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Where the Wild Things Are

Wildlife ponds are nature's hottest hangout spot p.36

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FEATURES

8 A Crisp Canvas POND CONSTRUCTION

Although pool-to-pond conversions are not uncommon in our industry, transforming an old Florida pool into an aquatic playground reminiscent of northern Wisconsin seems like pretty tall order. But with a little artistry, **Kelby Reed** — a Badger State native himself — proved that he and his team were up to the task.

15 The Price is Right - Or is It?

Successfully launching your own business requires sound knowledge of the industry and a competitive edge. But as **Tom Grandy** explains, if you don't carefully calculate your rates, your business could easily sink, regardless of how well it appears to be swimming.

20 The Gold Standard

Standards and regulations exist across nearly every industry to protect consumers and set the bar for quality. **Craig McBride** ponders why the pond industry doesn't adopt its own quality-assurance codes and offers a few guidelines that he believes all contractors should follow.

29 The Holding Tank

In this issue's installment of Best Pond Practices, **Kent Wallace** revisits when and how to implement short-term quarantine systems. Whether you are introducing new koi to an existing population, caring for an ill fish — or winterizing a group of swimmers for a few months, Kent's strategies and experience with these systems can help save you time, money and a lot of headaches.

36 Where the Wild Things Are COVER STORY

Who says ponds are just for fish? If you build a natural or wildlife pond, you're practically begging for additional tenants in your pondscape — and that's not necessarily a bad thing! **Jamie Beyer** has a rundown of all the flying, crawling and swimming creatures that could be eyeing your aquatic real estate. Simply set the stage, and then watch nature play out right before your very eyes!

45 2017 IWGS New Waterlily Competition

John Sou of the International Waterlily and Water Garden Society recaps the winners and honorable mentions at this year's New Waterlily Competition. Special thanks to Olivia Fow for an awe-striking photo gallery of exotic, award-winning blooms that you will not want to miss.

48 Long in The Fin LANGUAGE OF KOI

Thanks to the curiosity of Emperor Akihito a half-century ago, the Hirenaga variety was created from breeding Indonesian longfin carp and Japanese koi. Since then, the popularity of these long-finned koi has exploded, especially outside Japan.

Taro Kodama shows you some distinct features of these specialty koi and explains what to look for when shopping for them.

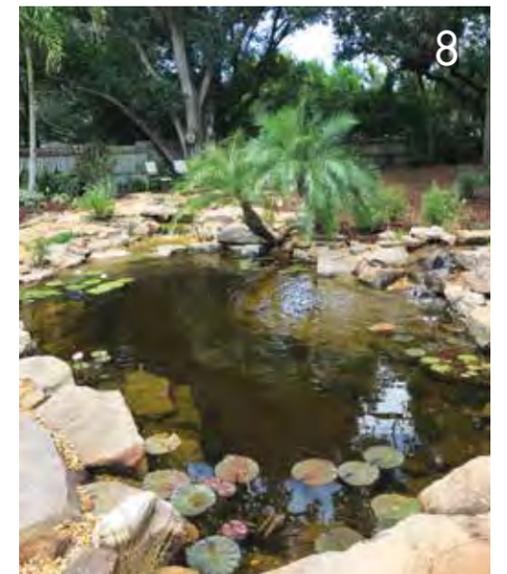


51 Follow the Arrow

Sagittaria latifolia and *rigida* flourish in shallow, marshy waterscapes, mostly in zones 3 to 11. **John Mark Courtney** has the skinny on this arrow-shaped plant and explains how it can bring fowl, floral enhancements and even food to your outdoor sanctuary. Speaking of food, don't forget to check out the delicious recipe for Duck Potato Heffner!

55 Filtration 101

Frayne McAtee takes us back to the basics of keeping a clear and healthy pond. With a carefully designed filtration system and appropriately sized pump — or "pond workhorse" — budget and performance requirements can be met. Frayne details four distinct types of filtration systems, explaining the merits and ideal applications of each, and explains why making the right choices during the design phase can help ensure customer satisfaction farther down the road.



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Upcoming Events

2018

January 9 - 11

Landscape Ontario

Toronto Congress Centre
Toronto, Ontario
www.locongress.com

January 10 - 12

MANTS

Baltimore Convention Center
Baltimore, Maryland
www.mants.com

January 15 - 17

MGIX

Greater Columbus Convention Center
Columbus, Ohio
www.mgix18.com

February 20 - 23

Water Garden Expo

Heart of Oklahoma Expo Center
Shawnee, Oklahoma
www.wgexpo.com

March 3 - 4

**Koi Club of San Diego
30th Annual Koi Show**

Del Mar Fairgrounds
Del Mar, California
www.koiclubofsandiego.com

March 9 - 11

The Central Florida Koi & Goldfish Show
Avanti Palms Resort Hotel
Orlando, Florida
www.cfks.org

February 20 - 23

Water Garden Expo

Heart of Oklahoma Expo Center
Shawnee, Oklahoma
www.wgexpo.com

August 14-16

IGC Show

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

August 22 - 26

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

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Publisher's Perspective

Publisher's "Top 10"

I'm not much of a list person. My son is, though. Every year since he was about 10 years old, he makes a "top 10" list of his favorite songs and albums over the past year. I guess he's rubbing off on me, because now I have an urge to create a "top 10" list of my favorite articles in 2017.



This list is not in any particular order; it's just my own favorite 10 articles looking over the last six issues. Enough jabbering; here I go:

1. "To Tree or Not to Tree," July/August issue by Max Phelps. I love trees. I simply thought this was sage advice for anyone thinking about the placement of their pond.
 2. "The WOW Factor," November/December issue by Joe Pawlak. Did you see those photos? They speak for themselves!
 3. "Spill It," July/August issue by Chris Ostrander. Spillways and patio pots enthrall me. Chris covers the gamut, and of course there were some awesome photos to go along with the article. I want one!
 4. "Water Artisans of the Year," March/April issue by Jordan Morris. The talent out there blows me away. Enough said!
 5. "Light it Up," May/June issue by Benjamin Timmermans. There's just something about a pondscape illuminated at night!
 6. "Level Up," July/August issue by Jack Harju. Jack shared his love of pond building and how he likes to think outside the box. Another photo extravaganza too!
 7. "Winter is Coming," September/October issue by Jamie Beyer. I can't begin to tell you how many people write in every year asking for winter advice. Jamie always seems to have the answers!
 8. "Renovate and Revitalize," September/October issue by Rex McCaskill. Rex used the pond-construction section to go into detail about renovating existing water features. It was a really good read.
 9. "The Lotus Love Affair," November/December issue by Kelly Billing. Kelly, lotus, her son's photos and her wealth of knowledge. Need I say more?
 10. "The Artisan Approach," September/October issue by Dave Duensing. Dave provided some valuable insight from a Water Artisans of the Year judge and a top-level pond builder.
- So many wonderful reads in 2017! Watch for our tally of the most-read articles of the year that we always post on our website. Here's to a peaceful and prosperous 2018.
Happy New Year — and happy PONDering!

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A Crisp Canvas

Wisconsin wistfulness emerges from a Florida pool renovation

by **Kelby Reed**,
Earthscapes Garden Room

Growing up in southern Wisconsin, I never had a pool. I did, however, have a few spring-fed ponds and streams that meandered throughout our property. When the snow started to melt in the spring, my brother and I would race small wooden boats down the rushing streams. In the summer, we would catch hatchling redeared sliders in the lake and bring them home to a pond our father had built. We would invite our friends over to swim and catch as many fish as we could before they had to go home. Every fall, we would return to where we had caught the turtles and release them. When winter came, we would return to the same aquatic playgrounds to play hockey and go ice fishing. In Wisconsin, that's just what we did.

Looking back, it's easy to see how my brother and I have spent the past 20 years in the landscape

industry as designers and project managers for a truly unique landscape company. We have a few very talented designers, but if a new lead has water involved, I'm their guy! All these years later, we are still playing in the water.

The "Pool Hater"

On my way to an early-morning consultation, I breezed through the work description prepared by our garden center, which collects information from our customers in advance of our site visits. There was nothing out of the ordinary at first. It read something like, "large open space, partial shade, some privacy issues to address, interested in plantings, wants natural feel, wants sound of water, maybe remove pool."

What? Remove a pool? In my 20 years in this industry I've been asked to remodel pools and maybe add a few waterfalls, but never remove a pool.

My consultation was in historic downtown Dunedin, Florida. I pulled up to the site with more questions in my head than usual. (Such as, what kind of person doesn't want their pool anymore?) I anxiously knocked on the door and was greeted by Bette, who had one of the kindest smiles I have ever seen — not what I had in mind for a pool hater! After we had talked for a while, she took me to the backyard. While walking through her 1 ½-acre lot, she told me that she was an artist. She even showed me some of her work. She wanted to create a natural and peaceful environment that she could look at while creating her work. There were massive oaks throughout the property that created a park or forest-like feel. She said to me that the yard reminded her of where she had grown

I thought my customer — an artist herself — might appreciate a hand-drawn rendering instead of a digital 3-D presentation.



The existing pool (left) took up most of the backyard space. Demolishing it (center) gave us the flexibility to create something new without limitations (right).

up — northern Wisconsin. It was finally clear to me what kind of a person doesn't want a pool!

We talked for another hour or so about growing up in the grand old Badger State. She wanted something like what we both had growing up, but with a tropical feel. She didn't want to look out the window and see something she had to maintain regularly without ever actually using.

A Different Design

When we are hired to create a design, we first create a conceptual sketch. Then, we create a blueprint or construction drawing. In some cases we will do a 3-D virtual design. On this project, however, I thought, what better way to show an artist my vision than to print out black-and-white copies of pictures of her site, and then draw on top of them? That was really all she needed to see.

Soon, our design was set. We proposed a 30-foot-long, 16-foot-wide, 3 1/2-foot-deep pond filtered by a skimmer, two biofalls filters and a 6-by-9-foot bog filter installed atop a 40-foot-long meandering stream. We agreed



Brutal heat and humidity took quite a toll on all of us!

to salvage and reuse her brick pavers from the pool deck and install natural stone steps and a pathway that led to a flagstone sitting area along the stream. Of course, we would soften the hardscapes with tropical

plantings and palms. All we had left to decide was how to address the pool.

After consulting a few demo companies, we were left with three options. The first option was to build inside and over the existing pool

structure. The spa in this case would stick up so far that it would have limited the size of the pond. The next option was to completely remove the entire pool structure. The only limitation here was the cost.

The third and best option was to remove the pool and break down the top half of the spa to 2 feet below the existing grade. This option kept us under budget and allowed us the freedom to create what we had originally envisioned.

Let the Demo Begin

Like every job site, we had obstacles and issues with access. We were able to remove a section of the fence in the back corner of her property to get machinery and several trucks through. Her fence backed up to a church parking lot. The church allowed us to stage our trucks and material there, as long as we cleaned up after we were done. The demo crew took longer than originally thought, and of course, left a bigger mess than originally promised. This is when I reminded myself and assured my customer that nothing worth having is ever easy.

The time we lost to



At this stage of the process, we start to see the light at the end of the tunnel. Boulders are about to be set, and the waterfall is almost ready for construction.



Despite being helpful in filling the pond for us — and saving us from using city water — the tropical storms slowed our progress during the home stretch.

the demolition was spent collecting stone and staging our equipment. We started construction right at the beginning of the rainy season. Every day at about 2 p.m., we would get an inch of rain. It was our only relief from the heat and humidity, but it would practically shut down operations. The combination of extreme heat and tropical rains took a toll on our crew. We went through one Bobcat and two excavators over the next week and a half, which didn't help production, either. Again, I found myself saying, "Nothing worth having is easy."

Bette on it!

We eventually pulled it together. Boulder after boulder, we set almost 80,000 pounds of stone. We moved countless tons of mixed river rock, hooked up the skimmers and plumbed the biofalls and bog filter. Soon, we were installing the landscaping and hooking up

