities

Changing circumstances, revisions of the tax laws and even the success of a business might prompt a reassessment of the entity used for a pond business. And best of all, the annual tax return is not the only option when selecting the entity that makes the most economic sense.

Although many of the tax law's provisions apply to all business entities, some areas of the law specifically target each entity. Choosing among the various entities can result in significant differences in federal income-tax treatment, but there is also more to consider when choosing the right structure for a pond business than just the taxes.

Not only will the decision to change a pond business' entity classification have an impact on how much is paid in taxes, but it will also affect the amount of paperwork required for the business, the personal

liability faced by the principals and the operation's ability to raise money, which is especially important in today's economy.

To switch or not to switch? If earlier tax law changes are any indication, the IRS should issue guidelines to help entities switch without a penalty. Since every situation is different, the best approach might be to choose the entity for your pond-building, retail or distribution operation based on the current tax law. To help in this decision-making process, seeking professional advice is strongly recommended. ☞

*With 25 years of professional experience in taxes and finance, Mark Battersby writes on unique and topical subjects in the industry. Although no reputable professional should ever render specific advice at arm's length, he does craft unbiased, interesting, informative and accurate articles. Mr. Battersby currently writes for publications in a variety of fields. His topical columns are syndicated in many publications each week. He also writes columns for trade magazines and has authored four books.*

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This is a good example of how aeration does not do anything to kill submerged vegetation. Only the area directly around the diffuser bubbles (center) is open.

# Lake it or Leave it

The proper way to sell diffused aeration systems

## Lake Aeration

by **Tim Wood,**  
Aquatic Edge

**W**hat if I told you that there is a large piece of pie available in the pond and lake management industry? Would you believe that there are opportunities everywhere in the country for you to expand your business model?

It's true. Allow me to explain.

Farmland continues to be sold to municipalities and private individuals throughout the United States. This land often contains one or more small earth-bottom ponds that were traditionally used for other purposes, such as irrigation of crops or drinking water for livestock. When these ponds were owned and operated by the farming family, the family likely performed their own management of the aquatic resources. In many instances, the purpose of these ponds was simply to provide water with little thought to their aesthetic value or potential recreational use.

But guess what happens when a housing community is built around such a pond? The purpose of the pond's existence suddenly changes from one of necessity to one of luxury. Then the pond must be managed differently, as the new owners of this aquatic resource demand a cleaner, healthier pond for everyday enjoyment.

This little pond was doing fine as a watering hole and drought-busting irrigation source for vegetable crops. But the many years of managing for these purposes may have taken a toll on its underlying ecosystem health. Eutrophication has been accelerated by nutrient-rich runoff from grazing animals in the surrounding fields. Anaerobic conditions have built up on the pond bottom due to the ever-increasing organic muck layer. Fish are suffering from lower dissolved oxygen levels, and high phosphorus levels are feeding some nasty algae blooms.

Here's where you come in. There's a simple solution that can help every single one of the above problems. It is not a cure-all, keep in mind, but it is a great first step in just about every circumstance.

### Diffused Aeration Systems

A diffused aeration system is comprised of a quiet air compressor and one or more air diffusers with lengths of weighted tubing connecting them to the compressor.



A compressor can be easily tucked away out of sight.



Only a few bubbles are seen on the surface, so they don't detract from the natural beauty of this lake.

Naturally, the air compressor is placed on the shore, while the weighted tubing is placed in the water leading out to the diffuser or diffusers.

When properly sized and installed, a diffused aeration system will assist in many environmental functions, including reversing the effects of eutrophication, eliminating anaerobic conditions (which increases beneficial bacterial activity), creating high

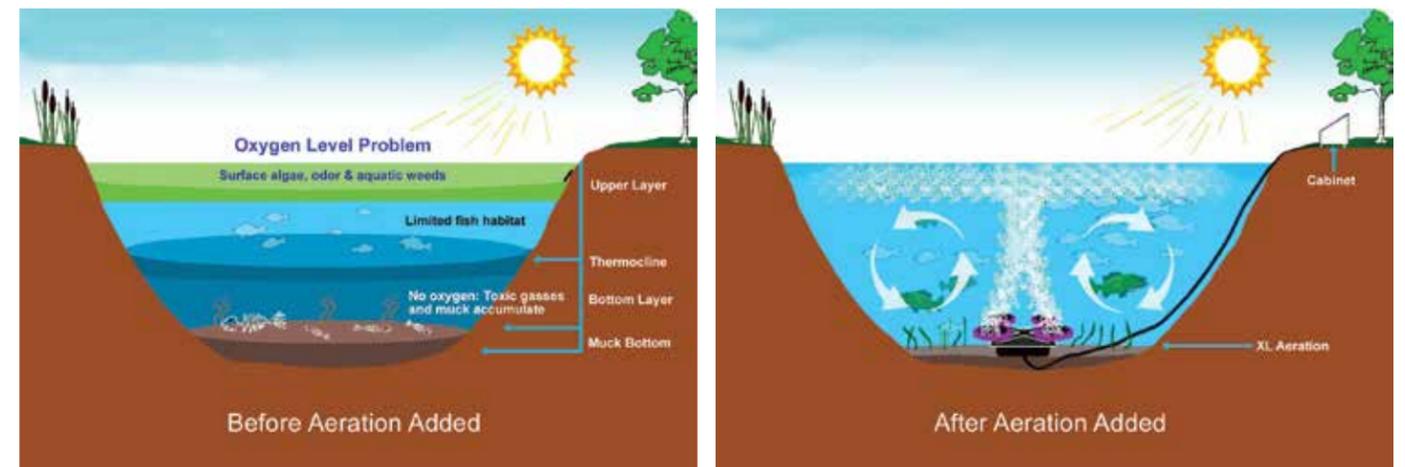
dissolved oxygen levels within the entire body of water (which increases fish habitat) and reducing usable phosphorus levels within the water column.

### Stick to the Plan

Diffused aeration systems are generally not difficult to install given the proper equipment. In addition to basic dirt-moving tools

you already have in your arsenal, all you need to get started is a small jon boat, a trolling motor with a battery and some poly rope.

A properly-sized aeration system is crucial to successful management of the pond. Always check pond depths and surface area and provide this data to an aeration manufacturer or distributor that is capable of producing an aeration system design. This design will contain all the



Diffused aeration promotes an overall balanced and healthy ecosystem. (Diagrams courtesy of Vertex Water Features)

# Three Factors for Improving Water Quality

By: Matt Larose, BioSafe Technical Representative



Sunlight, warm temperatures and nutrients can combine to form the "perfect storm" of algae and clarity issues.

Instead of enjoying your beautiful water feature, you may end up spending just as much time trying to keep water clear. The best way to keep water looking pristine is to understand the variables that influence certain conditions.

**The first is sunlight.** All living organisms, especially plants and algae, need sunlight to survive and grow. Even if your pond is considerably shaded, algae can still grow and reproduce, even rapidly at times.

**The second variable is temperature.** Temperature naturally encourages growth and increases aquatic life activity. Once temperature raises, algae and bacteria come out of dormancy and begin growing. A good threshold for water temperature is 50° F. Warmer water does not hold as much oxygen as cooler water and can be concerning if algae begins.

**Last, but most important, is nutrients.** Nutrients are almost always the culprit when it comes to water issues. In a natural pond, there is a balanced ecosystem that can keep itself in check. With backyard water features, you're shrinking down

that ecosystem. Even a slight change can result in huge consequences. Nutrients come from several different sources, most from dead organic material (leaves, dead plants, dead algae) and from fish waste, uneaten fish food and lawn fertilizer run-off after rain.

If you find yourself in a never-ending battle with algae chances are one of these variables mentioned are out of balance.

### Keep your water feature as pristine as possible.

Do regular "clean-outs" when the seasons change. Remove leaves, muck and other organic debris that collect at the bottom. Also remove algae that builds up and gets stuck onto rocks and the side/bottom of the pond. GreenClean® Granular or GreenClean®FX Liquid Algaecide are ideal. Both are organic and safe for fish and plants. Make preemptive treatments using smaller doses once or twice a week leading up to those times when algae is normally an issue.

If you keep fish in your pond, a good rule of thumb is 10 gallons of water for every inch in length of fish. If you get younger fish, they will grow quickly! You should have an aerator or a waterfall to provide circulation and to add oxygen into the water.

Using beneficial bacteria is very important for water quality. Beneficial bacteria are essential for consuming organic debris (leaves, muck, fish waste) and keeping a balanced ecosystem. Beneficial bacteria occur naturally in water, but it's recommended to periodically "boost" their numbers. This can be done with GreenClean Liquid Bacteria® or GreenClean Bacteria Tablets®.

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necessary calculations, such as turnovers per day, compressor size, number of diffusers and an aerial photo mapping the locations of each diffuser for maximum effectiveness. Don't just buy a stock aeration system off the shelf and assume it will be sufficient. An undersized system will do little or no good for a pond in need. An oversized system will work, but it will cost considerably more in both upfront costs and long-term electrical usage.

When you are ready to install your first system, call on the manufacturer or an experienced colleague to walk you through the installation. Again, it is not difficult, but some simple tips will help avoid some aggravation. (For instance, you have to coil the tubing in your boat in the proper direction for easy deployment. Trust me on this!)

### What Not to Say

You now know the basics of aeration systems and what they can do. Just as important, however, is to understand what they don't do. This is important, because

there are a lot of misconceptions and misinformation regarding aeration systems.

"It's a filter." Many times I hear both consumers and contractors tell me that

they think an aeration system filters the pond water. This is technically not true, and you should never refer to these systems as filters. The air bubbles produced by the diffuser float to the surface, which pushes water upward through the water column.

This causes a cycling or circulation effect that brings oxygen-rich surface water down to the bottom, which is the catalyst for all kinds of beneficial effects. But "filtering" is not one of them.

"It prevents algae." Phosphorus combines with iron in the presence of oxygen. Iron is present in practically every

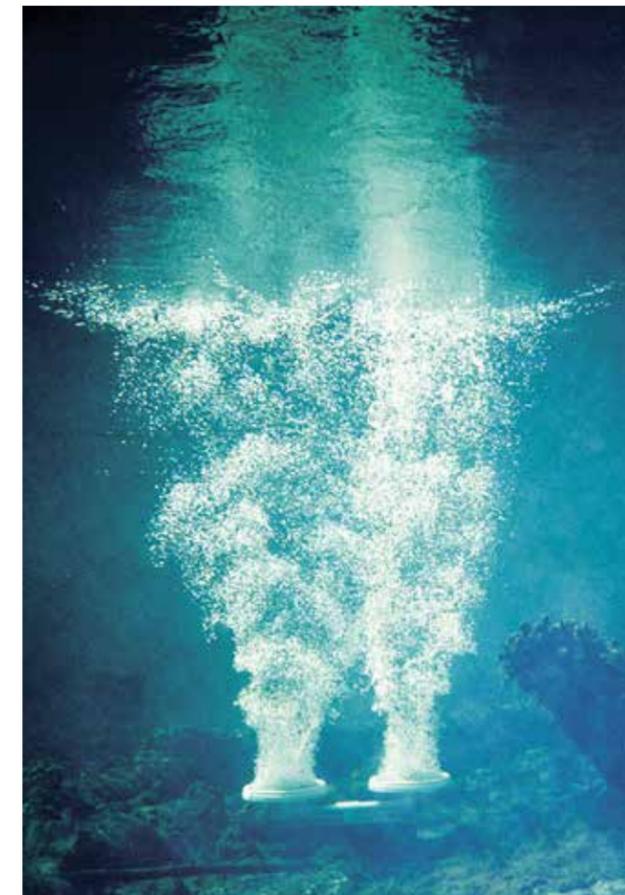
water body. If you tie up the extra phosphorus, there will be less phosphorus available for algae to utilize and flourish. While this is true, there are always several factors

### Collaborate With Lake Experts

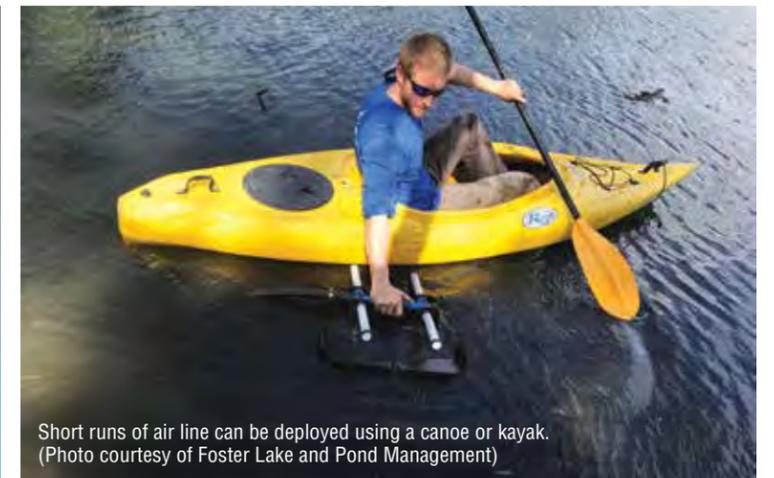
There are many projects (constructed wetland filters, shoreline aesthetic improvements, etc.) involving small farm ponds that combine water garden and lake management techniques. Reach out to lake management companies in your area and get to know them. A collaboration may be just a phone call away.

You may also be surprised to find that these companies often are looking for someone to refer their clients to for backyard koi ponds and waterfalls! If you are interested in expanding your pond business model, or if you want to talk and network with reputable lake management companies around the country, visit [www.lakeprofessionals.org](http://www.lakeprofessionals.org) to see what the Society of Lake Management Professionals is all about.

at play when talking about algae. The presence of rooted aquatic vegetation is a strong influencer in algae growth, as is available sunlight in the depths of the pond, which is also influenced by water clarity. An aeration system helps to discourage excessive algae growth in the right conditions, but that is



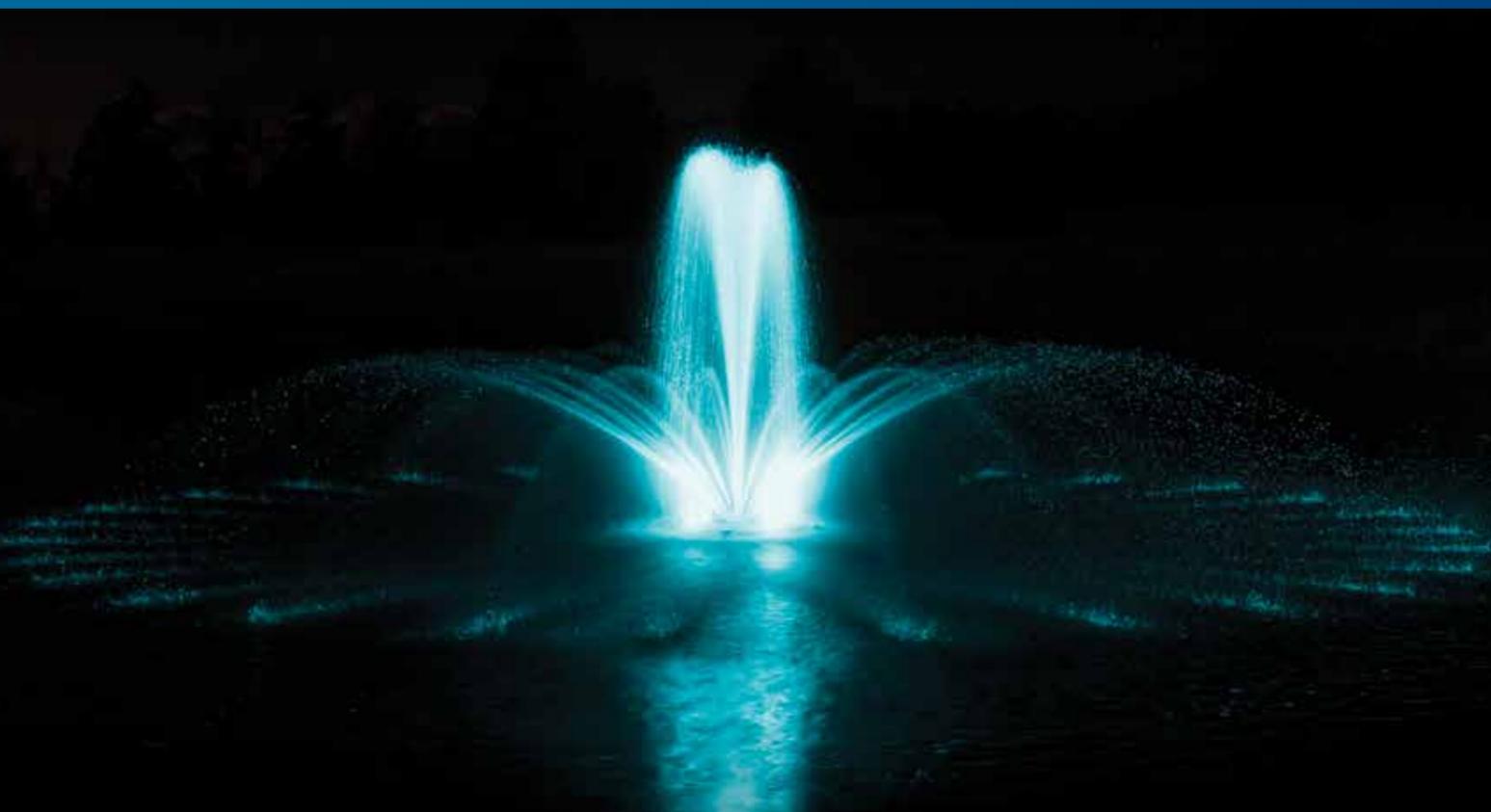
An air diffuser is shown in action underwater. Notice how the bubbles rise upward as well as outward, creating the water-cycling effect.