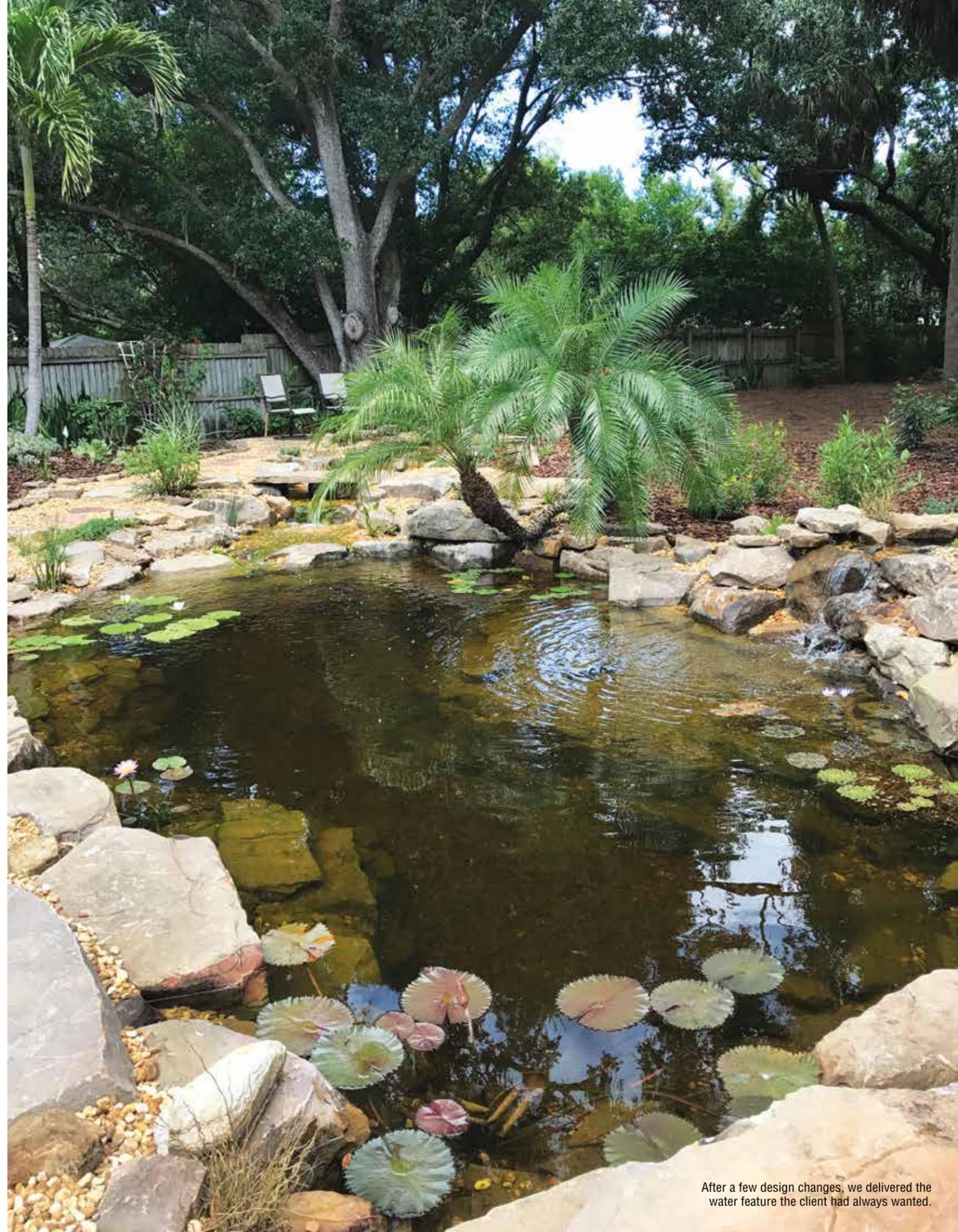
the lights. We graded the surrounding area and restored it to its original form. The reclaimed pavers were laid as if we had never touched them. The bog plants and lilies were installed just before we turned on the hose. Before we knew it, we were showing Bette how to use her automatic dosing system and where to mount the remote for her pumps.

Bette told us that she absolutely loved what we did, and it exceeded her expectations — but this went without saying. I saw her in her studio overlooking us creating our art while she created hers. I came back a few days later to pick up some tools we had left behind, and I could tell by the shifted furniture and flip-flops on the edge of her pond that we had delivered the same joy my brother and I had found in the water so many years ago. Each project seems to get more difficult, but the ability to get paid to play in the water with my brother makes it beyond worth it. ☞

About the Author



Kelby Reed is a designer and project manager for Earthscapes Garden Room in Palm Harbor, Florida. He has 20 years of experience in the landscape design and construction industry and more than 30 years of living the pond life. He specializes in water features and outdoor living areas. His use of natural material that blends seamlessly into his designs is what separates him from his competition. www.earthscapesgardenroom.com



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| Setting **Rates** |

The Price is Right Or is it?

If your rates are wrong,
nothing else matters

by **Tom Grandy,**
Grandy & Associates

All trades, including pond-building, have one thing in common: 90 percent or more of all owners used to be a tech working for someone else. One day in the field, a little light bulb goes off and says, "Gee, the company is paying me X dollars per hour, and they are charging the customer a huge amount of money. If I went into business for myself, I could charge them the same rate — and I would be rich!"

Over the coming months, the seed continues to grow, and one day you make the decision. You quit your job, determined to do a better job than your former boss — while making a lot more money! Typically, the new company owner starts out alone or perhaps with one other person. The shop is their home or garage.

So, what's the first major challenge? How much do you charge? In reality, that's not really a major issue, as you can simply call all over town to find out what others are charging. Their pricing becomes your pricing — or, rather, yours is typically a bit lower, so you can get all the jobs based solely on price.

The irony is that this initial pricing strategy actually works, for a while, at least. After all, your overhead is lower than your competition's, so you're making money. However, really high-quality pond builders grow. With growth comes change — more overhead, inventory, receivables, equipment,

techs and taxes. As costs go up, profits come down, and typically within three to five years, the once highly profitable fledgling company is losing money.

Improper Pricing

This is the main cause of a business's failure. In other words, few companies know what they really need to charge per hour for their services. Thus, putting together a reasonable bid package to cover the real costs of doing business — while still generating a reasonable profit — is lost on many new business owners.

The rest of this article will cover the basic principles of setting proper hourly rates. Be aware that this is normally a full-day seminar or workshop, so we will only hit the high points. The foundational principle of proper labor pricing is that rates need to be calculated from a cash-flow perspective, not accounting. Cash flow is concerned with the real dollars that flow in and out of the company, versus accounting numbers that sometimes use paper dollars. We will discuss some of the

major differences throughout the article.

Equipment-Replacement Dollars

This is a major difference between cash flow and accounting. When a vehicle or piece of equipment is purchased, Uncle Sam typically allows the owner to write off the cost over five years, or 20 percent per year. This becomes a cost of doing business in the form of an overhead cost called depreciation. The term "equipment-replacement cost" looks at the same piece of equipment from an entirely different point of view, asking how many more years the equipment will last and how much it will cost in the future to replace. Then it builds this "future cost" into today's pricing, so when it's time to replace the equipment, the owner has the cash to pay for it.

For example, let's assume a vehicle was purchased three years ago for \$25,000. It is estimated to last four more years, and the cost of replacement will be a net \$28,000 after trade-in. This means the equipment-replacement cost would be \$7,000 per year

(or \$28,000 over four years).

Typically, the equipment-replacement cost will be at least twice the accounting depreciation figure, since it is dealing with past costs, not future costs. The equipment-replacement cost is often a company's second-highest single cost of doing business.

Labor: Direct and Indirect

Indirect labor covers overhead people — normally office staff, owners who do not work in the field and other support staff.

Direct labor covers technicians who are working in the field. Their time is normally billed directly to the customer. Direct labor has significant amounts of non-billable time. Non-billable time is composed of shop time at the beginning and end of the day, travel time between jobs, vacation, sick days and holidays, as well as callback, warranty work and company meetings. A typical service technician making multiple calls a day will have non-billable time in the range of 50 percent. Install crews will be in the 15-to-20-percent range.

Think about that for a moment. If you have a service tech making \$18 per hour, or perhaps \$20 per hour when you include company-matching taxes, that single tech is costing the company \$20,000 per year, assuming 1,000 non-billable hours per year in non-billable time. But, that \$20,000 needs to become part of the company's overhead cost, just like rent, utilities and insurance.

Fixed and Variable Overhead

These are the basic costs of doing business, including gas, insurance, office supplies and so forth. However, when considering overhead costs, be sure to include the following costs that are often overlooked.

- Bad debt is money that is not and will not be collected.
- Long-term debt is past debt that needs to be paid off. This could take the form of past-due taxes, money owed to a supplier, an unpaid line of credit or personal loans. Decide how many years you want to take to pay off the debt and build the repayment cost into the overhead.

• Considering the full amount of a loan is another huge difference between cash flow and accounting. If you have a \$500-per-month loan payment and \$100 of it is interest, the only figure that shows up in the accounting profit-and-loss statement is the \$100 interest. However, from a cash-flow perspective, the company wrote a check for \$500, which flowed out of the company. If the company has a lot of loans, this can be a major reason that your accountant insists that you are making taxable income, even though there is no money in your checkbook! Most of the time when a company purchases materials or equipment to resell to a customer, they will mark up the item to generate a net profit. The markup on the items sold can and will absorb some of the fixed and variable overhead of running the business.

And amazingly, many company owners do not pay themselves a regular salary; they simply take money out when needed. Well, guess what? If you don't build costs like rent, utilities and insurance into your customer pricing, it won't get covered.

Likewise, if you don't build your salary into your cost of doing business, it won't get covered, either. Put together a family budget to determine what salary you need to earn, and then build it in to your cost of doing business as indirect labor.

Setting Profitable Hourly Rates

First, calculate the company's total equipment-replacement costs by listing all vehicles and equipment with more than \$1,000 in value. This will become one of your fixed overhead costs a bit later.

Next, total all indirect labor costs, and be sure to include your costs of matching taxes (Social Security, federal unemployment tax and your state's unemployment tax). When it comes to direct labor, determine the cost of non-billable time, which will become an overhead cost. Also compute the actual number of billable hours to the customer (or the total hours the company pays for, less non-billable hours). Finally, determine the weighted average hourly rate of all direct labor personnel.



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Add up the real cost of doing business, including fixed and variable overhead, direct and indirect labor, cost of non-billable time, full amount of loan payments, equipment-replacement costs and matching taxes. Then, project how much gross profit will be generated through the sale of materials and equipment over the coming year.

Next, you can calculate the overhead rate per hour. Take the total cost of doing business calculated above and subtract the projected gross profit. Then, divide the remaining number by the billable hours you have determined. For the sake of example, let's say your overhead rate is calculated at \$48.78 per hour.

Then, you must determine the break-even hourly rate, or the rate you would need to cover all the company's costs of doing business without a net profit. This is determined by combining the overhead rate per hour (\$48.78) with the average hourly rate of your direct-labor people. If the average rate were perhaps \$16.53, the sum, or break-even rate, would be \$65.31.

Your final rate is determined by adding profit. Let's assume the company wants a 15-percent net profit, so your hourly rate would then be \$65.31 divided by 85 percent, or \$76.83 per hour.

In its simplest form, that is the process. ☞

About the Author

Tom Grandy has more than 35 years of experience in industry and small business. He has worked as the general manager of a service company and is the founder of Grandy & Associates, a firm that holds seminars, two day workshops and one-on-one consulting for business training. Grandy & Associates also writes articles for numerous trade publications. Tom routinely presents at national and state conventions. For contractors who are serious about profitable growth, we also offer our two-day "Planning for Profit" at numerous locations across the country. Go to www.GrandyAssociates.com or call 800/432-7963.



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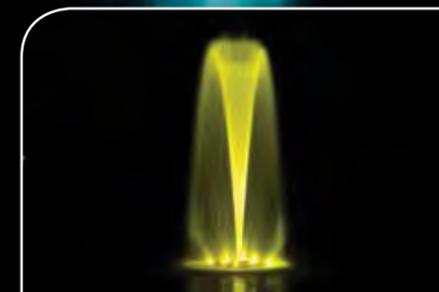
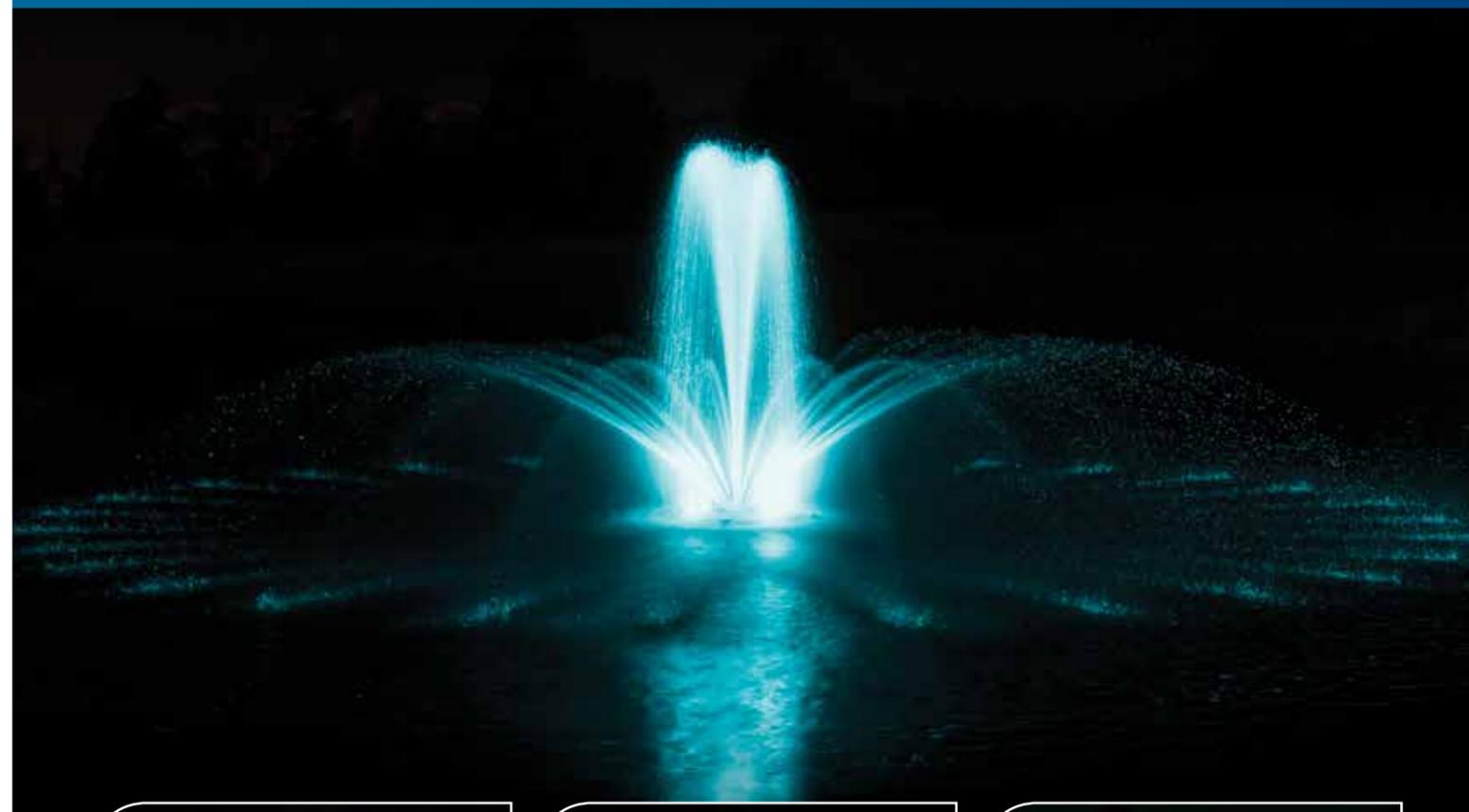


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The **Gold** Standard

Installation tips to ensure quality without question

by **Craig McBride**,
All Aquatics

The water garden industry as a whole is still evolving, and with that, there are few, if any standards or regulations in place for us to follow. As professionals, we are responsible for being knowledgeable about our trade and following procedures and any safety standards set forth by our local government agencies. However, the rest is up to us as we determine the best options for each individual project. The water garden industry consists of many different types of bodies of water, each serving a unique purpose and performing different effects. So, it is hard to have one set of rules or standards to follow in order to build properly and accomplish the best result.