Short runs of air line can be deployed using a canoe or kayak. (Photo courtesy of Foster Lake and Pond Management)



A small jon boat is ideal for most aeration system installations. (Photo courtesy of Louisiana Pond Management)



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Aeration can keep a large hole open in the ice for oxygen transfer and a waterfowl habitat.

all. Never set a false expectation with your customer by suggesting they won't have algae after installing an aeration system.

"It makes the water crystal clear." Actually, in the beginning, you may notice reduced clarity when bottom sediments are disturbed and pushed upward into the water column. An aerated pond is going to be teeming with life, both microscopic and macroscopic. Certain times of the season will see increased levels of various microorganisms such as phytoplankton and zooplankton. Runoff and feeder streams will undoubtedly bring sediment particles into the pond at various times of the year, which can cloud the water for quite some time. There is a longstanding misconception that aeration systems will make a pond become crystal clear and stay that way permanently. You must always remember that earth-bottom ponds are a constantly evolving and living system. Never guarantee clear water in these systems.

"It's a quick fix." Aeration systems are a tremendous proactive method for promoting overall ecosystem health. Just don't expect instant results. This is more of a long-term and somewhat passive approach to pond management. It sets the stage for increased effectiveness of other management activities and fosters a more suitable environment for fish and other aquatic life, including beneficial bacteria. Think of it this way: Many ponds have been accumulating muck and experiencing eutrophication for decades. Any attempts to rectify this situation (short of dredging) are going to take time. You should preach patience with your customer.

Simply put, be careful not to oversell or overhype the aeration concept. Setting expectations is critical to avoid having a dissatisfied customer. You can promote all the great benefits of aeration in a way that makes the customer feel comfortable and happy to know that they are doing a good thing for the entire pond's ecosystem. It truly is one of the best management tools you can use for just about any pond to promote a strong and balanced ecosystem. ☞

### About the Author

**Tim Wood** began his career in aquatics 18 years ago with the Virginia Department of Game and Inland Fisheries. Eight years ago, he founded Aquatic Edge, a full-service water garden design, repair and installation company and lake management company operating in the Pittsburgh, Pennsylvania area. He is a two-time Water Artisans of the Year winner and a Master Certified Aquascape Contractor. Tim also serves on the board of directors for the Society of Lake Management Professionals, a national group of private pond and lake management companies working to advance the industry of pond and lake management. In his spare time, Tim enjoys coaching youth sports, fishing and spending quality time with his wife and two children.



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This picture shows the completed piping for an undergravel filter. A layer of gravel should extend up to 2 inches above the top of these pipes, which run out of the pond to the suction side of a pump. Fitz's Fish Ponds LLC built this pond. (Photo courtesy of Mike Hall)



# So you (Still) Want a Crystal Clear Pond

A follow-up on (nearly) maintenance-free undergravel filtration



by Mike White,  
White Water Filters

*I wrote an article for the May/June 2014 issue of POND Trade magazine under a similar title: "So You Want a Crystal Clear Pond." If you don't recall it, check it out in the archives at [www.pondtrademag.com](http://www.pondtrademag.com) before you dive into this update.*

You might notice that my 2014 article generated a few dozen comments and questions from my fellow readers, so I'm happy to take this opportunity to expand on what I wrote four years ago about undergravel filtration. I'll also address some questions that have since come up.

First, just a quick update — my first undergravel filter is still running great and has not needed to be cleaned in the last 27 years. I'm guessing that the liner will fail before the filter needs to be cleaned or stops working.

## Koi Safety Issues

I came across a Facebook post about three weeks ago with a discussion among several well-known koi experts. They were familiar with undergravel aquarium filters and felt that undergravel pond filters would behave in the same way. In other words, the filter could fail or build up toxic areas.

Could this happen in a pond undergravel filter? It's possible, but not from the waste from the aquatic life present in the pond. It would require a lot of outside debris infiltrating the pond and simply left there to cause a toxic, rotting situation. Of course, this is true with any pond using any type of filter system. An advantage to having an undergravel filter is that debris is generally not an issue,

unless it's so large that it actually prevents the pump from being able to pull water through it. We're talking about a layer of debris 4 to 6 inches thick. It would certainly be producing poisonous gases before it would get this thick, and you have to assume that the pump would suck it in and bring it up to the surface, where it would rise into the atmosphere before it would harm the aquatic life.

A likely response to this answer is, "That's not why undergravel aquarium filters fail!" And that is correct. They fail because the gravel or slots in the undergravel bottom plate get clogged up. When the filter is designed as I specified in my last article, it won't clog up. Water will continue to flow through all areas of the filter, and the filter will continue to work as advertised.

## Size Matters

The next logical question is, "Why doesn't it build up enough debris to clog it up?" Simply put, in a properly constructed system, there should be sufficient space between the gravel so that debris continues to move and break down, eventually exiting through the filter.

But what about debris that is too large to get into the gravel? This would normally include outside environmental debris, such as leaves or sticks. This material tends to lay on the gravel surface until it is manually removed, or until it breaks down into smaller pieces. It will break down more quickly with water moving around it, rather than just sitting at the bottom of the pond. But it still could take a very long period of time. It is a good idea to have another type of filtration system, such as a skimmer, that is designed to remove floating debris from the pond. I would recommend a secondary filtration system for any outdoor pond, regardless of its primary filter system.

But how closely do you have to follow the directions for building an undergravel filter, which I outlined in the previous article? I can't answer this one completely, as I have not branched out from my formula very much.

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An undergravel grid (above, left) is ready for gravel. Tino's Pond (above, right) was built by Fitz's Fish Ponds (photo courtesy of Mike Hall). An airlift system (right) was integrated by Magnolia Ponds (photo courtesy of Max Taylor).

The farthest I have strayed from my proven design is a pond that I built 11 years ago. The homeowner wanted a pond with a completely calm surface. It was for plants primarily, but they wanted some fish, too. To meet these requirements, I designed the system with a submersible pump in a sealed box with an open pipe leading into it from half of the undergravel filter. The output from this pump went to the other half of the undergravel filter as a pressurized filter. The last thing this homeowner wanted was small gravel, and I had my doubts, but we used pea gravel.

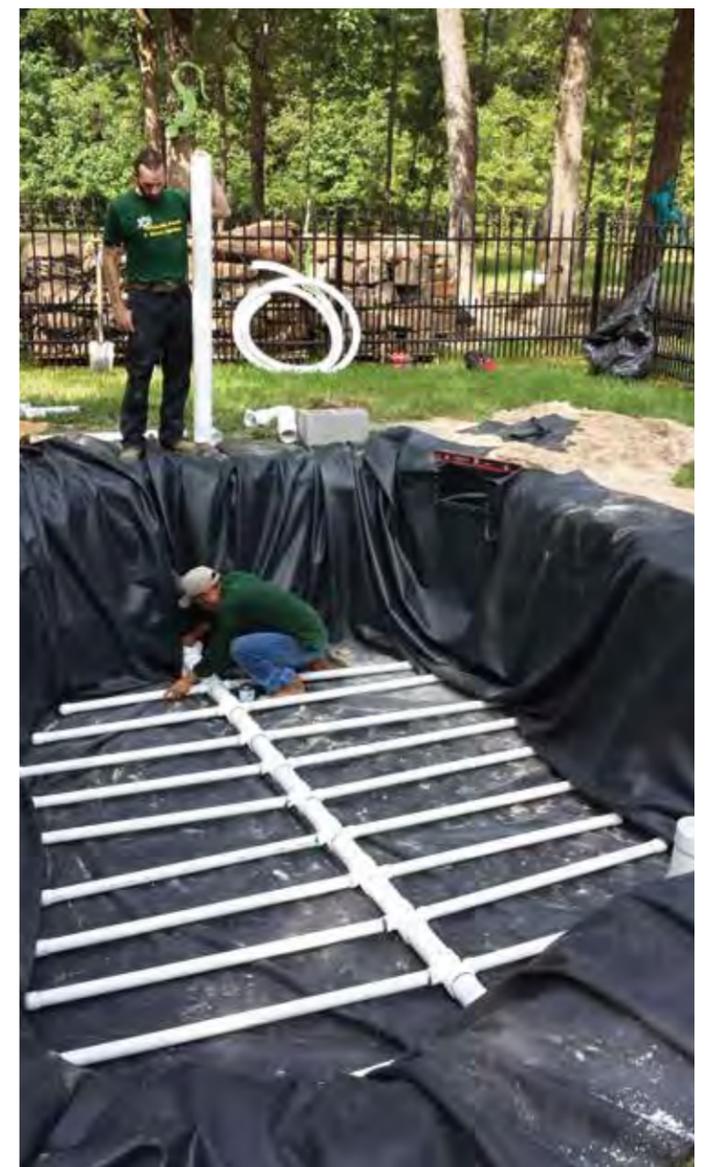
Eight years later, I talked to the homeowner, who had done zero maintenance on the system. Their only complaint was that they occasionally had to dye the water, because the pond was too clear to show off the plants as much as they wanted. I am not crazy about this system for the average homeowner, as it uses a submersible pump, which doesn't last as long as an external pump. Moreover, this pond doesn't have a skimmer, so the homeowner has

to remove surface debris manually. Most homeowners would not keep up with debris like this. You can see a picture of this pond in my previous article.

### Add an Airlift

It may seem hard to believe, but you can filter a large pond using 60 watts of electricity, or even less. This is another huge advantage of undergravel filtration systems. Because the filter is in the pond, it can run without having to lift water above the surface of the pond. This creates the perfect scenario to implement an airlift system. With 60 watts of power operating a good air pump, you can easily move 10,000 gallons of water through the filter.

What other benefits can be expected from this kind of system? You could not have a better system for oxygenating the pond. If designed correctly, the filter should draw water from the entire bottom of the pond and bring it to the surface, where it can absorb oxygen from the air. There should be no dead areas in the bottom





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of the pond. Other than skimmers and gravity-fed settling chambers, there are very few other filters that can be run by airlift systems.

There are always going to be some who believe that undergravel systems promote the production of hydrogen sulfide. The truth is, this can happen — if the system is designed incorrectly, that is. I have found that a correctly designed system is about as maintenance-free as can be. My own pond requires fewer than 10 minutes of maintenance per month during the spring and summer. It has been running for more than six months now with no maintenance at all, and it will not need maintenance until the hoop house is removed.

Across the United States, there are hundreds of these ponds that were designed correctly and continue to work perfectly. However, there is no such thing as the perfect system. If there was one perfect system, everyone would use it, and we wouldn't be having this discussion. But all things considered, you can be assured that if implemented per the design instructions, undergravel filtration works very well. 

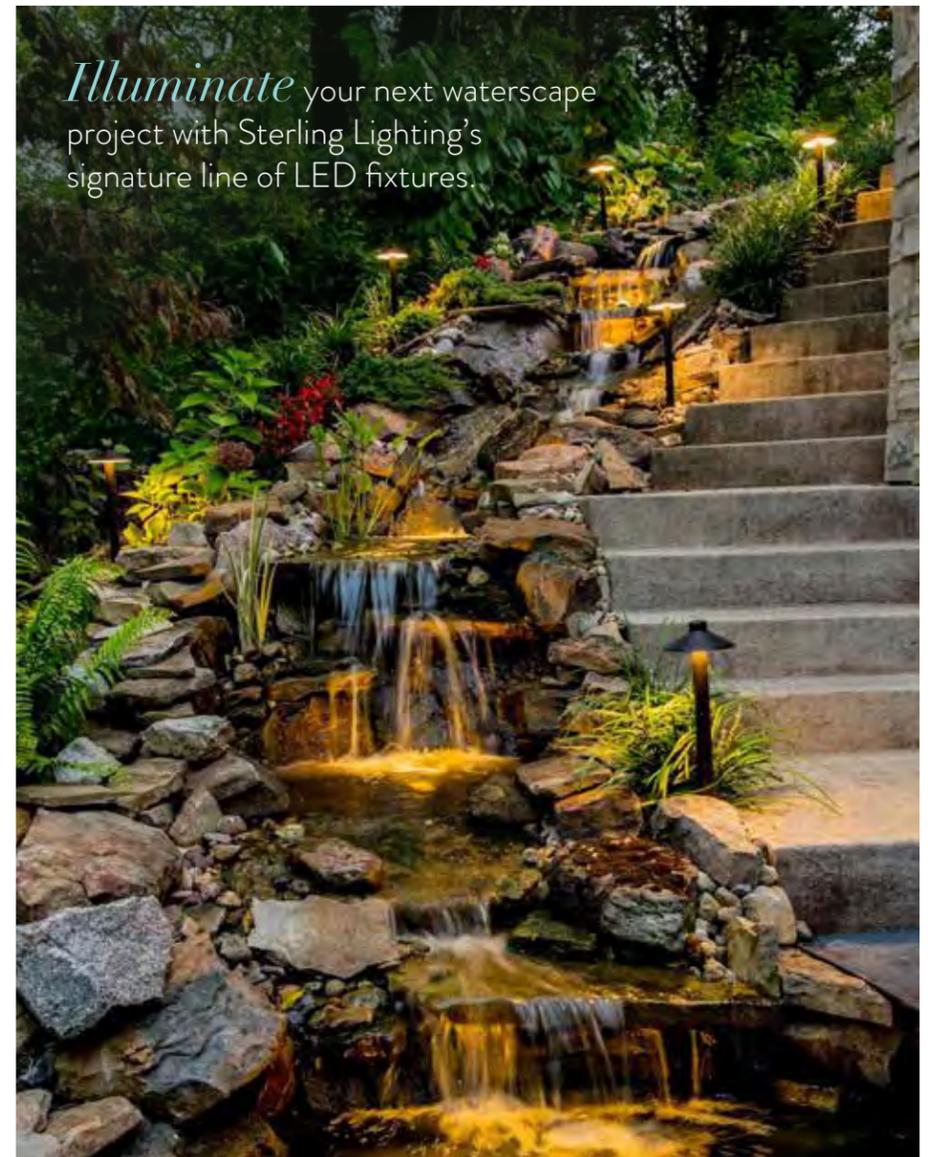
### About the Author

**Mike White** is the owner and operator of White Water Filters LLC and Sue Miller Enterprise in Batavia, Illinois. He built his first pond in 1990 and instantly fell in love with the hobby.



In 1995, Mike became president of the Midwest Pond and Koi Society, the second-largest pond club in the country. In 1998, he started White Water Filters, a pond construction company. In 2007, he took ownership of Sue Miller Enterprise, a local pond wholesale company.

Mike has taught pond classes at a community college, spoken at numerous pond clubs in the Midwest and taught at seminars across the country.



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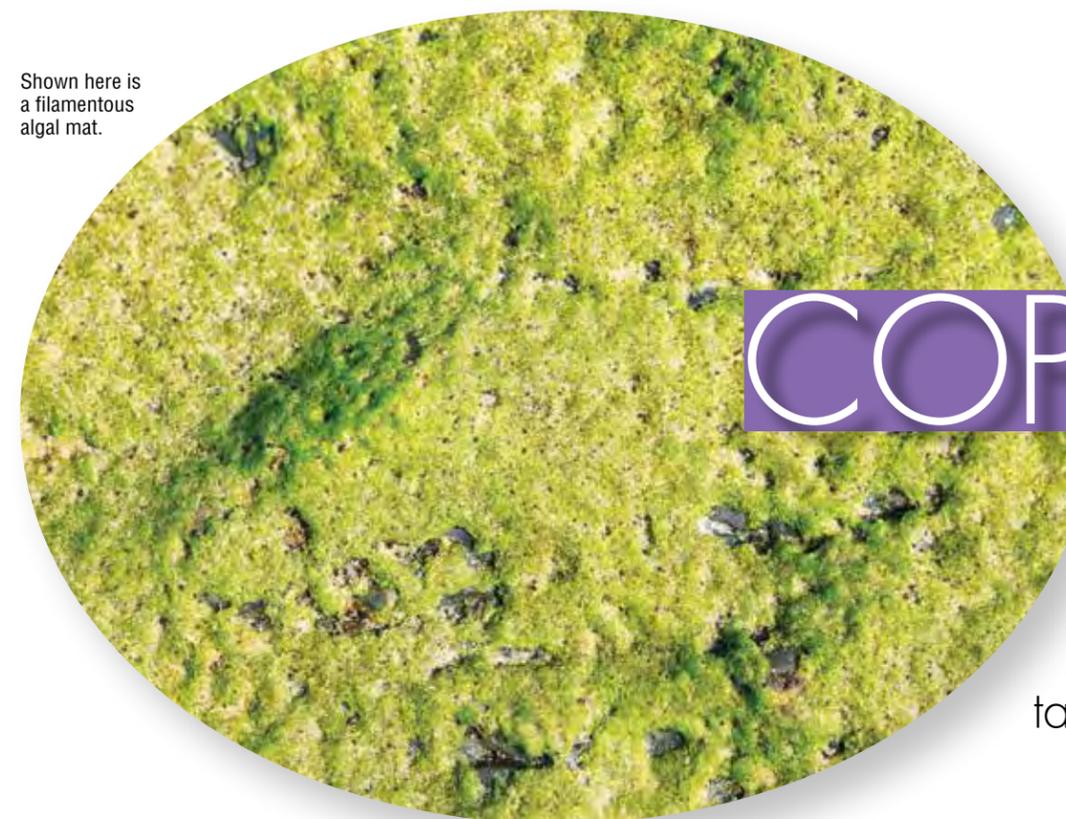


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## | Chelated **Copper** |

Shown here is a filamentous algal mat.