Our industry is essentially a big mix of many different industries. At first glance, it might seem like a simple mix of the plumbing and landscape industries, but it's more complicated than that. There is clear overlap with the pool and aquarium industries, with our adaptation of their filters and pumps. We also cross over into the automotive industry for their sealants, and into the medical industry for various treatments and dosing systems. This all serves a common goal — to

see clean, clear, flowing water. As with any evolution, time must pass for us to perfect these new creations. Thus, we as installers need to adapt and find the best implementation options, while at the same time thinking several steps ahead and, of course, keeping safety at the forefront.

Not all projects I encounter appear to have been completed with the quality or effort required to yield the best performance. This makes me worry that the stage has been set for our industry to be weak when it comes

to following quality standards. Some of this may be driven by the varying state building codes and regulations, but it's even more evidence that our industry needs to voluntarily adopt standards that control the quality of products and installations, similar to what the pool industry has done. This needs to

happen before we are forced by the government to follow methods that may not realistically relate to our wide range of projects.

Continuing Education

We are fortunate to have manufacturers in our niche industry that offer education to help us learn how to properly install their components. Taking these courses is essential to capture a full understanding of the products and allow for proper installation. If you are just starting



Alongside the 2-inch flexible PVC is a 1 1/2-inch electrical conduit sleeve to protect the power cord.

Opposite page: The use of 316 stainless steel hardware (top, left) will ensure a quality install. Compacting your waterfall mound (middle, left) reduces soil movement typically caused by erosion. Place underlayment fabric (bottom, left) before you install the value box. With the underlayment wrap done properly (top, right), the box won't settle, and rodent intrusion is mitigated. Stainless steel screws (bottom, right) should replace old, oxidized aluminum screws.

out, I recommend contacting a manufacturer and requesting information about some of their educational offerings.

For example, companies like Aquascape have online classes that cover the fundamentals of water-garden husbandry, ecology, filtration, water chemistry, installation tips and essential business practices like accounting, marketing, human resources and sales. They also offer hands-on training events that I highly recommend, because you can see firsthand how a professional tackles an installation while actually participating in the process, adding your own artistic skills and sharing ideas with others. Pondliner's annual Water Garden Expo also offers valuable hands-on experience. These education opportunities shouldn't be taken lightly. Too often I see projects completed



Here, we placed geotextile fabric under the Aqua Blocks to protect the liner from being punctured by the plastic corners.

with absolutely no accuracy, which tells me that the installer hadn't taken any training courses. This is ultimately a disservice to the customer and hurts the industry as a whole.

This brings me back to the vital training and education courses that manufacturers offer to help avoid botched projects.

Over my many years in the industry, I have dedicated about 1,000 hours every year to taking training courses and seizing opportunities to work with other industry leaders on construction projects to continue to hone my skill as a professional installer. This allows me to see the many different ways our industry is evolving to create

quality water features with clean and clear water.

What Makes a Quality Project?

There are several reasons why quality often falls low on the priority list and ends up an afterthought. Many times, quality is dictated by the customer's budget, regardless of whether or not a contractor wants the project to be built to the best standards. Sometimes the customer has an unspoken expectation that the contractor will automatically build it at the highest quality, despite the agreed-upon price. Unfortunately for most customers, it turns into a "buyers beware" situation, where the contractor will only build a project according to the budget, regardless of any spoken or unspoken standards or require-

ments. Perhaps if there were more adopted standards across the industry, the customer could count on a proper install in the first place.

So, how long should the life of a project be? Government projects in many cases are required to be engineered to last 100 years. But, with residential projects, the standard typically is five to 10 years. Most water gardens built today with the latest products and technology available could easily last 10 years without structural and mechanical failure. I find that failure in building water gardens is often attributed to base material or aggregate that undergoes movement from improper substrate used or inadequate substrate compaction. Other times, failure can be chalked up to bad plumbing connections or metals that rust or oxidize thanks to incorrectly chosen alloy metals. Also, waterproof membrane (commonly 45-mil EPDM rubber) degradation, lack of protection or improper exposure can cause a project to fail to perform as intended.

Forces of Failure

When addressing the foundation of a water garden, you need to consider the fact that you are creating a structure that will hold the weight of the water in it. It will also be exposed to water movement, which can cause erosion throughout its expected life. I also find that the areas around the feature can be exposed to foot traffic, which will cause additional movement of the membrane and the components it supports.

The best way to insure minimal

movement of the soil or substrate used for your base material is proper compaction. I like to use a motorized jumping jack compactor during the construction of a water garden, focusing on the perimeter of the feature, like the border of the pond and stream areas. During any mounding, I will compact in 6-inch layers to insure there are no voids that don't get compacted. I will also overbuild the mound and then cut the desired shape out of the compacted mound. When the area is compacted and shaped, you can cover the area with the membrane, preventing any erosion from surface water. The areas not covered with the membrane can be covered with a variety of materials like geotextile fabric, mulch or plant materials. In high-traffic areas like the skimmer area, which is most likely surrounded by underground plumbing and electrical equipment, I like to add additional stabilization to the substrate surrounding the skimmer. This can be as simple as building a visual steppingstone set in concrete. For a subtler appearance, use pea gravel layered over geotextile fabric to help disperse the foot-traffic load and prevent erosion.

Coping with Components

This can be a double-edged sword, because even if you do all the right things to prevent failure, the component itself can fail, causing even more insult to injury. I have found that choosing the best materials for the application and maintaining a strong foresight into what the project should look like in coming years will help enhance

At right, you can see how we installed a 1 1/2-inch conduit (top) from the pump vault to protect the power cords from future damage. We placed geotextile (middle) under large boulders for reassurance that the liner would be extra-protective over its life under heavy pressure. We closed off openings (bottom) that were made to pass large plumbing, ensuring that the structural integrity of the plastic walls would not collapse. We also used stainless steel screws with wing nuts for easy disassembly.



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the success of your installation. There is no crystal ball for us to look into, so the best thing you can do is to educate yourself on your surrounding environment and determine how it may affect the components in your project.

One key question to always start with is, "How can you support the product you are installing?" Let's consider a project with power cords that pass from a pump housing to a power outlet. These should be supported and protected from the elements by passing through a PVC conduit. Likewise, control boxes like pumps, rheostats and transformers should be mounted at least a foot off the ground and housed in a weather-tight box. Plumbing also can become weathered and may crack when exposed to the elements. To reduce the risk of cracking, I place all valves below the frost line in an in-ground valve box with a geotextile fabric bottom, preventing settling and pest intrusion. When choosing hardware for mounting, I choose 316 stainless steel because it ensures durability in marine applications. I have found that the

use of aluminum hardware becomes problematic when it comes in contact with other metals over an extended period of time.

Liner membrane should also be sized properly and protected based on the application. Features with stones weighing up to 100 pounds should only have geotextile underlayment fabric under a 45-mil EPDM liner. If it has stones weighing up to 2,000 pounds, it should have, at minimum, the same underlayment placed above and below the liner to avoid punctures over time. And if you're using even larger stones, I recommend the addition of rock-pad underlayment on top. In fact, I would like to see an industry standard implementation of 60-mil EPDM liner and rock-pad underlayment on the top and bottom to ensure that the waterproofing membrane can stand up to all the elements.

I hope this starts to set the stage for our industry to implement "quality without question" into every project, ultimately resulting in water gardens built with standards that all customers can expect. ☞

About the Author

Craig McBride has worked in the industry since 1996, owning and operating companies focused on retail, service and installations in aquatic environments. He has sought out every educational opportunity through manufacturers and environmental organizations to provide his clients with the optimal products and installations for their needs. Over the years he has owned three retail stores, the largest spanning more than 4,000 square feet. His largest pond is more than 2 million gallons, complete with wetland and bog filtration to create a recreational paradise. Contact All Aquatics at 469/400-4769.



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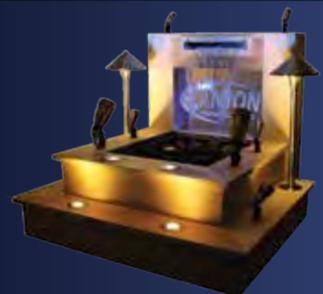
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Best Practices



Seen above is a single-filter tank system with an external pump and soft tank.

The Holding Tank

Revisiting short-term quarantine systems

by **Kent Wallace**,
Living Water Solutions

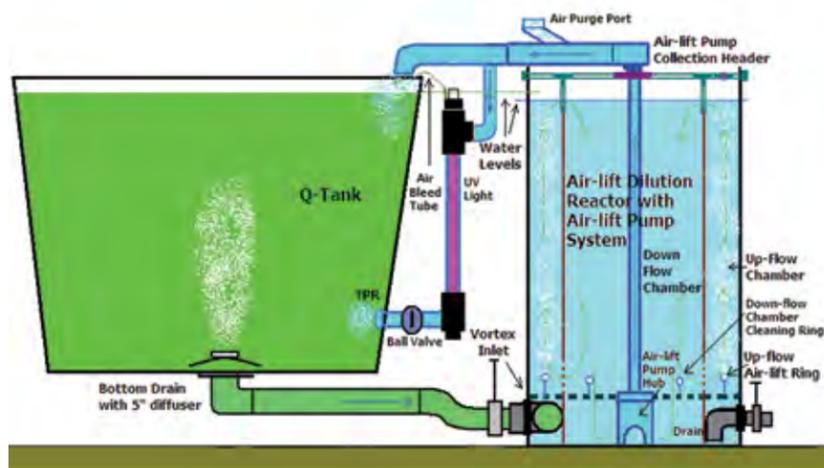
Winter is here, so I feel it's time to revisit quarantine systems. Quarantine is a practice used for winterizing fish in colder climates, caring for sick fish and separating new arrivals for a period before introducing them into your existing system. It's important to have a system that's easy to set up, tear down and store. The system must be large enough to easily contain your fish without crowding and have enough filtration to handle the ammonia load produced. Winterizing requires a

SERIES: Best Pond Practices

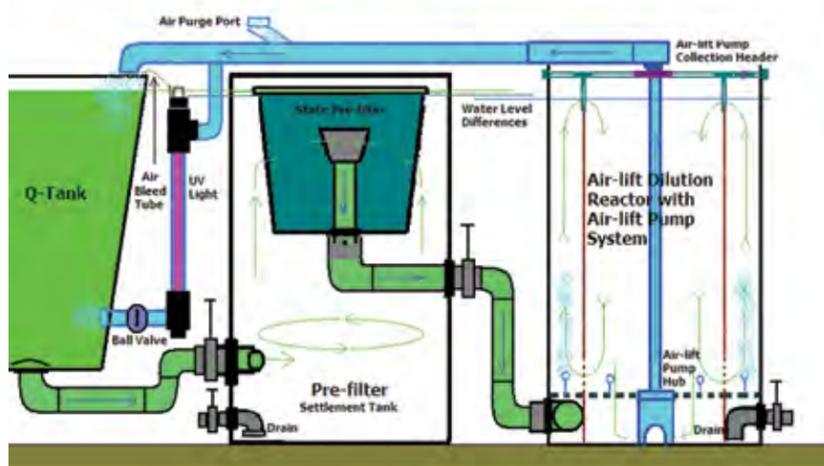
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larger system than short-term quarantine, because there are more fish involved in the process.

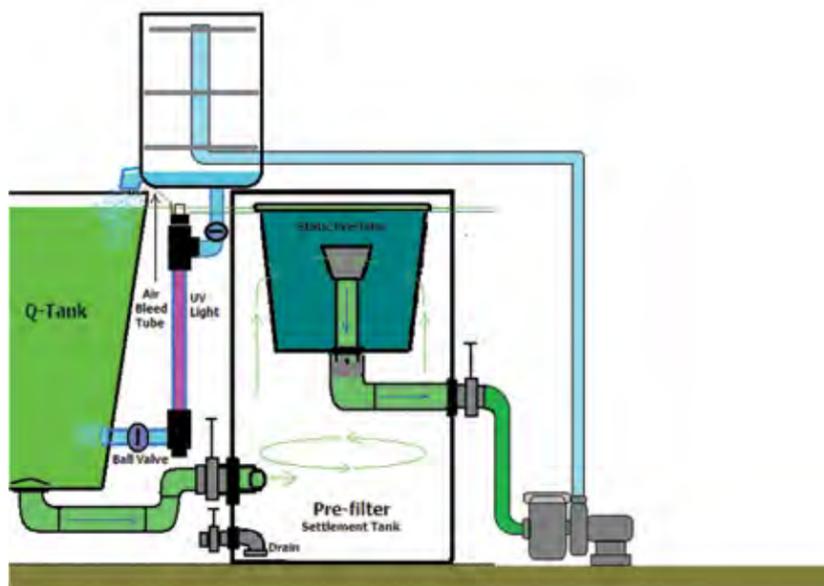
Many times, short-term quarantine has minimal filtration with lots of oxygen, because the time it takes to mature a bacterial colony can be longer than the quarantine period. Caring for a sick fish also doesn't require much biofiltration, and some medications can have adverse effects on the bacteria creating the nitrate cycle anyway. When this is the case, frequent water-quality testing and water changes are the norm. Good circulation is important, and building a system that has a working bottom drain as the primary outlet is always better than removing the water from the side or top. In larger bodies of water, water stratifies, with the worst water quality at



Single-filter system operated by air



Dual-tank system operated by air



Q-Tank with a prefilter and shower filter

the bottom and the best at the top, so moving water from the bottom to the top is important. A quarantine system is much smaller in volume, but that's no reason to treat it differently than you would a larger system.