# THE COPPER EFFECT

Chelated copper can help safely tame pond algae

**by Patrick Simmsgeiger,**  
Diversified Waterscapes Inc.

Copper is an incredibly diverse element. Depending on the selected chemical formulation, it can be used in a variety of ways. Copper in its different forms is found in artwork, plumbing, wiring and many other areas. In 2016, more than 19 million tons of copper were mined around the world, with 1.4 million tons coming from the United States. Needless to say, copper is everywhere, and all estimates suggest that its production will only increase as the nations of the world continue to develop their infrastructure and economies.

However, just as copper is everywhere, so is water. Too often, the results of copper mining and usage end up leaving residual copper in the

water. But fear not — not all copper is the same, and not all copper is necessarily bad.

One of the major environmentally beneficial uses of copper nowadays is to control algae. Algae can be found in practically every pond, serving important roles in the water, such as aiding in oxygen production and acting as a food source. Unfortunately, anyone who has spent enough time around ponds has seen what happens when algae get out of control. Affected ponds can go from picturesque to green soup over the course of a day. In cases like this, immediate action is needed. While algae can serve as a positive factor most of the time, they represent a real threat to all other life in the water when they bloom. Not only do blooms of algae take up large amounts of oxygen, but some species even produce toxins that are deadly to

other organisms. So, if this becomes a problem for a pond owner, what is the most effective approach?

### Copper-based Algaecides

Copper crystals (granular) are exactly what they sound like — crystallized copper. This is the cheapest and oldest method of applying copper as an algaecide. Just throw it into the water where algae is present, and the crystals will dissolve, killing the algae it comes in contact with. While this sounds easy enough, this method is also the most damaging. Copper crystals only kill what they touch, so a large pond could require quite a bit of copper to achieve an effective result.

A second approach, liquid copper, covers a very wide range of products that use different mixes of copper to varying effects. Liquid copper is more

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efficient than copper crystals because it can actually stay suspended in water for a longer period of time — copper crystals tend to sink straight to the bottom. However, the same issue remains: To achieve the most algae kills, more product needs to be used.

A third category to consider is chelated copper, a slightly more complex version of liquid copper. Chelated copper algaecides are also liquid, but they are defined by that first word — chelated. This is the name given to a chemical process where a form of protective covering attaches to the copper atoms. Chelation is analogous to the shell around M&M candy. The shell around the chocolate protects it from the outside, and it only starts to break apart in response to heat (or in this case, being chewed). The goal of using chelators is so that the main ingredient of the product isn't used up too quickly. So when chelated copper is applied to a bloom, the copper releases more gradually, as the protective covering slowly dissolves in the water. This creates a longer period of actively killing algae while requiring less copper usage, since the product works for an extended period. Thus, this is the most ecologically friendly choice.

While these are the three general categories of copper-based algaecide, there really are not that many varieties for sale on the market. Even though there is not an array of choices, it can still be tough to figure out what the right choice is. Chelating agents tend to be proprietary, and finding out what products are natural or organic can be next to impossible. It can also be a task trying to find copper products that are easy on the ecosystem — but if you can find the right product, it can be a great solution.

Although copper is a natural part of the

environment and can be found at varying levels within sediment that has never been touched by human copper products, we have to be aware of the fact that in excessive amounts, copper can become a problem. So, it makes sense that when considering



These vials contain copper sulfate solution.

copper algaecides, you want to make sure to use a solution that contains the smallest amount of copper while still producing the greatest results.

## Why is Copper Balance Important?

Regardless of the source, copper ends up binding to organic matter, and when it reaches the sediment layer, it resides in the upper few inches of substrate where this organic matter is concentrated. This section of the sediment hosts some of the most vital organisms in a freshwater ecosystem — beneficial bacteria, plants and invertebrates, just to name a few. They call this area home, and together they make up the base of the freshwater food web. Smaller organisms feed on floating detritus (plant material) and microorganisms, and the levels of consumption keep rising.

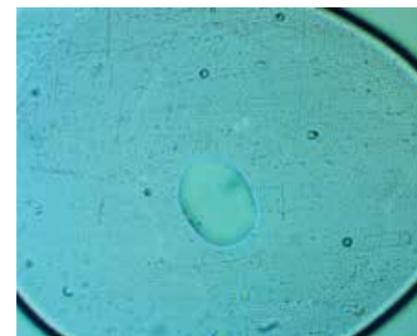
An example of these levels in fresh water would be how a phytoplankton photosyn-

thesizes. It is eaten by a larval fish; this larval fish is eaten by a sunfish; and the sunfish is then grabbed from the water by a heron. This is an extremely generalized view of the flow of life, but it depicts an integral part of ecology. It's important to note that it all starts at the bottom. Without plants and microorganisms, the smaller organisms have no food; in turn, the bigger organisms have nothing to eat. It seems clear that maintaining healthy sediment is the key to a functioning ecosystem and a sustainable pond.

If an algae bloom is starting to spread, the health of the pond must be an immediate concern. It may be obvious that the bloom needs to be dealt with, but the massive number of products available for this exact situation can be quite daunting. This is where chelated copper can be a great asset. Not only can the bloom be killed with a small dose, but it can be done with a minimal amount of copper added to the ecosystem. This small amount of copper also enables the use of different products after application. One of the most common supplements to a chelated copper application is an enzyme product, with additional bacteria added a few days after applying the chelated copper. These speed up the decomposition of dead algae as they sink, reducing the chance of a reoccurring bloom. The fact that chelated copper works well with these organisms is proof of how much less damaging it can be, compared to products that use copper crystals.

## Overall Pond Balance

Keeping balance in a pond is something that every pond owner strives for. It is easy to forget that the ponds we see may look peaceful, but there is always an ongoing



Left and middle: Freshwater algae species are shown at 400x magnification. Right: A common water flea under the microscope (Daphnia pulex)

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Copper sulfate crystals congregate.

battle for resources and space among many different organisms. Algae are no exception to this, and they are one of the most successful organisms at rapidly expanding when the conditions are right. Control needs to happen quickly and decisively, but when algae clear up, every pond owner still wants their plants and fish to thrive. Chelated copper is a great way to tackle this issue and leave the rest of the environment capable of flourishing after the algae subside. The best treatment method is the kind that specifically targets the problem, with as few side effects as possible. If utilized correctly, this solution can be built around chelated copper. ☞

### About the Author

**Patrick Simmsgeiger** is the founder and president of Diversified Waterscapes Inc. He is a licensed aquatic pesticide applicator, landscape contractor and certified lake manager. He is an expert in all stages of aquatic treatment, from product development and manufacturing to application and treatment. He specializes in watershed and water-quality management in lakes and reservoirs. Patrick also manufactures an EPA-registered chelated copper algicide that is 100-percent natural and organic. Patrick is well known on the speaking circuit, recently having given a presentation at the ICAIS conference in Fort Lauderdale, Florida, and at the California Lake Management Society's annual conference in Big Bear, California.



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# Mixing **Koi** Populations

An ounce of prevention may be the best medicine

by **Ben Plonski**,  
Laguna Koi Ponds

**M**ost of us have witnessed this scenario. The pond is doing well, and the koi are really healthy. So, time for more koi, right? In go the new fish, and all is well for a week. But then, things turn ugly.

Koi like stability in their environment. They get used to a certain set of water quality conditions and the existing microflora in the pond.

Suddenly the koi look very sick, they don't want to eat. If proper action is not taken, mortalities will follow.

This can happen to hobbyists and professionals alike. You obviously bought a sick fish, and now your inventory is in jeopardy, right? Well, more often than not, this scenario can be prevented before it ever happens. The key word here is "prevention." Before getting into how to prevent fish disease, let's re-evaluate our mindset on fish pathogens and disease in general.

Koi like stability in their environment. They get used to a certain set of water quality conditions and the

existing microflora in the pond. This microflora includes non-pathogenic and pathogenic protozoa, algae, bacteria, viruses and fungi. Every pond environment contains an indigenous commensal flora population of diverse microorganisms growing in the water and colonizing the surface areas of the pond. They also grow on the filter media and colonize the outer surface of the fish's skin.

This microflora may also contain populations of pathogenic microorganisms. Under normal circumstances, they do not pose an infection threat to fish. However, if one strain becomes paramount, the host's resistance is reduced or the epithelial surface becomes broken, infection or infestation may develop. An established population of koi can adapt to the unique chemistry of a stable pond and develop an immunity to potential pathogens.

### Pond "Bugs"

Fish have been dealing with parasites, bacteria, fungi and viruses since the dawn of fish. In a properly maintained ecosystem, fish like koi can develop immunity to most bugs.





What we need to accept is the fact that these “bugs” are always present in our ponds and on our koi, to some degree. Our efforts to keep a clean, balanced pond help to reduce the numbers of these bugs to a level where the koi can develop proper quarantine procedure with chemical treatment for parasites, the koi will still have bugs. You can’t sterilize a fish. In other words, koi may appear disease-free, but they are never completely free of pathogens. Pathogenic and non-pathogenic

When we medicate preventively, we are merely reducing the bug count, temporarily giving the immune system of all the koi, old and new, a fighting chance.

a natural immunity. However, these bugs can be kept in check by the immune system of the koi. Upset this natural immune balance, and the pathogens will increase in numbers. Even after a bugs can thrive in dirty ponds. But even under the most disgusting conditions, I have seen established koi live without a pathogenic outbreak. When the pond was new, fish were introduced to clean condi-

tions with what I call a low bug count. Over time, the water quality declines, and waste products build up, creating a terrible condition. The pathogenic and non-pathogenic bugs can then reproduce and increase exponentially. But somehow the koi continue to thrive, because they have had time to develop immunity to their gradually declining environment, with the bug count ever increasing. This is when you can really run into trouble adding new koi.

Whenever a new koi is introduced to an established pond, the immune balance will be compromised. Not only do the old koi pick up bugs from the new koi, but the new koi will also pick up bugs from the old koi. In a dirty pond with a high bug count, the chance of a pathogenic outbreak will increase.

Everybody ends up sick, but the new koi always get the blame. It’s important to realize that the bugs go both ways. If you are a retailer of koi, you have likely witnessed this. A koi that you know to be very healthy and disease-free for many months or years dies when introduced to a hobbyist’s pond. Sometimes the rest of the customer’s old koi start to get sick, too. The new koi gets the blame, but it is very likely that the bug count in the pond was too high for the new koi’s immune system. Likewise, another environmental factor like pH or temperature may have been beyond the new koi’s ability to adjust.

So the bugs already in the pond then take advantage of this, reproducing rapidly on the new fish, which then stimulates increased virulence on the old fish, too. The new koi was already immune to its own bugs, but it forces the old koi to respond to these new bugs, too. Once again, the bugs go both ways, and we cannot sterilize a fish. But what we can do is reduce the number of bugs with preventive medicine and a clean environment. The fish can then more easily develop immunity, because there is a low number of bugs in a stress-free environment. When we medicate preventively, we are merely reducing the bug count, temporarily giving the immune system of all the koi, old and new, a fighting chance.

Once we accept the idea that pond fish

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always have bugs, good and bad, we can teach our customers the art of preventive treatment.

### Proper Quarantine

The quarantine process should start in the dealer's shop. Koi farmers are very diligent in quarantining and treating koi before shipping. However, a new shipment of koi will be weak and under stress from the shipping process, compromising their immune system. They need time to rest in warm, clean water conditions, where they can be treated preventively to keep pathogens in check.

It's all about being proactive. Don't wait for them to get sick before you treat them. The fish will need to be treated for flukes and other parasites. Know your gallons so you can treat properly. They may need salt therapy to help the gills stabilize for proper osmoregulation. Salt can also keep the mucus level low.

Large tanks will be required for this,

because koi cannot be overcrowded during quarantine. A water temperature above 65 degrees is extremely important, because a koi's immune response is poor in colder water. Their immune systems really start to kick in above 70 degrees.

### Know your gallons? Dose a pond as follows:

**Day 1:** Treat with Malachite Green and Formalin and fluke medicine together.

**Day 4:** Treat with Malachite Green and Formalin only.

**Day 7:** Treat with Malachite Green and Formalin and fluke medicine together.

**Day 10:** Treat Malachite Green and Formalin only.

Proper and restful quarantine should last at least two to three weeks. A conscientious dealer can also test for KHV exposure with the ELISHA test during this time.

During this period, feeding should

be monitored carefully. The filter needs to process the waste to keep the water quality high during this recovery period. But too much food too soon, and the koi's gut will be overburdened. This will lead to an increased microflora count in the water, in the gut and on the skin and gills. I prefer to keep new koi on the hungry side during this initial period. The water quality and oxygen levels stay higher, and the koi's natural defenses seem to recover more quickly on a lean diet. If they are not begging for food during this period, don't feed them. And if they are begging, limit the quantities you feed them.

Develop and adhere to a quarantine protocol that works for you. There will always be room for improvement. Dealers and importers of koi will have variations in their quarantine protocol, but the end goals are the same. Reduce the stress from shipping, maintain high water quality, keep the gills in good

condition, treat for common parasites and early signs of bacterial infection and test for viruses like KHV.

### Treat the Whole Pond Again

Before introducing quarantined koi to your existing population, give the filter a good cleaning, remove or vacuum muck from the floor of the pond, make a water change and test the pH, KH, ammonia, nitrite and oxygen levels. Don't add new koi to a dirty or poorly maintained ecosystem. Clear water is no clear indicator of water quality and bug count. Your existing koi have had a long time to adapt to the pond's environment, so give the new koi a chance with improved maintenance.

Try not to add koi when the water temperature is below 65 degrees, because again, their immune response will be on the slow side. The best time to add koi to a pond is late spring through early fall. Once the pond is in check, add your koi and treat the whole pond preventively



with a Malachite Green and Formalin combination and fluke medicine to keep things in check while the koi adapt to each other and the pond.

No water changes are necessary between each of these doses. These chemicals break down in less than 48 hours. A

Malachite Green and Formalin combination is available under various brand names on the market. The fluke medicines that work best are praziquantel and flubendazole.

A koi dealer might feel uncomfortable suggesting that his customer treat the

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entire pond after a new koi purchase. The hobbyist may be suspicious that they are being sold a sick koi or that the dealer is just trying to upsell. But I can tell you that in my shop, my employees are instructed to explain this whole story to our customers, and they are typically very appreciative that we take the time to explain and help them be successful. They leave our shop with more knowledge and the ability to treat the

pond correctly.

It certainly takes a lot of time to teach customers how to calculate the number of gallons in a pond, discuss water quality and proper filtration, and show them how to spot signs of a sick koi before it is too late. Most importantly, it takes time to get to know the customer and build relationships. Customers who treat preventively and correctly will be a lot more successful. The ones who don't

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follow these steps may have a 50-percent chance that nothing bad will happen. Fifty-percent odds might be good in Las Vegas, but not with koi.

In the next issue of POND Trade, I will go into greater detail on the quarantine protocol that we use and discuss "koi sleeping disease," a very common virus many of us have seen in our ponds, but perhaps without fully realizing what was actually going on with the koi. ☞

## About the Author

**Ben Plonski**, a real lover of koi, has been in the koi business for 43 years. He has been traveling to



Japan for 25 years to hand-pick koi for sale in the U.S. market. He is a member of the Shinkokai All Japan Nishikigoi Promotion Association

(U.S. District) and president and owner of Laguna Koi Ponds, Niji-Yama Wholesale Koi and Matala USA. For more information, visit [www.lagunakoi.com](http://www.lagunakoi.com).



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# Coming Full Circle

Polyurea provides solutions for ponds old and new

by Kent Wallace,  
Living Water Solutions

My first pond construction project was in early 1999. My father's neighbor, Pam, lived in the cul-de-sac behind him and had removed a tree from her courtyard. She approached me and wanted to use the space for a pond like my father had at the time.

**SERIES:**  
Best Pond Practices  
*This is an installment of an ongoing, multi-part series. Be sure to watch for further installments in future issues!*

At the time, I had just left a 26-year career in the automotive industry and was working on racecars and doing custom iron work out of the shop in my home. My father always had a fish pond of some sort, and all I knew was that it was a lot of work. I agreed to help his neighbor and ended up building out her complete courtyard, including the cover, which was supported by steel beams. I did a month's worth of research, which consisted of calling every manufacturer listed in KOI USA magazine, because my father had stacks of them lying around. I had a long conversation with William Lim of Wlimproducts.com, who ended up guiding me through the project.

### Getting My Feet Wet

Looking back, it was a fairly complicated project for a first-timer. William guided me through installing the filtration system for this boomerang-shaped, raised pond, but "raised" construction of the pond was completely up to me. Because of the shape, the rubber liner had to be seamed, which was another aspect I had to figure out by myself.

It ended up being a great learning experience, and because



Top: We cut a 45-degree angle for the polyurea attachment. Middle: The original surface had to be scraped and cleaned. Bottom: We applied polyurea and geotextile cloth to the interior of the pond.