Filtration is the Key

In a small short-term system, prefiltration or mechanical filtration is the primary goal. The water can move through a gravity-flow outlet to a prefilter from a bottom drain, with a submersible pump in the prefilter that flows water back to the tank or through a direct-suction pump from the tank to a filter and back to the tank. The system must always include a source of dissolved oxygen, which can be an air stone or another form of small-bubble creation in the tank or biofilter, if it's an open-gravity flow filter. Just letting water splash back into the tank is not enough.

When using direct suction, a 1 1/2 or 2-inch outlet is adequate, but when building a gravity-flow system, the outlet must be 3 or 4 inches in diameter. Direct suction is much more hazardous to the fish, and I would recommend always using a large screen over the outlet to prevent a fish from getting sucked in or damaged. I prefer gravity flow for its safety, because the larger pipe sizes slow the linear speed of the water through the piping and don't create high suction when blocked.

Smaller-Scale Systems

One tried and true way to speed up the initial bioconversion process is to remove the media from the filter of choice a few weeks before quarantine and place them in your pond somewhere convenient. They will collect bacteria and detritus and start becoming active media. Just pull them from your pond and place them in the quarantine system filter when needed. Once media have been used, they should never be stored or sealed, as they will go anaerobic. Always store them in an open container where they can dry out. Even used media that have dried out over time will kick-start much faster than new media, because much of the bacteria doesn't really die off. This practice can help a smaller system get started in a shorter amount of time.

Adding starter bacteria to a system with no fish in it is usually a waste of time. With no fish in the tank, the bacteria won't have any



Pictured is a dual-filter tank system with an external pump and 350-gallon tank.

ammonia to convert, so they will just stay dormant until they have a food source. It is possible to prestart a system with ammonia and starter bacteria and test until you get nitrite and nitrate readings. It won't be equivalent to your fish load in most cases, but it will grow rapidly from there.

Larger Systems

In larger systems used for longer terms or a higher fish load, a prefilter and biofilter combination is preferred. Whatever size system you're trying to build, remember the total turnover rate must be much higher than in your pond. Your pond should be at a once-per-hour minimum to twice per hour, depending on the size — and it usually falls somewhere between the two. The smaller the system, the higher the turnover rate should be. A typical quarantine system might be three or four times per hour. I like making filters out of 55-gallon drums because they are inexpensive, and you can do almost anything with them. These drums might seem too

large for a quarantine system, but considering that inadequate filtration volume is one of the biggest problems we face in the hobby — they're not. When using them

In larger systems used for longer terms or a higher fish load, a prefilter and biofilter combination is preferred.

as prefilters or for static biofiltration, the speed of the water through them should not exceed 2,000 gallons per hour. When using them as an aerated biofilter of any type, there isn't necessarily a speed limit. The bioconversion is almost instantaneous between the ammonia and bacteria, but when trapping solids, the speed must be kept down to allow for good water clarity and better trapping ability.

A 3-inch bottom drain line attached to a 55-gallon-drum vortex and static prefilter of some type will flow 1,800 to 2,000 gph at a 1-inch drop of water level between the tank and drum. Sized with an appropriate pump or a larger pump that is restricted with a

valve on the outlet side, a 55-gallon-drum biofilter can be added with the water returning over the edge of the tank as a return. This type of open, upflow biofilter can be

aerated easily, improving performance and eliminating the need for in-tank aeration.

Trickle Towers

Shower filters, or trickle towers, are also a great form of aerated biofiltration. The filter container is placed on a stand above the edge of the tank, and the pumped water flows down through the shower and back into the tank. Shower filter media can be dried and stored and will usually kick-start quickly when the system is set up again. Ceramic media are extremely useful for this, as the bacteria will imbed in the porous surface of the media in ways



These new arrivals went directly into this quarantine system with dual-filter tanks and a 350-gallon tank.

they cannot in plastic media. Skimmers are not usually installed on quarantine systems, because they are typically too large and require too much flow for most weirs to operate on a small system. They also can create a danger for small fish in a small system. Last year, I created a smaller 4-inch circular weir skimmer that works great on smaller ponds and quarantine systems with a flow rate as low as 300 gph.

Dual & Airlift Systems

My own — or I should say, “my wife’s” — quarantine systems are both types. The first is a small “hospital” system consisting of a 350-gallon tank with a 3-inch bottom drain connecting to a 55-gallon-drum prefilter. The system is smaller for convenience, so the drum is cut down to match the height of the tank set on one row of cinder blocks. The blocks also create a space for the bottom drain plumbing underneath. A small

1,200-gph external pump moves the water to a 55-gallon-upflow static media filter that pours back into the tank. The media in both the prefilter and the biofilter is Bacti-twist, which is easily cleaned and disinfected when necessary, allowing this small system to be used as a hospital tank. Aeration is provided with an air stone located in the 1 ¼-inch bulkhead in the lower side.

The larger system is a 1,500-gallon W. Lim preformed pond raised to the height of a 55-gallon drum. It has a 4-inch aerated bottom drain reduced to 3 inches before it goes into the 55-gallon drum prefilter. I reduce it at a sweep tee, because I use this system as well as the smaller one for testing equipment. The water is pumped to a 55-gallon-drum shower filter that spills back into the tank. I use a WLim Wave 1 1/15-horsepower pump at 3,000 gph, which is more than my prefilter should flow, but it works. The water level runs about 2 inches lower than the tank, which is more than I want, but it works. The addition of my new

skimmer on the suction side will correct the flow from the bottom drain by reducing the suction from the prefilter. The media in the shower filter is Bacti-twist in the upper basket and Cermedia MP-2C in the lower basket.

Recently, I’ve moved to creating quarantine systems that run on air, both for the simplicity and the real-time dissolved oxygen content. An airlift system can be one or two tanks — or more. The airlift is created inside the filter, which makes the system easy to set up, operate, disassemble and store. Three and 4-inch bottom drain piping is a must, as airlift flow is, at its core, gravity-flow in both directions. The airlift lowers the level of water in the filter, creating flow from the tank to the filter, and raises it just above water level in the tank for the return.

Whatever system you build, it needs to fit your needs. Calculate the size based on your use, and create something that works for you! 

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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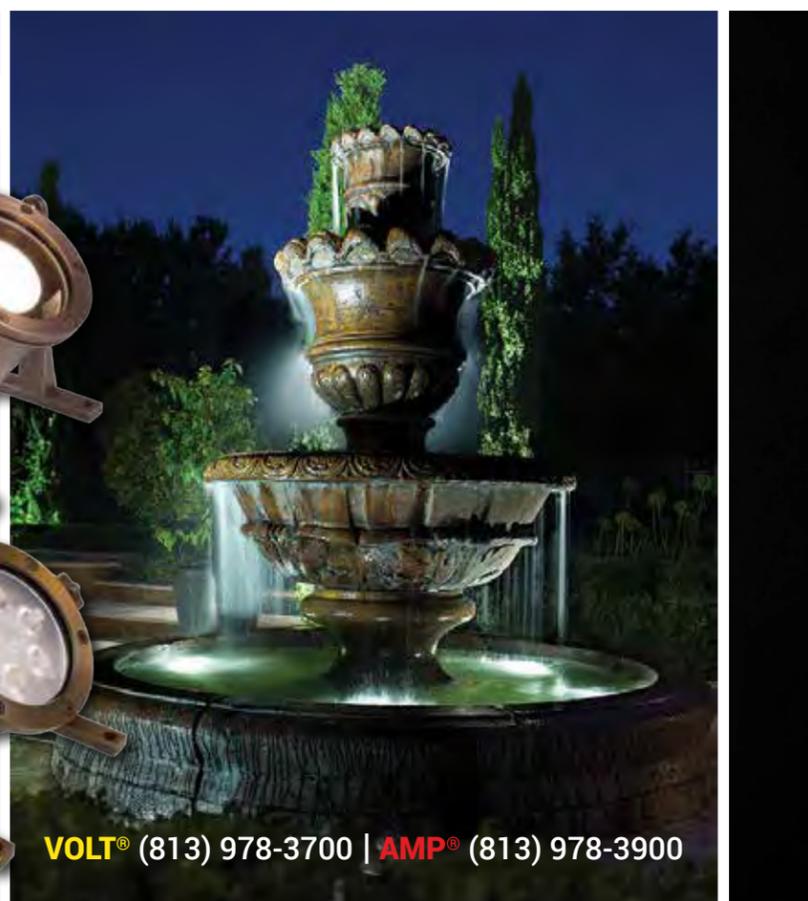
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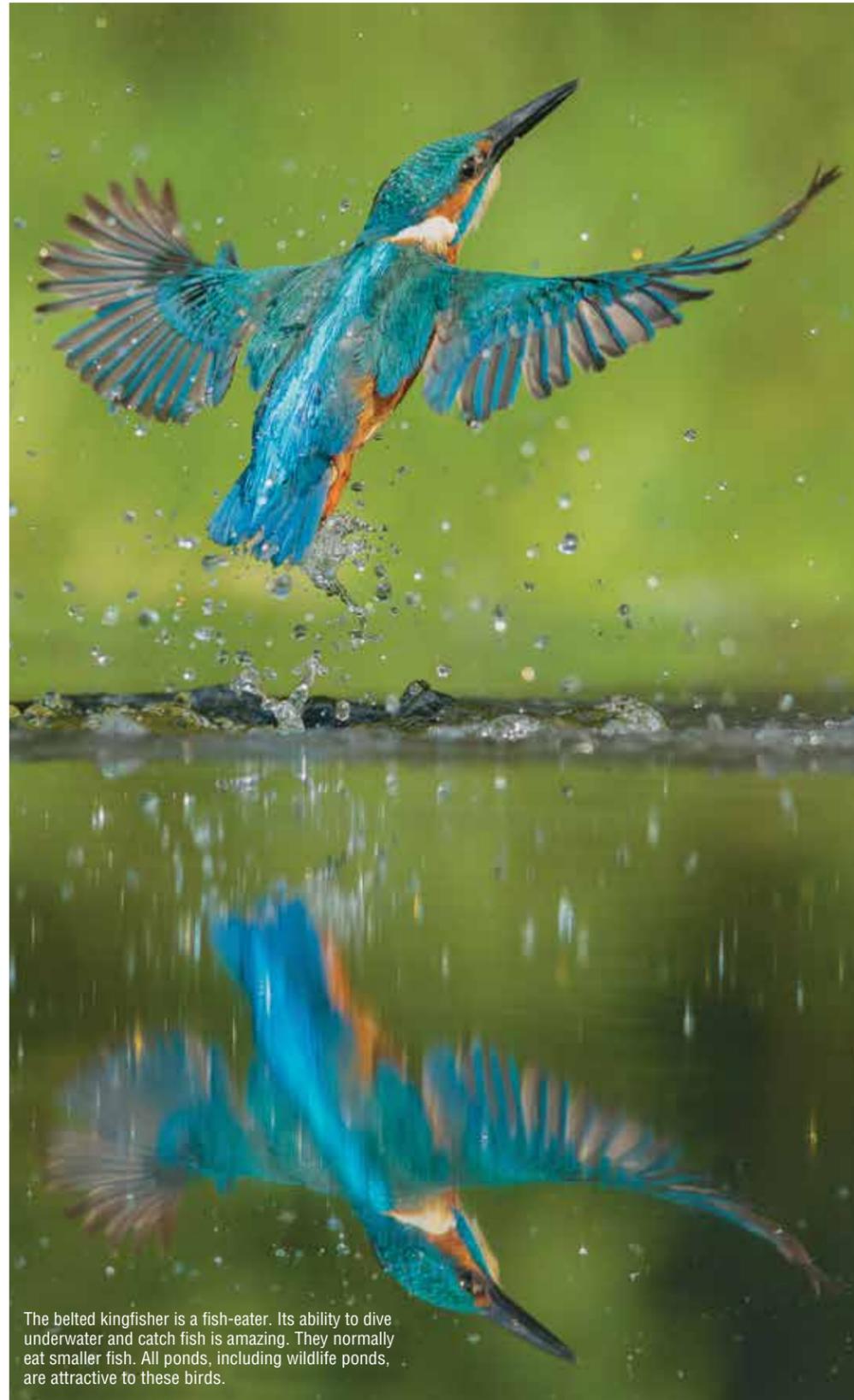
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The belted kingfisher is a fish-eater. Its ability to dive underwater and catch fish is amazing. They normally eat smaller fish. All ponds, including wildlife ponds, are attractive to these birds.

Where the *Wild* Things Are

Wildlife ponds are nature's hottest hangout spot

by **Jamie Beyer,**
Midwest Waterscapes

We water gardeners generally enjoy seeing nature and the ecosystems that surround us. Adding a water garden to a landscape is a great way to add more nature that is up-close and personal. While many enjoy the sound of water and others are drawn to the beauty of waterlilies and fish, there are other ways that water gardens can be enjoyed. Attracting wildlife to your water garden is one of those ways, and it's sometimes overlooked due to fear of potential problems — many of which can be easily solved.