Left: Polyurea was applied on the sides and the top block edge. Middle: The finished surface is ready to go. Right: We added sand to the floor to smooth it out.

Pam was a real estate appraiser who worked out of her home office, visitors to her home for business would often ask her who built her pond. Over the next couple of years, I was splitting my time between iron work and pond construction, but I eventually had to decide the direction I would pursue going forward.

Late in 2000, Pam entered her courtyard in a Better Homes and Gardens special-interest issue and won best courtyard nation-

wide. I used this for some advertising and moved forward from there. Although I was getting comfortable with pond construction, I still had some concerns about the longevity of liner and the amount of work that would be required to replace it at some point in every pond's future.

### Paving the Way

After a couple of years, I started blogging on Koiphen about my projects

and repairs to what I considered odd problems I had run into. At one point, I was contacted by a gentleman named Dudley Primo. Dudley was a chemist who held many patents on polyurea coatings, and he asked if I could write an article for him detailing the proper application techniques for the system. Polyurea had been briefly introduced to the pond industry by Tim Zuber through an article in KOI USA magazine, but others were installing

it improperly, causing a reputation issue across the entire industry. The polyurea industry was large and encompassed many different areas, but the small segment that was pond construction was causing a lot of grief in the industry because of improper application.

Dudley was going to be in Las Vegas for the upcoming World of Concrete convention and wanted to meet with me. I knew nothing of polyurea, but I had read Tim Zuber's article, which I found very interesting. I agreed to work with him and had a very informative meeting with Dudley at the convention. He was mostly concerned with mechanical clamping techniques around the penetrations. Later that season, I met Tim Zuber at a koi show in Florida and was duly impressed. Tim, a Seattle native, was training others in polyurea-application techniques.

Over the years, I started using polyurea on any project I could. These days, as a consultant and equipment manufacturer, I suggest polyurea as an option on



each project, which brings me back to my first pond build.

### Back to the Start

Pam had placed a large flagstone in one end of the pond bottom to place a decorative castle on, and over time its

weight had penetrated the liner in a couple of places on the sides that were under the most pressure. I removed the stone and patched her liner, which held for some years.

Years later, Pam passed away, and the home was sold. The new owners were



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excited about the pond, but after a little while, the patched areas started to leak again. It had been OK for many years, but it had become harder to patch. Replacing the liner would mean removing the entire flagstone top cap.



Carl oversees the workmanship.

moving the fish easy. Every pond owner should have a quarantine system of some type available for emergencies or disease management. This system had sat empty for more than 10 years, but it started up easily.

The new owners, Kim and Wally, hired a crew to move the fish and remove the existing liner. On new pond construction, the polyurea would typically be applied over the top of the block or edge treatment, with the top cap or decorative rock used as the mechanical clamp. In this case, a 45-degree cut was made in the top edge of the block just under the flagstone with a diamond saw, providing more surface area for the polyurea to attach to under the top cap without removing it. This worked well, and the return penetrations were reinstalled as originally used for the EPDM liner.

### Polyurea to the Rescue

But after seeing a sample of polyurea, they decided to use it. I had originally built a 1,000-gallon airlift-operated quarantine system in the home's backyard, which made

Paul Parszik of Artisan Aquatics was brought in to install the polyurea, which turned out great. The original construction had been a block retaining wall on a foun-

ation shelf with a dirt floor and a concrete ring around the bottom drain. All the return penetrations were originally installed in the block retaining wall, so the clamp rings just needed to be unscrewed and cleaned up. The sand floor was reshaped a little, and the block was scraped to remove any glue left over from the original underlayment attachment. Paul used a geotextile cloth to transition from the block onto the sand bottom. The geotextile cloth used for polyurea is much heavier and stronger than that normally used as underlayment for EPDM. The system worked well and turned out beautiful.

The equipment and filtration were still in good working order, so no major repairs were necessary in that respect. The original liner lasted 19 years with some patches that were only necessary because of the improper installation of the underwater flagstone table. With the addition of polyurea, there is no telling how much longer the pond will last.

Polyurea has been speed-tested to more than 75 years and can withstand many

tons of rock pressure that liner simply cannot. I've even seen a 10-ton boulder dropped on polyurea over geotextile with no damage. Polyurea cannot be penetrated by roots or eaten through by varmints, as is often seen with rubber liner.

Keep polyurea in mind next time you need to replace a liner, or consider how cheap the expense of polyurea is up front on new construction, as opposed to the massive expense of complete replacement down the road. ☞

### About the Author

**Kent Wallace** was born and raised in Las Vegas. Kent spent most of his adult life in the automobile industry at independent shops and dealerships, including his own shop as a racecar fabricator at age 24. Then, in 2001, a neighbor asked Kent if he could build her a koi pond like the one Kent's father had.



From that point on, pond building became his new passion. That first pond he built was submitted to Better Homes & Gardens magazine and won Best Courtyard Nationwide in their special-interest publication.

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# An Icy Start to a Hot Show

Looking back at the 2018 Water Garden Expo

by **Lora Lee Gelles**,  
POND Trade magazine



If you've never been to Oklahoma in February, this was the year to check it out — especially if you're a meteorologist. Thankfully, the slick roads and ice on everything did not keep people away from Pondliner's 2018 Water Garden Expo.

Due to the weather, there were two days of indoor builds and demos. John Eccles of Waterscape Creations led the way on Tuesday, taking part in a rehab with Living the Pond Life and OASE.

On Wednesday morning, Jake Langeslag from Aqua Eden demonstrated his airlift system, and Brian Helfrich and Chris Hanson from Aquascape performed a water feature facelift.

On Thursday morning, POND Trade's second annual Water Artisans of the Year awards were announced and distributed to the winners in attendance. Another great year of talent was showcased.

There were two days of speakers, with a diverse assortment of exhibitors and vendors on hand. It's always fun to walk around, meet new people, get reacquainted with people you already do business with and take a gander at all the new products.

It was a full four days. We're already looking forward to next year — ice or no ice! ☃



Water Artisans of the Year

Three companies were in attendance to accept their awards. Fitz's Fish Ponds, Best Large Scale; Aquatic Edge, Most Artistic; Magnolia Ponds & Water Gardens, Best Under \$15k (runner-up)





### Water Garden Society of Greater Kansas City Announces 25th Annual Water Garden Tour



The Water Garden Society of Greater Kansas City is celebrating its 25th annual Water Garden Tour on July 7 and 8, 2018. Visit the greater Kansas City area to tour more than 40 stunning water features. Many of the sites have never been on tour before, and many have working trains and fairy and sculpture gardens. Witness water sparkling like diamonds as koi and goldfish play among the exotic waterlilies and native plants and dragonflies dance atop the stately blooming lotus.

The theme this year is "The Wonderful World of Water Gardens." Tickets for the two-day tour will be available at all garden centers in the greater Kansas City area, Hen House Markets and Westlake Hardware. Prices for the self-directed driving tour is \$10 for both days. Like every year, the proceeds from the tour will go toward the construction and maintenance of educational and restorative water gardens and other educational programs in the Kansas City metropolitan area.

Visit [www.kcwatergardens.com](http://www.kcwatergardens.com) or find us on Facebook for more information. For further inquiries, call Linda H. at 816/305-5963.

### Kloubec Koi Farm Receives Leadership in Industry Development Award

Myron and Ellen Kloubec accepted the 2018 Leadership in Industry Development Award at the sixth annual Iowa Secretary of Agriculture Leaders Award Dinner in Des Moines, Iowa, on March 6, 2018.

Iowa's Secretary of Agriculture Mike Naig presented the award to the Kloubecs and three other winners. Other highlights of the evening included the swearing in of Bill Northey as the new national USDA undersecretary of agriculture by the U.S. Secretary of Agriculture Sonny Perdue. Perdue also mentioned the Kloubecs in his keynote address, focusing on their lifetime of accomplishments in aquaculture.

Iowa Governor Kim Reynolds was among the more than 500 guests in attendance, which also included state legislators and friends and family of Secretary Northey. The Kloubecs would like to wish Northey the best of luck in his new position in Washington, D.C.



### Pond Demos at Pond Pro Shop



### Aquascape Announces 20th Anniversary and Theme of Pondemonium 2018

Aquascape Inc. is excited to celebrate the 20th anniversary of Pondemonium, one of the water feature industry's premiere business training and networking events. Distributors, contractors and retailers are invited to register and attend the event held August 22 to 26 at the Q Center in St. Charles, Illinois.

"We're pulling out all the stops for this year's 20th anniversary of Pondemonium," states Greg Wittstock, founder and CEO of Aquascape Inc. "Attending this year's event is the perfect opportunity for water feature professionals to be surrounded and inspired by their industry peers and mentors."