It goes without much debate that simply

adding water to a landscape will attract some wildlife. A simple, dripping water bath is very attractive to a lot of birds. The focus of this article is how to enhance the design of a water garden to attract more varieties of critters. Although most people will not use all these design considerations, you may want to incorporate a few of them.

Natural Ponds

A wildlife or natural pond will change from one season to the next, depending on the age, design and variety of wildlife that the pond attracts. Expecting this type of pond to look a certain way may not happen, so remember to expect the unexpected. I read a few years ago that anything that enters a pond will affect it

Opposite page: Having a shallow edge (top) presents a fun way to hand-feed your koi. The fish will swim partly out of the water to get to the fish food in your hand. However, this shallow water makes it much easier for predators to prey on the koi as well. Occasionally, butterflies (middle) will find shallow water created by a sloped edge inviting for them to get a drink. They call this process puddling. Some species of butterflies seem to be more willing to do this. Fine sand in the sloped edge is more appealing. Bullfrogs (bottom) will eat anything that fits in their mouths. This particular bullfrog is eating a sparrow. This is nature playing out right in front of our eyes!



Honeybees (top) are attracted to water, so providing water in the landscape will invite more of these pollinators. The bees here found the water in the exposed moss along the edge of this water garden. All dragonflies (middle, left) need water for laying eggs. This dragonfly is laying its eggs on an underwater stem. Some will lay them underwater, while others will lay their eggs just at the water line on an exposed stem of an emergent plant. Having different species of emergent plants will provide more choices for these flying mosquito-eaters. Streams provide shallow areas for birds (middle, right), like this pair of grackles, to easily get a drink and take a bath. Every bird in the neighborhood will visit this type of stream. Providing a floating platform will attract some critters as a resting spot. This grouping of leopard frogs (bottom) was fun to see. I placed a piece of 2-by-8 lumber in the water for these guys to make good use of.

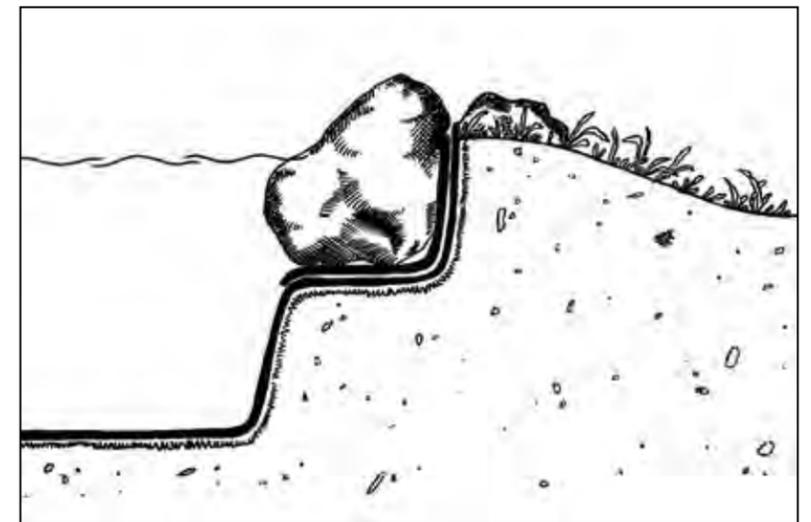
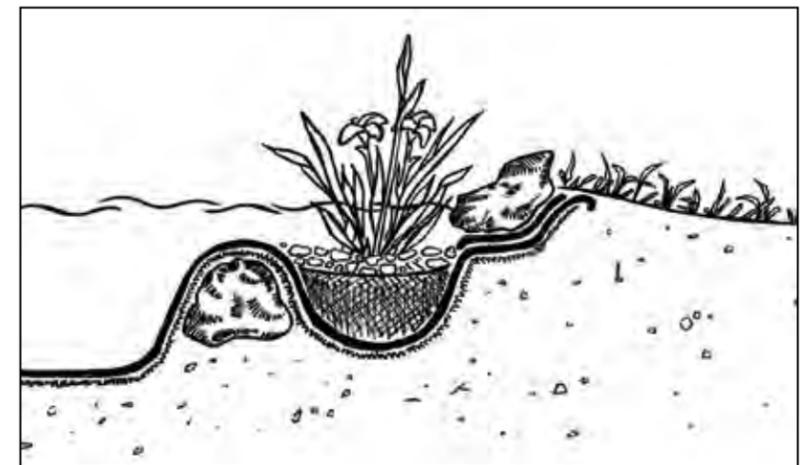
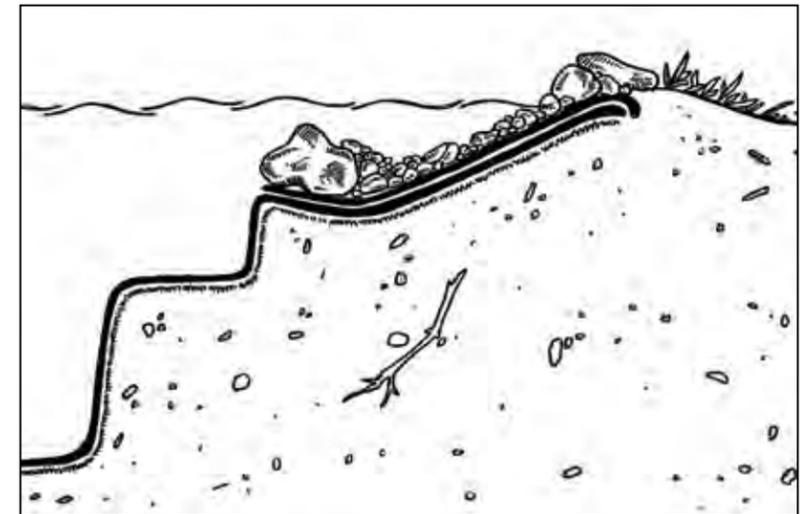
in some way, and I think this especially holds true with wildlife ponds. Some things will be more altering than others, of course. A bird, for example, can bring in fish eggs with its feet. This will not happen very often, of course, but it will on occasion.

Ponds for wildlife are generally not appropriate for high-value fish like high-end koi. Many types of wildlife will dine on fish, and brightly-colored fish are very susceptible to predation. The coloration of native fish makes them well camouflaged. They are generally dark-colored on top and silver-colored on the bottom. It is more difficult for a predator to see a fish with a green or dark dorsal aspect from above. The same holds true when a predator is looking at a fish with a light belly against a bright sky. We have circumvented evolution by selecting brightly-colored fish, thereby making our hand-selected fish more vulnerable to predation. The point is that fish selected for wildlife ponds need to be either low-valued, brightly-colored fish, or native fish that are naturally camouflaged. So, place those expensive fish in a pond that is designed for protecting these fish — not a wildlife pond.

One of my clients' ponds actually became a wildlife pond by chance, not by choice. A belted kingfisher had begun preying on his small goldfish in a pond that was just outside his living room window. He was initially very upset that this bird was eating his comet goldfish, so he asked me to recommend a way to stop this predation. After witnessing this bird perching on a wire directly above the pond and then diving into the clear water, chasing and catching a goldfish underwater, I said, "Wow!" I had never seen anything like it before, and I actually enjoyed seeing nature playing out right before my eyes. My recommendation was to replace the goldfish on occasion and enjoy a unique "birdfeeder." This is exactly what he did. His pond became a wildlife pond, and he found a whole new way to experience his hobby.

Streams, Waterproofing & Bogs

Most water gardens already have a stream associated with them, which is a perfect area for most kinds of birds to bathe and get a drink. Every bird in the neighborhood will be at the stream, almost guaranteed. The process of the birds bathing can add a lot of extra nutrients to the water. Some birds will bring their food to the stream to eat and inadvertently leave some uneaten food in the water. Good circulation and biological filtration will assist in keeping the water clear. However, in some wildlife ponds, these excess nutrients cause single-celled algae to proliferate, creating green-water conditions at times. Many times, these conditions remedy themselves over several years



Top: This sloped-edge design is perfect for inviting wildlife. Animals can easily wade to the right depth to get a drink, bathe or look for food. Middle: This edge is a type of bog design that not only provides a great place for many different kinds of animals, but also gives the edge a different look. This design can be used on the far side of the pond with another type of edge, like a sloped one, on the near side. Bottom: Edges like this one can be not very wildlife friendly. The water becomes deep quickly, making it more difficult for animals to use. It is not as friendly to predators, so it's ideal for high-quality fish.

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as the pond matures.

You might have heard that you should avoid using concrete or any kind of rubber liner to seal the pond. These kinds of waterproofing techniques not only prevent water from leaking out, but also hinder a natural pond's interaction with bottom mud. These interactions are complicated and not completely understood. Using bentonite clay to seal the pond would be considered more wildlife friendly. For example, a lot of critters like to bury themselves in the mud, like frogs and turtles when they overwinter.

Having a bog edge can be very inviting for wildlife. These areas can have some open water and areas that are solid plants. There are many designs for bogs, with some of them serving as a filter that is built for that purpose. This is more of a marsh situation, with many animals already adapted to this kind of habitat.

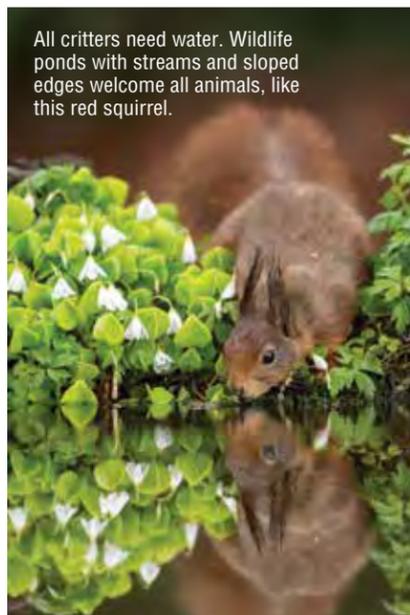
Sloping Edges

Another design consideration is a sloping edge that is incorporated around part or all of a water garden's perimeter. The simple matter of having a sloped edge, as opposed to an edge that immediately drops off into deeper water, will allow wildlife to safely bathe, feed or simply get a drink. Animals that accidentally fall into the water can climb out easily using the sloped edge. Some people feed their fish in this shallow-water edge, which makes it more fun. A lot of insects like honeybees and butterflies will come for a drink. Some shore birds will wade around, hunting for small invertebrates that are in the sand or gravel. Raccoons love to wade into this shallow water to prey on fish or just to play. Some raccoons have been observed washing their food in these situations. It is important to realize that raccoons can become a problem, damaging some plants and eating your fish. You should be prepared for some of these problems from our previous discussion. This is nature, and hopefully, as a wildlife lover, you can live with it.

There are two potential problems with these sloped edges. A sloped edge is difficult for a person to enter a pond easily

without slipping or becoming unbalanced. Always provide an area in the pond's perimeter to enter a pond with some kind of steppingstones or actual steps leading into the pond.

The proliferation of string algae (also known as filamentous algae, blanket weed or moss) can also become a huge issue with



All critters need water. Wildlife ponds with streams and sloped edges welcome all animals, like this red squirrel.

sloped edges. This algae readily grow in shallow-water situations and initially will be a problem. You can add different string algae control methods, some of which are chemical. The careful wildlife ponderer will not want to do this. In most cases, the pond will have string algae for a few years, and it will lessen as the pond matures.

Sediment Buildup & Plants

This brings up an aspect of wildlife ponds that could make it more appealing to some water gardeners. These ponds should not need any kind of sediment removal, at least for many years. The sediment buildup is actually part of the ecosystem, and the anaerobic action in the sediment will inhibit the growth of filamentous algae. A downside to this is that the water can become cloudy when the sediment is stirred up by your fish or other activities.

The use of many different kinds of plants is a critical component in a wildlife pond. Native plants will be much

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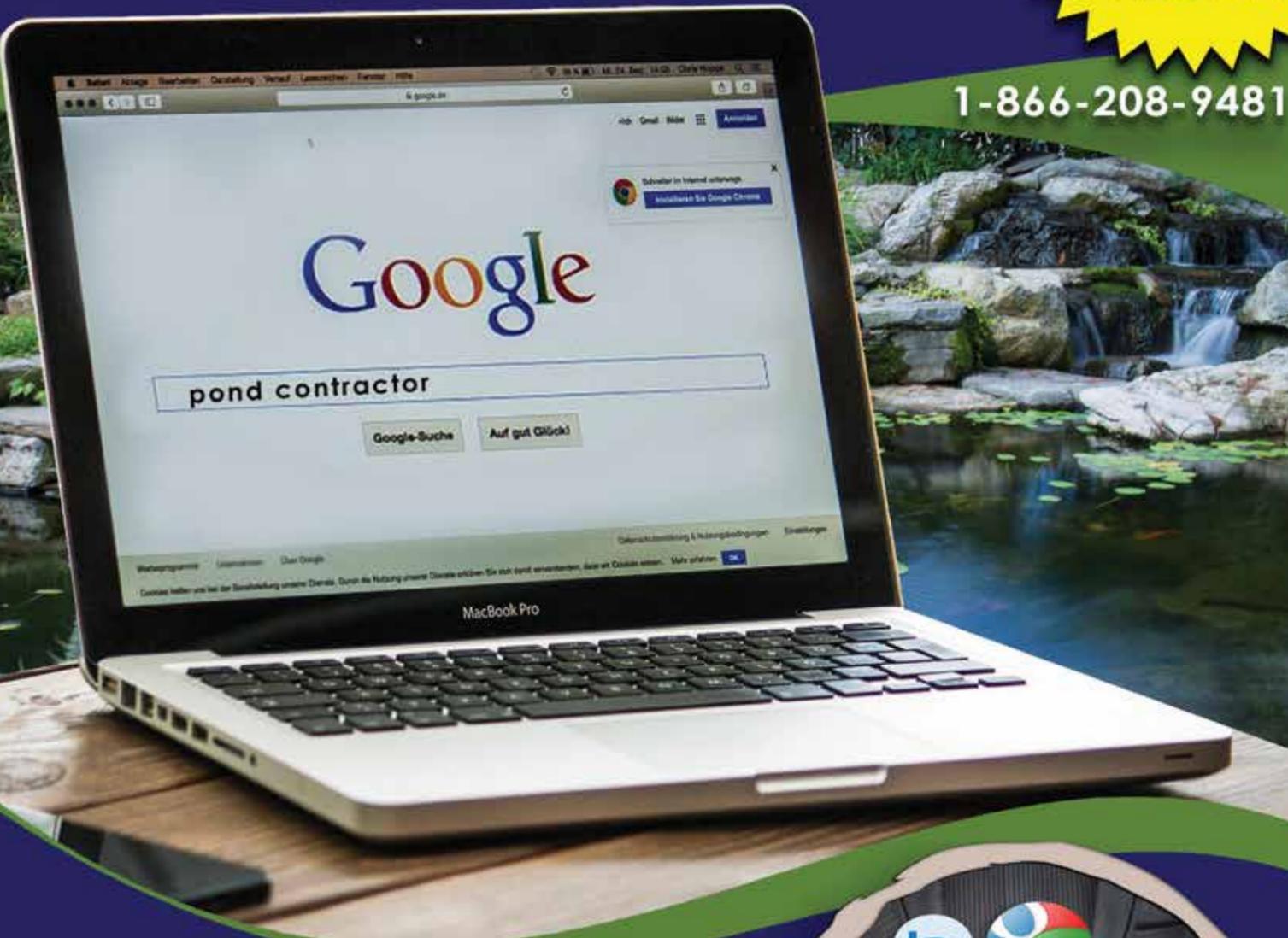
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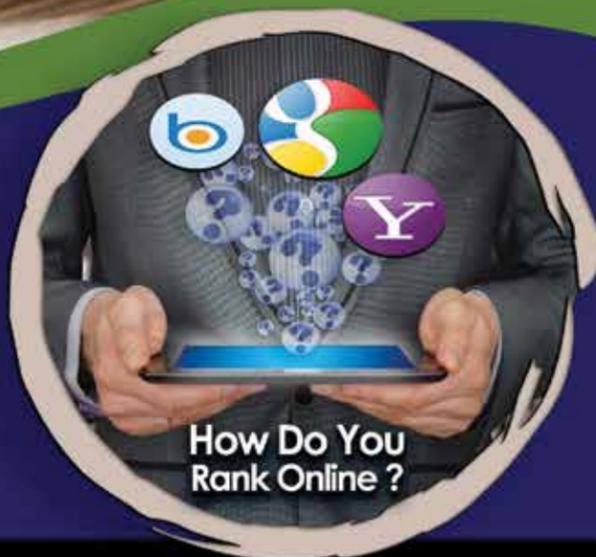
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more attractive to the native wildlife in your area, since they are adapted to each other. Non-natives may be more attractive to humans but may not necessarily be useful to the local critters. Also, be very careful with aggressive or invasive plants that will overgrow a pond unless they are in a pot or otherwise controlled. Cattails are a good example of aggressive plants. These need to be in a pot without holes. Emergent plants that grow above the water line will provide a habitat for many different types of insects, like dragonflies. Plants that float on the surface provide an ecosystem for many other types of insects, like pollinators that need to get a drink. Submerged plants will be the home for many other types of invertebrates, providing more oxygen to the water column due to their respiration under water. These plants are sometimes called oxygenating plants. They will not be the complete answer to providing all the oxygen the pond needs, but they do help. The associated stream will provide

the rest of the oxygen to the water column that the ecosystem needs.

Adding rocks and logs that come out of the water will provide sun perches for many kinds of wildlife. This also provides a ramp to the outside edge of a pond where the edge is not sloped, so that wildlife that accidentally fall into the water can climb out. Some critters will come specifically to these shallow-perch areas to get a drink and bathe. As a bonus, adding these elements gives the pond a more natural look.

Wildlife ponds are an adventure in watching nature at its finest. Letting a pond mature over several years without removing sediment or adding different chemical algae controls is not only easier, but it's also something to watch and learn from. Every wildlife pond will be different. Letting nature take its course is both effortless and an enjoyable learning experience. Watching how a pond changes over time, or as I like to say, how a pond "dukes it out," can be a very special experience, indeed. ☺

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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| The **Winners** |



2017 IWGS New Waterlily Competition

A gallery of this year's
leading lilies

by John Sou,
IWGS Board of Directors
Photography by Olivia Fow



Nymphaea 'Jakkaphong'



Nymphaea 'Arrakis'



Nymphaea 'Amethyst Mist'

This year marked the second year that the International Waterlily and Water Garden Society (IWGS)'s New Waterlily Competition was held at its new home — Longwood Gardens in Kennett Square, Pennsylvania. The entries were submitted from hybridizers worldwide to compete in three categories: hardy, intersubgeneric (ISG) and tropical. In addition to these categories, there was also a Best Overall award.

It was also special year where, as part of the 2017 IWGS Symposium, the attendees were able to visit Longwood Gardens to view these entries in an area outside public view. They were also asked to vote for a People's Choice Award.

All entries were grown under the supervision of Longwood Gardens' senior gardener, Tim Jennings. A total of 27 entries across the three categories reached blooming size in time to be judged in late October and early November.

We would like to thank Tim and Longwood Gardens for their support in hosting the IWGS New



Nymphaea 'Tian Ci'



Nymphaea 'Pink Silk'



Nymphaea 'T0217'



Nymphaea 'T0117'



'Princesse Leia'



Nymphaea 'Muttasindh'



Nymphaea 'ISG0117'

Waterlily Competition. A special thank you also goes out to display design intern Olivia Fow for her photography of all the waterlilies you see here.

Finally, we would also like to thank the judges for their time, support and contribution to this competition. The panel this year consisted of 12 experienced growers and industry experts from around the world.

Brian Galligan (Naples Botanical Garden, United States)
 Farley See (Moore Water Gardens, Canada)
 Iain MacGregor (Water Garden Life, Australia)
 James Allison (Aquapic, United Kingdom)
 James Bennett (Bennetts Water Gardens, United Kingdom)
 John Loggins (Lone Star Aquatic Nursery, United States)
 Mark Wilson (Any Pond Limited, United Kingdom)
 Paula Biles (About The Lotus, United States)
 Rich Sacher (American Aquatic Gardens, United States)
 Richard Gallehawk (Dorset Water Lily Co, United Kingdom)
 Rolf Nelson (Nelson Water Gardens, United States)
 Séverine Lyssens-Danneboom (Agua, Belgium)

The results for the 2017 IWGS New Waterlily Competition are as follows:

Best Overall New Waterlily

Nymphaea 'Jakkaphong' by Jakkaphong Sung-ngam (Thailand)

Best New Hardy Waterlily

First Place: Nymphaea 'Jakkaphong' by Jakkaphong Sung-ngam (Thailand)
 Second Place: Nymphaea 'Arrakis' by Florian Henaux (France)
 Third Place: Nymphaea 'Tian Ci' by Shu-Juan (China)

Best New Tropical Waterlily

First Place: Nymphaea 'Amethyst Mist' by Florida Aquatic Nurseries (United States)
 Second Place: Nymphaea 'T0117' by Florida Aquatic Nurseries (United States)
 Third Place: Nymphaea 'T0217' by Florida Aquatic Nurseries (United States)

Best New Intersubgeneric (ISG) Waterlily

First Place: Nymphaea 'Pink Silk' by Jakkaphong Sung-ngam (Thailand)
 Second Place: Nymphaea 'Princesse Leia' by Florian Henaux (France)
 Third Place: Nymphaea 'ISG0117' by Florida Aquatic Nurseries (United States)

People's Choice Award (tie)

Nymphaea 'Muttasindh' by Nopchai Chansilpa (Thailand) and Nymphaea 'Tian Ci' by Shu-Juan (China)

The IWGS New Waterlily Competition committee members will now begin preparation for the 2018 IWGS New Waterlily Competition. We look forward to seeing a lot of exciting new hybrids in the year ahead! ☘

John Sou manages Watergarden Paradise Aquatic Nursery in Sydney, Australia, and currently serves on the IWGS board of directors. He joined the industry 25 years ago and has worked extensively in aquatic and wetland plant identification, propagation and consultancy. In addition to being a passionate plant collector, he also experiments with hybridizing waterlilies, irises and other aquatic plants. He can be contacted at john@watergardenparadise.com.au.



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Long in the Fin

Hirenaga makes a splash outside Japan

by **Taro Kodama,**
Kodama Koi Farm

There are so many names for this variety — *hirenaga* (“long fin”), *onaga* (“long tail”), *tenaga* (“long arm”) and *hagoromo* (“celestial robe of an angel”) are just a few. I like to use Hirenaga, because it is the most commonly used.

Hirenaga’s History

Few people know that Hirenaga breeding traces back to Japan’s emperor. When the emperor of Japan, Akihito, was the prince in 1962, he visited Indonesia and saw longfin carp. He thought it would be interesting to cross the Indonesian longfin carp with Japanese koi. He suggested this idea to Saitama Prefecture’s Inland Water Fisheries Experiment Station. The station succeeded to develop five Hirenaga varieties. In 1991, 22 Hirenaga koi were released to a pond at the palace. It is no exaggeration that Hirenaga koi would not have existed for our enjoyment without Emperor Akihito.

Unfortunately, Hirenaga did not gain much popularity in Japan. Instead, it became very popular overseas. In the United States, for example, there are Hirenaga divisions at koi shows, while there are none in Japan. I believe this stems from the different aesthetic senses of each culture. Because their fins are long, they are

easy to split or tear. Personally, I think this imperfection might have bothered the Japanese eye.

However, I must admit that Hirenaga have made a very big contribution to the koi world. Because Hirenaga blood can be introduced to any variety, it literally doubles the varieties of Japanese koi.

Identification

Appreciation of Hirenaga is very simple. Though the long fin is its main characteristic, the shape and beauty of the fin is the most important part. After this has been identified, we can check the koi according to the standards of each variety.

When you look at the fins, ideally they should be long and symmetrical with no tears. Take a look at the examples in the pictures. The pictures of koi D and E show some fin faults — they are uneven and curled. Due to the high difficulty of breeding ideal, long fins, it should not be criticized too much. But I believe these examples should give you an idea of what to look for.

After checking the shape of fins, the standards of each variety need to be checked. For example, koi A is a Tancho Sanke. So, we need to examine the shape of the circle on its head. The quality and location of the sumi are important in the Sanke variety.

Koi C is beautiful, otherwise perfect Shusui variety, but it is unfor-



A. Hirenaga Tancho Sanke



B. Hirenaga Ogon
The fins are symmetrically long with no tears — absolutely perfect.



D. Hirenaga Taisho Sanke
The fin is unfortunate, but it is an excellent Sanke.



E. Hirenaga Ginrin Showa
The fin is unfortunate, but one day it will be a very nice Ginrin Showa. It will be interesting when more sumi comes out.

C. Hirenaga Shusui
An ideal form of
Hirenaga



tunate that the pectoral fins are a bit torn. In Shusui, because it is a Doitsu (scaleless) variety, the scales on its back are the most important. You can see that the consistent indigo-colored zipper line goes perfectly from its shoulder to its tail. Then, we look at the clean head and body and hi markings. I must say, this koi has excellent features in this regard. If you come across this kind of Hirenaga Shusui, grab it right away before somebody else takes it!

Koi E is also Taisho Sanke. It has such a nice four-step Kohaku pattern. Sumi, which are emerging, are excellent in quality and location. Although it has some weaknesses on its fin, the standard of this Taisho Sanke is very high.

Where to Find Them

Although Hirenaga are not popular in Japan, there are two excellent breeders in Niigata. If you consider the fact that more than 80 percent of Japanese Koi are exported, it seems natural that some breeders want to breed quality Hirenaga.

I recommend two breeders: the Yamasan Koi Farm, which breeds many metallic

Hirenaga, and the Suda Koi Farm, which breeds many Hirenaga with Gosanke, Kohaku, Sanke and Showa. Please always make sure to check the koi breeder when you are going to buy or sell. ☞

About the Author

Taro Kodama

is the president of Kodama Koi Farm, the largest importer and distributor of quality Japanese koi in the United States. With locations in Japan, Hawaii, New York and New Jersey, Kodama Koi Farm carries more than 35,000 Japanese koi from the top breeders in Japan. Taro, along with his father, Mamoru, not only provide show-winning koi, but they also conduct many koi seminars.



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Follow the **Arrow**

Sagittaria brings food, fowl and floral enhancements to the pond

by **John Mark Courtney**,
Aquascapes Unlimited
Photography by J.M. Courtney

What is there not to love about *Sagittaria latifolia*? For starters, there's its beauty. *Sagittaria* is known for its verdant green, sagittate (or arrow-like) leaves coming off a central stem that is held aloft over shallow waters. White-petaled flowers bloom from

June to mid-August. These plants are often at their best in the withering heat of August. *Sagittaria* is a strong grower and can spread vigorously. Like a friendly bully, it offers habitat and cover to wildlife while protecting against invasive, sun-loving water pests — animal and plant alike. The plants also offer a food source for waterfowl, which reminds me of the saying, "Duck potatoes are crackers for quackers!" More on that in a minute.



Sagittaria latifolia takes its botanical name from the astrological sign Sagittarius.



A colony of *Sagittaria latifolia* creates a natural drift on a shoreline in Central Park, New York City.

The burgundy foliage of *Sagittaria australis* 'Benni' performs well in the dappled sun.