"An Attitude of Gratitude" is this year's theme at Pondemonium. Attendees will enjoy a full schedule, including hands-on water feature installation training sessions, classroom presentations, networking opportunities, a full-day pond tour, fun team-building events and much more.

Pondemonium 2018 offers training for both new and experienced water

feature professionals. Numerous networking sessions and early morning "Cup of Coffee" roundtable discussions allow attendees to learn valuable business practices from each other. Multiple training sessions covering a range of business operations and construction topics are led by familiar industry experts. New to this year's event is a Digital Marketing Summit held on Wednesday, August 22, which features a day of learning, planning and networking as we demystify digital marketing and provide tools to succeed in the virtual world. To view the full event schedule and register for Pondemonium 2018, visit [www.pondemonium.com](http://www.pondemonium.com). For more information about the Q Center, visit [www.qcenter.com](http://www.qcenter.com).

For information about Aquascape Inc. and its products and services, visit [www.aquascapeinc.com](http://www.aquascapeinc.com) or call 866/877-6637 (U.S.) or 866/766-3426 (Canada).

**2018 Pond-O-Rama Tour**

The St. Louis Water Gardening Society will present its 18th annual water garden and pond tour, Pond-O-Rama, on June 23 and 24 from 9 a.m. to 5 p.m. each day. The 2018 tour has 36 private gardens owned and maintained

by society members, with water features created by the homeowners, professional landscapers and water garden contractors. Tickets for both days of the tour are \$15 and will be available in early May.

The gardens are located throughout the St. Louis metropolitan area, including Illinois. This event is the only time during the year that St. Louis Water Gardening Society members as a group open their gardens to the public. In addition to owning water features, most of our hosts also are avid gardeners who maintain beautiful landscapes filled with perennials, annuals and shrubs.

This event provides funds for the St. Louis Water Gardening Society to continue their civic mission to plant and maintain the reflecting pools at the Jewel Box in Forest Park, St. Louis, Missouri.

The tour ticket booklet provides location addresses, descriptions and driving directions. For more information, call 314/995-2988 or contact Ginny Mueller at [vcmueller16@hotmail.com](mailto:vcmueller16@hotmail.com). Tickets will be available by mail order in early May from the society's website, [www.slwgs.org](http://www.slwgs.org).

**Lifegard Unveils New Pro-MAX Ultraviolet Sterilizer**

Lifegard Aquatics introduces the Pro-MAX Ultraviolet Sterilizer, featuring a patent-pending, flow-through design with less restrictive, angled inlet and outlet ports that require less plumbing. This unique design enables the easy installation of new or replacement systems, as it can be positioned in multiple ways to fit any tight space.

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Our long-term goal is to bring in and highlight new, underutilized and lesser-known plants, along with the resources to help you understand how to use them in the best way possible. Making you look good makes us look good!

Kelly has gained a reputation as one of the experts in the industry, landing speaking engagements everywhere from Pennsylvania's Longwood Gardens to China's world-renowned lotus festivals. She has participated in research projects with organizations like the U.S. Department of Agriculture and the University of Maryland. She has also co-written two books, "The Lotus: Know It and Grow It" and "The Water Gardener's Bible," and regularly writes for trade magazines like POND Trade and Ponds USA. Kelly also serves on the board of the International Waterlily and Water Gardening Society and diligently tends to invasive aquatic species updates.

Mark and Becky Willoughby, owners of Splash Supply Company, started designing and installing relaxing, eco-friendly landscapes across York County, Pennsylvania, in 1989. They now boast the largest pond design garden and retail store in the region, serving everyone from homeowners to contractors.

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**New, Larger Little Giant Aeration System  
Maximizes the Health of Bigger Bodies of Water**

Franklin Electric Co. Inc., now offers the Little Giant Aeration System in both ½ and 1-horsepower models, providing multiple options for contractors to improve the beautification and biological health of larger-sized bodies of water. The new, multifunctional 1-horsepower model moves up to 800 gpm to aerate up to 1 full acre of water, making unit sizing very simple. It features a 150-foot cord for added placement flexibility and minimizes installation time with its simple design, which lacks bolts and screws.

The Little Giant Aeration System is ready to use out of the box, coming standard as an all-in-one package that includes the float, aerator and a proven Franklin Electric submersible motor to keep water clean and healthy. The system requires 115 Volts for the ½-horsepower unit or 230 Volts for the 1-horsepower unit. Both units require a minimum depth of 18 inches of water to operate. The system can be used for decorative bodies of water, water agitation, ice prevention and mixing.

A unique feature of the Little Giant Aeration System is its ability to quickly transform into an attractive fountain display. An optional conversion kit includes a pump head, nozzle stem and multiple fountain nozzles that are interchangeable between both models. With the easy installation of your selected fountain nozzle, the system provides up to five different spraying patterns — the Sonata, Cantata, Concerto, Staccato and Crescendo — and appeals to any aesthetic preference, with average spray heights from 8 to 15 feet and average spray widths from 14 to 30 feet.

For more information about the Aeration System or other Little Giant branded products, visit [www.lg-outdoor.com](http://www.lg-outdoor.com). Visit the Little Giant YouTube channel to see the product in action.

**Koi Market Becomes Exclusive East Coast Agent  
for Ornafish Japan**

Koi Market and Ornafish announce a strategic partnership that will provide pond and garden enthusiasts a wider variety of high-quality Japanese koi fish. Koi Market is now the exclusive east coast agent for Ornafish Japan Co. Ltd.

Koi Market is New York's largest dealer of quality koi fish and will now bring in Japanese koi for both wholesale and retail trade through its Huntington, New York, location.



Offerings will also be available through [www.OrnafishUSA.com](http://www.OrnafishUSA.com). Koi Market received its first shipment from Japan in early February.

For its initial offering, the team of Koi Market and Ornafish USA will import more than 2,000 Japanese koi from some of the country's best koi breeders. Ornafish Japan works with more than 50 of

Japan's top koi breeders, including Marudo, Sakai, Aoki, Yagenji, Kase, Shinoda, Shintaro and Dainichi. These breeders are part of the Shinkokai, also known as the All Japan Nishikigoi Promotion Association, which is a group of professional koi breeders and dealers dedicated to the promotion of koi keeping in Japan and around the world.

"This partnership gives us the opportunity to import many varieties and sizes of high-quality Japanese koi to American hobbyists at affordable prices," said Shawn Rosen, the president of Koi Market & Ornafish USA.

For more information, contact Shawn Rosen at 516/809-6771 or [sales@koimarket.com](mailto:sales@koimarket.com).

**Atlantic Water  
Gardens Offers 316  
Stainless Steel Spillways**

Atlantic Water Gardens now offers its elegant stainless steel spillways in corrosion-resistant 316 stainless steel in all three sizes: 12-inch, 24-inch and 36-inch. Its standard 304 stainless steel versions are also available.

The new brushed stainless steel spillways are specially designed for use in environments where chlorinated water is used for disinfecting purposes. They also feature integrated bonding lugs for grounded installations and swimming pool applications.

Atlantic Water Gardens  
330/274-8317  
[www.atlanticwatergardens.com](http://www.atlanticwatergardens.com)  
[info@atlanticwatergardens.com](mailto:info@atlanticwatergardens.com)

**BioSafe Systems Announces New Technical Sales Manager of Retail Division**



BioSafe Systems is pleased to welcome Mike Mallon as the new technical sales manager of its retail division. Mike will work directly with distributors, independent garden centers and other retailers throughout the United States, providing customers with technical sales support and account management. Mike will also work closely with the entire BioSafe System team in the continued development of exciting, new organic gardening products and programs within the retail home and garden industry.

“Mike’s consumer product knowledge is a great addition to our sustainable solutions program,” said Tammy Raymond, BioSafe Systems’ retail market segment manager. “I am excited to have him as a part of the retail team.”

Mallon has an extensive background in the retail consumer products industry, including more than 25 years of retail, manufacturing and distribution in garden centers, hardware and hydroponics channels.

BioSafe Systems is celebrating 20 years in the growing industry. Mike and the retail team will be in attendance at many upcoming tradeshows this year, including Cultivate, the IGC show and NGLS.



**2018 Your Pond Farm Trade Show Announces Dates**

Your Pond Farm has released their 2018 show Dates. The dates will be Tuesday, August 28th, and Wednesday, August 29th. The show will be taking place at Bear Creek Mountain Resort in Lehigh, Pennsylvania.

Retailers use the show as part of their strategic planning for 2019. Customers can place discounted orders at the show for their upcoming season.

Your Pond Farm offers a variety of educational seminars on topics such as how to draw customers to stores and e-commerce.

Your Pond Farm is dedicated to expert service, amazing product selection, next-day shipping and competitive rates. Visit their blog at [www.yourpondfarm.blog](http://www.yourpondfarm.blog).

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