Sagittaria rigida (left) can also be seen underwater with its persistent submergent leaves. The author, John Mark Courtney (right), poses with *Sagittaria*.

Follow the Arrow

The *Sagittaria* has long been favored as an attractive water garden plant and is shown to its best advantage when mixed with *Pontederia cordata* and other wetland species, including bulrushes, which provide a contrasting vertical element. This vigorous aquatic perennial is native to the continental United States and Puerto Rico. *Sagittaria* is famed for its distinctively arrow-shaped leaves and takes its botanical name from the astrological sign Sagittarius — the archer. The plants vary in height and can grow to between 2 and 4 feet tall. They emerge from rhizomes with single, white flowers and form on the central stalk from the base of the plant. *Sagittaria* commonly grow submerged in shallow water or out of water on wet, muddy banks, sloughs, swamps, marshes and the margins of streams and ponds.

Native Varieties

The two most common varieties in the United States are *Sagittaria latifolia* and *Sagittaria rigida*.

Sagittaria latifolia, commonly known as duck potato, is a vigorous aquatic perennial that typically grows 2 to 4 feet tall. The plant features strongly peaked, arrowhead-shaped leaves. Green *Sagittaria latifolia* commonly grows submerged in shallow waters. It is easy to naturalize and will colonize by spreading rhizomes and through self-seeding (Zones 3-11).

Sagittaria rigida, also known as the Grass Leaf Arrowhead, is found in swamps, bogs, marshes and shallow waters in both mud and sandy soils. The leaves appear almost lancelike — long and thin, jutting out of the shallows up to 24 inches. Foliage grows to 2 feet tall above the water line in the sun to partial shade with small white flowers in midsummer. *Sagittaria rigida* is a strong naturalizer (Zones 3-11).

Although not strictly native, we are partial to our own less common hybrid, the *Sagittaria australis* 'Benni' Silk Stockings. Silk Stockings is a



Duck Potato Heffner

- Duck potato tuber (soaked and peeled, about 1 pound)
- Thick-cut bacon (three slices or to taste)
- ½ tablespoon fresh garlic minced
- Salt and pepper to taste
- 1 tablespoon olive oil or butter

Cook bacon over medium heat until crisp. Remove from heat and set aside. Drain excess fat. Wash and remove stalks from the *Sagittaria latifolia* tuber. Peel using a peeler to remove the outer skin of the chestnut-sized duck potatoes. Add the tubers to a hot pan used for bacon along with olive oil or butter. Sautee over medium heat for about 15 minutes until tender and golden brown. Add garlic and sautee. Chop cooled bacon into bite-sized portions, add to sauteed tubers in the pan and season to taste. Transfer to serving dish. Total preparation time: about 25 minutes.

selection of a native Appalachian Arrowhead (Sagittaria australis). There are many types of Arrowhead, but none like this! It was developed by Aquascapes Unlimited and chosen for its fine, green veins over bronzed foliage. The new leaves are particularly lovely with their dark-reddish tones and light veination. For best color, avoid hot sunlight. Morning sun followed by dappled sun or very bright shade is best, especially in warmer

climates. Like all Sagittaria, Silk Stockings grows best in calm, shallow water, about 1/2 to 2 inches deep. The dormant tubers, which form in the fall, are edible and important wildlife food, giving rise to the name duck potato. Some species were known to the Native Americans as Wapato (Zones 5-11).

Managing these plants is surprisingly simple. Spreading by rhizome, the foliage typically dies in the winter, though this is

not always the case. They leave behind tubers and seed and will emerge vigorously in the spring. Control occurs either through removing the flower stem before seeding, or through harvesting the tubers.

Crackers for Quackers?

So, back to that “crackers for quackers” comment I made earlier. Ducks may love these tubers, but humans can enjoy them, too. In the early fall, the Sagittaria produces an edible tuber, or turion. These can be prepared for spring planting — or could become a harvest feast! Lucky for us as growers, we at the nursery enjoy them in what we like to call Duck Potato Heffner (see previous page). Tubers can be stored for up to six months in the fridge, and what’s left uneaten can be planted in spring. Now that’s food for thought! ☺



About the Author

John Mark Courtney is an award-winning designer, avid bogman and lover of all things wild and natural. For the last 15 years, John has been the greenhouse manager for Aquascapes Unlimited in Pipersville, Pennsylvania. He has grown and nurtured from seed more than 100 different genera of native herbaceous wetland perennials for habitat restoration. John has lectured on many topics involving ponds and bogs and has also been featured on television with Martha Stewart. He has a bachelor of science degree in environmental design from Delaware Valley College of Science and Agriculture and completed an internship program at Bowman’s Hill Wildflower Preserve in 1997.
www.aquascapesunlimited.com

Filtration Fundamentals

How to keep your water crystal clear

by **Frayne McAtee,**
OASE

Choosing a proper filtration system is a critical step in water-feature construction. It relies on understanding your customer and their budget, pond conditions and requirements. Proper planning can deliver clean, clear, healthy water, help to work within your budget and live up to the end user’s expectations.

Understanding the features, benefits

and drawbacks of each pond filtration system is the first step. When selecting a filtration type — mechanical, biological and ultraviolet clarification (UVC) — you must weigh the options. Every pond has multiple filtration possibilities, and each type of filtration is ideal for certain conditions. Consider efficiency, maintenance, cost, appearance, reliability and the customer’s expectations when deciding which filtration type to use.



Choosing a filtration system is a critical step in water-feature construction, but with proper planning, clear and healthy water is guaranteed.

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Types of Filtration

In mechanical filtration, water passes through filter media, removing particles from the water. Media are rated to filter particles of varying sizes. The flow rate determines the speed of water flow through the filter. Efficient filtration relies on proper selection of filter media and flow rate. Common types of mechanical filters are those that utilize pressure and gravity as the method of moving water through the filter.

Biological filtration relies on the nitrogen cycle, or naturally occurring beneficial bacteria that convert nitrites and ammonia to less toxic nitrates. Biological filtration relies on an oxygen-rich area for bacteria to grow. Establishing a biological filter can take four to six weeks, so keeping the pond in balance as it establishes its natural rhythm may require some attention. Ammonia and nitrite levels may spike, impacting the health of fish. Water changes and aeration can mitigate the impact of the natural process.

Finally, ultraviolet clarifiers work by damaging microorganisms like algae at the cellular level. Once damaged, single-cell algae clump together and either are captured by the filter or settle on the pond's bottom. UV clarifiers can be added to a filtration system for additional support, but often times they can be found integrated into the filtration products themselves.

Filtration Systems

Using mechanical and biological filtration, and in some cases UVC, in-pond filters are built for ponds that are usually no more than 1,000 gallons. Most are self-contained units comprised of a pump, filter and some sort of water display. An in-pond system is typically easy to install, but it's important to note that there are size limitations and maintenance requirements to consider when using them.

Skimmer and waterfall systems are another filtration configuration to consider. These are comprised of a skimmer unit located at the side of the pond and a waterfall housing that

Understanding the features, benefits and drawbacks of each pond-filtration system is the first step in selecting the best setup for your customer. Different options for filtration systems include (left, from top to bottom) in-pond filters, skimmer and waterfall systems, pressurized filters and flow-through filters.

is typically located opposite the skimmer. This is a multifunctional setup, supporting mechanical and biological filtration, as well as aeration for a clearer pond. The filtration in this system is handled in either the skimmer or in the waterfall. While they

Another system to consider is pressurized filtration, which uses the water pressure developed by the pond pump to push water through an enclosed filter housing with media in it.

are easy to install, a skimmer and waterfall filter systems can have some drawbacks. The maintenance can be something that end users don't enjoy, because they may have to remove the media for cleaning, or perhaps access to the media is not otherwise convenient. Another issue with this type of system is that if filter media get clogged in the skimmer, the water level in the pump area of the skimmer will drop, leading to pump burnout.

Another system to consider is pressurized filtra-



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tion, which uses the water pressure developed by the pond pump to push water through an enclosed filter housing with media in it. It then filters the water and returns it to the pond. One of the benefits of a pressurized system is that water returned to the pond can be directed to a waterfall or mechanically stop debris, because it physically stops debris from re-entering the pond system and promotes the growth of beneficial bacteria. Beads or bio-balls are another media that is popular because they typically offer a large amount of surface area that promotes the growth of beneficial

Bog filters are typically constructed with liner and connected to the pond. A pump from the pond delivers water from the pond into the bog, and then gravity moves water through bog media – usually pea gravel – and returns it to the pond.

water feature located above the elevation of the filter. Many of the pond-style pressure filters can be partially buried, making them easier to conceal around the pond. Pool-style pressure filters, which are sometimes called sand filters or bead filters, can be more difficult to conceal.

When choosing a pressure filter, it is important to understand the media that are being used. Filter foam is one of the best ways to

bacteria. The downside to bead-style filters is that they don't typically do a great job of mechanical removal of debris and they can use a large amount of water during the cleaning process.

Bog and underground filters represent additional options. Bog filters are typically constructed with liner and connected to the pond. A pump from the pond delivers water from the pond into the bog, and then

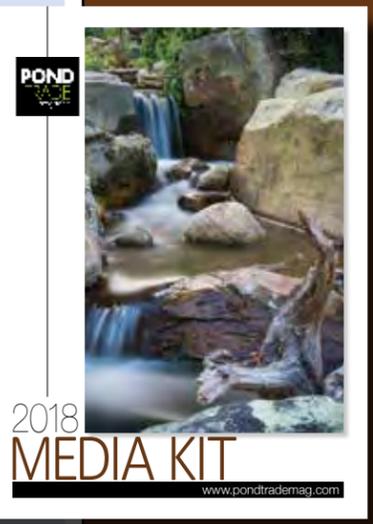


Consider the fit between system and customer, including lifestyle and resource issues.

gravity moves water through bog media — usually pea gravel — and returns it to the pond. An undergravel filter is usually constructed with a system of perforated pipes in the bottom of the pond covered with gravel or rock. The perforated pipe is connected to pump, which either pushes or pulls water through the gravel. The gravel promotes the growth of beneficial bacteria. The downside to both of these systems is that eventually they need to be cleaned out, which can be a fairly significant job.

Finally, you might consider flow-through and gravity filters, which use gravity to pull the pond water through the filter. In a flow-through filter, a pump forces water into the top of the filter, which then flows through various forms of media, including foam pads, brushes and mesh screens, all via gravity. This type of filter is located at the highest point of the system. The clean water is then delivered back into the water feature. These





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can be ideal for any water garden or koi pond, creating cleaner and clearer water as it flows through the media. The downside to this type of systems is that they can be more difficult to mask in the landscape.

Gravity filters differ in the elevation of the filter and the placement of the pump. The filter is located so that the water level in the filter is the same as the water level of the pond. The pump is located at the end of the filtration system and sends water out of the filter and back into the pond. Pumping water out of the last stage of the filter forces gravity to pull pond water into the first stage of the filter. This a very effective and efficient method of filtration, but again, the downside is that locating the filters can be challenging on some projects.

The Pond's Workhorse

The pump, or the "pond's workhorse," supports the filtration system. Pumps come in a variety of styles and sizes, and it is important to choose the correct pump for the filtration system. A solids-handling pump is recommended for any installation that requires the pump to pass debris through it and into the filter.

Multiple options and combinations can make choosing a filtration system an arduous task. Begin by understanding the need based on pond conditions and identifying filtration systems to suit. Next, eliminate options based on the budget. Finally, consider the fit between system and customer, choosing a system that accounts for the customer's lifestyle and resources. 

About the Author

Frayne McAtee has more than 27 years of experience in the water feature and fountain industry. When Frayne built his first pond in 1989, he knew that this was the industry for him. Aside from being an avid water gardening enthusiast, his experience in the industry includes, but is not limited to, product development, manufacturing, marketing, sales, training, troubleshooting and installation. Frayne is a motivated, results-oriented sales and marketing professional with extensive knowledge in both operating a small business and working within an international corporation. He excels at communication and building relationships with customers and colleagues alike. As the director of sales for distribution and commercial at OASE North America, Frayne is truly passionate about water and believes in the company motto, "water is life." Born and raised in Washington, he currently lives in the Seattle area.



Left to right: Kathy DeHaan, Sharon McGarry, Bernie White, Rick Smith, Jacob Johnston, Phil Higgins, Cheryl Radomski and Jake Bradley.

EasyPro Announces New Positions to Support Growth

In response to continued growth, EasyPro Pond Products of Grant, Michigan, announces recent promotions and newly added positions to provide its customers with the best possible customer support in the areas of profitable business development, technical application support, project quotes and quick-response order entry, processing and shipping. These changes became effective Oct. 1, 2017.

Phil Higgins – Inside Sales/Customer Service Manager. Phil joined EasyPro in 2014, and this contributed to the success and efficiency of the EasyPro shipping and receiving department. He soon became the logistics manager. Phil brings team-oriented leadership skills with a focus on efficiencies to the Inside Sales and Customer Service Team.

Rick Smith – Director of Sales/Business Development. With Phil heading up the Inside Sales and Customer Service Team, Rick will focus 100 percent of his time working directly with EasyPro customers and their business needs to capitalize on market trends and maximize profitability and success. Rick, who joined EasyPro in 2009, brings with him more than 36 years of executive leadership experience in sales, marketing and distribution within the lawn and garden and landscape industries.

Cheryl Radomski – Customer Service/Development Coordinator. Cheryl is a 19-year veteran with EasyPro Pond Products, and a face that most of our customers know well. She is a leading tech expert and EasyPro's in-house guru on all order-processing functions. Cheryl brings her extensive background and experience to the customer service/development coordinator position to insure the customer support team continues to operate efficiently in all order-processing functions and product-tech information.

Jake Bradley – Customer Service/Projects Quotes Coordinator. Starting in 2006 at the fish farm and store, Jake has worked in a variety of positions requiring a broad base of technical knowledge spanning fish culture, lake and pond management and water features of all sizes and design requirements. In recent years, Jake not only works as part of the customer support team, but he has also become the lead person handling technical project quotes. Jake brings a wealth of firsthand experience to this important value-added position.

Jacob Johnston – Logistics Coordinator. With his outstanding experience and attention to detail in all aspects of shipping, Jacob will be working with our carriers to ensure the most economical cost of shipping for our customers. He will manage the daily shipping and receiving logistics to ensure getting orders out the door quickly.

Bernie White – Warranty and Repair. EasyPro is excited to welcome Bernie to the EasyPro Customer Support team as of Dec. 1, 2017. Bernie brings with him more than 32 years of hands-on experience providing customer sales and servicing and repairing pumps, electrical equipment and power tools. Twelve of those years included sales and service, warranty and repair for the well respected local True Value Hardware.

Kathy DeHaan – Kathy, who has worked in customer support as an order processor, will be moving over to the Water Treatments Manufacturing Division to assist with manufacturing and order-processing functions. Kathy's order-processing role with the EasyPro division, will be back filled by Pam Postma, who served as the customer support team receptionist in 2017.

Trade News

Evan Moreau Joins BioSafe Systems' Retail Team

BioSafe Systems is excited to announce the addition of Evan Moreau as the digital marketing specialist to their growing retail team. He will assist the execution of BioSafe Systems' marketing strategy and public-relations initiatives including graphic design, email marketing, web development and search-engine marketing for digital and traditional content. He will have a strong focus on implementing marketing activities across a variety of online segments.

"BioSafe prides itself on customer service and industry trends while upholding our sustainable values," said Tammy Raymond, retail market segment manager. "Evan's energy, creativity and experience in social media and digital marketing will support our customers' needs as well as our company's mission to be sustainable. He has proven success in all digital platforms — he is a great asset to the company."

Evan is a native of Connecticut, having graduated from Springfield College with a bachelor's degree in computer graphics. He has been working in the digital-marketing space for the past seven years. He is excited to join the BioSafe Systems team, a family-owned company, with a great understanding in manufacturing chemistries that do not negatively impact the health and safety of people and the environment.

Evan Moreau can be reached at emoreau@biosafesystems.com.



WAC Landscape Lighting Introduces New Hardscape LED Luminares with Technology Advancements

WAC Landscape Lighting has introduced new hardscape LED luminaires for a variety of exterior lighting applications. Designed to illuminate the outdoor space and wash away the darkness, the new Hardscape Luminaires feature dual 2700 K and 3000 K correlated color temperatures (CCTs) and integral brightness control. The luminaires enhance stone or rock columns and retaining walls, facades, steps and other outdoor areas.

Operating with a constant output of 9 to 15 volts, the fixtures deliver up to 330 lumens with a 90-plus color rendering index (CRI) and a life of more than 50,000 hours. IP66-rated and protected against high-pressure water jets, these luminaires are factory-sealed and watertight.

The hardscape fixtures are crafted of corrosion-resistant aluminum alloy and tightly spaced with diffused LEDs for even illumination.

Four sizes are available: 3, 6, 12 and 18 inches; however the latter three offer the technology advancements of CCT selection and integral brightness control. Three architectural finishes are offered: bronze on aluminum, graphite and sand. Mounting accessories are included.

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Central Florida Koi Show
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Saturday 9am – 5pm
Sunday 9am – 1pm

Announcing the 2018 Central Florida Koi & Goldfish Show

"The Orlando Show," as it is known in koi circles, will be held March 9-11, 2018, at the Avanti Palms Resort Hotel (6515 International Drive, Orlando, Florida 32819).

It is the largest judged koi show in the eastern United States, drawing entries from across the country every year. Plus, the judged goldfish show, now in its sixth year, has become the largest goldfish show in the country.

In addition to the judged shows, there will be more than 35 vendors from across the nation with koi, goldfish, pond supplies, aquatic plants, garden art and more. Seminar presentations on koi, goldfish and ponds are conducted all day Saturday beginning at 9 a.m. The show hours are as follows: Friday, March 9 from 1 p.m. to 5 p.m.; Saturday, March 10 from 9 a.m. to 5 p.m.; and Sunday, March 11 from 9 a.m. to 1 p.m.

This year's show is sponsored by ZNA Southern Koi Association and the koi clubs of Orlando, Florida East Coast, Rainbow River and Gainesville. Admission is free. (The seminar series on Saturday is \$10 for the day.)

For more information, including how to become a vendor at the show, visit www.cfks.org.

Permaculture Guide to Reed Beds: Designing, Building and Planting Your Treatment Wetland System by Féidhlim Harty

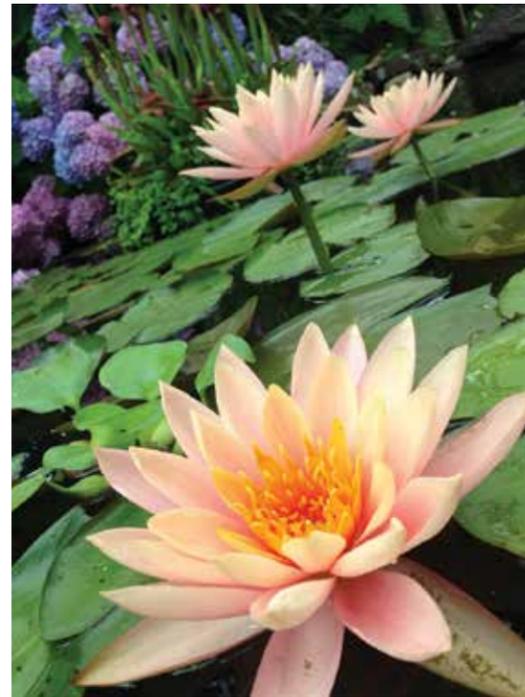
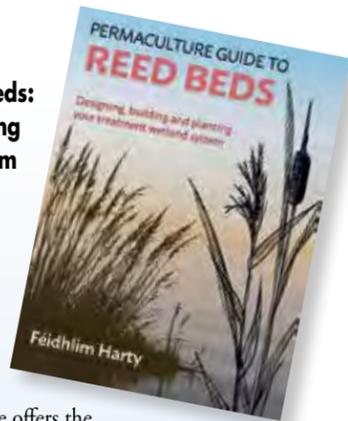
“Permaculture Guide to Reed Beds” is a comprehensive overview of reed-bed systems and treatment wetlands for household effluent treatment. From system selection and design to construction, planting and maintenance, this guide offers the reader a complete how-to manual for getting a reed-bed system up and running.

Reed beds are an efficient, effective, low-energy filter system for protecting local groundwater and streams from septic-tank effluent and gray water. This thorough book explains the background of wastewater treatment and water quality and describes how reed beds work to get wastewater clean again.

Reed beds and treatment wetlands are well established elements within permaculture design, and many of the permaculture principles are readily applied to them. This guide goes a step further than simply explaining how to design and build reed beds. It provides greater insight into permaculture as a design tool and explores how to maximize the yields, beneficial relationships and sustainability of the reed bed, covering the whole sewage-treatment process within your site.

Complete with an overview of planning guidelines for the United Kingdom and Ireland, “Permaculture Guide to Reed Beds” is an invaluable resource for homeowners who want to build their own system. It is also an essential reference manual for permaculture designers, architects, engineers, landscape designers, planners and others with an interest in this area. Easy to follow and clearly set out with beautiful line drawings to illustrate the text, this is a book you’ll find both useful and inspiring.

<http://permanentpublications.co.uk/port/permaculture-guide-to-reed-beds-designing-building-and-planting-your-treatment-wetland-system-by-feidhlim-harty/>



Kelly Billing Forms a New Company: Water Becomes a Garden

Kelly Billing has a long history in the water garden trade and a passion for aquatic plants. Her 31 years in the industry have provided abundant opportunities to plan, design and plant innumerable water features. As the owner of Water Becomes a Garden, her knowledge, expertise and careful attention to detail will be available to small contractors, large pond builders, swim-pond creators and landscape architects to ensure long-term success. Her history is infused with extensive research and education projects using plants to maintain healthy ecosystems. Lake management and stormwater are of particular interest. Her specialty is denitrification through beautification and understanding plants' natural ability to improve the health of aquatic environments. Her insight makes her adept at effective plant use while capitalizing on the architectural appeal. Creating artistic balance is her key to success.

In her new endeavor, she is excited to be fulfilling her dreams of changing the way "Water Becomes a Garden."

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First Major Koi Show of 2018

The Koi Club of San Diego is holding its 31st Annual Koi Show at the Del Mar Fairgrounds March 3-4, 2018.

This is the largest koi show on the west coast and the first major koi show of 2018, with more than 300 koi on display and in competition. Vendors are welcome to sign up for the show, and there will be an awards banquet on

Saturday, March 3, where the distinguished panel of judges will comment on the winners. More information is available at the Koi Club of San Diego's website: www.koiclubofsandiego.org.



Atlantic Enhances Wall Spouts

In response to popular demand, Atlantic Water Gardens is adding to their lineup of best-selling wall spouts. The Ravenna will now come with a round backing plate to match its round spout. We've also added a second cornerless style, the Olivett, featuring an elegant oval spout and plate. The new Verona wall spout is similar in size and shape to the square Mantova, but it is instead oriented on the diagonal. All spouts are built of heavy, solid brass with an attractive oil-rubbed finish, an integrated drip edge to eliminate backflow down the wall and bonding lugs for grounded installations.

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New Holland Construction Showcases New Full Line of Mini-Excavators

New Holland Construction is proud to showcase its new full line of compact excavators at the Green Industry & Equipment Expo in Louisville, Kentucky. Complete with six new models ranging from 1.7 to 6 metric tons, the New Holland Construction mini-excavators offer competitive performance measures on each available model, including extended-life components, liquid-cooled industrial Tier 4 Final diesel engines, an auto-shift traveling system and lower noise levels.

The six-model lineup doubles the size of New Holland's former compact excavator offering and introduces the E17C, E26C, E33C, E37C, E57C and E60C.

Performance features include a rail and interlocking type track, top-of-class ground clearance and excellent dozer blade lift height. An auto-shift travel system automatically downshifts when a load is sensed to increase torque, and it upshifts when the load is no longer sensed.

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then extends for stability.

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The new full line of mini-excavators features industry-leading serviceability and convenience. The design boasts easy access to the engine compartment for daily checks, a convenient switch layout, easy-to-read cluster, touch-screen monitor (E57C and E60C) and a wide, spacious cab.

The mini-excavator cab features excellent forward visibility, with excavator-style window and removable lower window. Retractable windows on the right side and rear mirrors on both sides improve all-around visibility. In addition to its well designed visibility, the cab is optimized for a comfortable operating experience and offers features such as an ergonomically designed suspension seat, adjustable arm rests and a spacious environment to help reduce operator fatigue.

For more information on each model's performance features, serviceability, convenience and configurations, or to locate your nearest dealer, visit <http://construction.newholland.com>.

A Microbe (Face) Lift

Ecological Laboratories hasn't altered our healthy Microbe-Lift fish food, nor have we changed our sturdy containers. Still, we are proud to introduce new, spectacular eye-catching labels that refresh the look of the product you already know and love. Quite simply, we want you to enjoy our products almost as much as your koi and goldfish already do. So, keep a look out when you're shopping for Microbe-Lift later this year. As always, all the information you need is plainly — and now, oh so beautifully — marked on the label.

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MARKETPLACE



Pondliner Wholesale Announces the 2018 Water Garden Expo

Kevin Dougherty headlines Pondliner Wholesale's 2018 Water Garden Expo, which will be held between Feb. 20-23 at the Heart of Oklahoma Exposition Center in Shawnee, Oklahoma.

For the last 31 years, Kevin Dougherty has been speaking to the construction industry. Kevin represents a changing industry — aggressive, realistic and open-minded. Kevin's work and education experience enables him to relate to today's problems and provides tangible solutions in an easy-to-understand style. He has taught thousands of people in various seminars. His client base ranges from family-owned businesses to corporate conglomerates.

In addition to speaking and writing articles, Kevin has served in a variety of leadership roles for a multimillion-dollar specialty services contractor. He has also been a frequent speaker for the Sheet Metal and Air Conditioning Contractors' National Association, Rain Bird Sprinkler Systems, the Mechanical Contractors Association of America, the Small Business Administration and other trade organizations.

Tuesday and Wednesday will feature hands-on construction at the Pond Pro Shop with two pond rehab projections, each centered on unique concepts. Jake Langeslag with Aqua Eden will lead one project using airlift technology, while John Eccles with Waterscape Creations of Oklahoma and the team from Living the Pond Life will complete the second pond using OASE pumps and filtration. Aquascape's Brian Helfrich and Chris Hanson will also demonstrate a water wall installation. All three projects will illustrate real-world applications.

The presentation of POND Trade's 2018 Water Artisans of the Year will kick off Thursday morning, with 24 seminars following over the next two days. Three educational tracks will provide learning opportunities for all knowledge levels. Highlights include Kevin Dougherty ("Developing Front-Line Leadership"), Andy Schoenberger ("The Science Behind Water Pumps"), Ken Rust ("The Nuts and Bolts of Expanding into Lake Management") and Paul Amos ("Firestone PondGard Certification Class").

Demi Fortuna, Greg Wittstock, Jim Chubb and Eric Triplett are among the industry's top experts also scheduled to speak. Attendees can also visit with around 25 manufacturers exhibiting in the trade show and network with peers from across the country.

The Water Garden Expo is free for trade professionals. Visit www.WGExpo.com or call 866/219-3561 for more information.

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