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Features

8 Act Natural

No matter how much time, effort and money went into your pond, if it doesn’t look natural then it won’t have that “wow factor” — and you won’t have repeat business! Taking cues from Mother Nature’s playbook, Alan Koontz has developed some surerfire ways to turn a dull arrangement of rocks and water into a naturalistic oasis ... and he’s sharing his secrets with you.

13 CSI: Pondville

Who’s been killing the aquatic plants? If your pond has become a gruesome crime scene with chewed-up leaves and mutilated lily pads left behind, don’t fret. Paula Biles is on the case! Utilizing her forensic science skills and extensive knowledge of plants and insects, she’ll help you investigate the evidence, track down the culprits and bring the victims back to life!

19 COVER - Crystal Clear Pond

A crystal clear pond can sometimes feel like the white whale or the Holy Grail — that elusive reward that you perpetually chase and never catch. But according to Mike White, the secrets to victory over pea-soup green water may be hiding in two unlikely places: the local stone yard and your indoor fish tank.

25 Koi Skin Scrapes

If your koi are losing their color, swimming sluggishly or “circling the bowl,” don’t call the coroner just yet. Examining your fish for harmful microscopic parasites is easier than you think. Follow Ellen Kloubec’s detailed instructions to perform skin scrapes and find out what’s ailing your precious pets. It might just save their lives!

30 Water Garden Expo

While many pond lovers stared sadly out the window at their frozen ponds last February, over 150 pond professionals were knee-deep in projects and seminars at Pondliner’s Water Garden Expo.

35 Benefits of Bubbles

You probably know that oxygen is vitally important to the health of your fish and plants. But did you know that warm weather (like the spring and summer days ahead) can bring your pond’s O2 to dangerously low levels? Efficient aeration can be the difference between a gorgeous, healthy pond and a bunch of dead fish floating on the surface. In this detailed story, Demi Fortuna shares his knowledge on aerating effectively in all seasons.

42 The Spice of Life

With a history spanning over a century, goldfish have come a long way from their humble beginnings as a cheap food source in China. And while their American legacy began as a “five-and-dime” product at Woolworth, today’s goldfish are anything but ordinary. Joe Pawlak of Blackwater Creek Koi Farms sheds some light on the many colorful varieties of the fish you only thought you knew.

46 Contractor Crackdown

Many pond companies use independent contractors to cut down on labor costs and get projects finished. But according to new legislation, the IRS has much different standards for what constitutes a “nonemployee” than you might realize — and miscategorizing your workers could cost you a pond-load. Is worker misclassification putting your company at risk?

52 Best Practices

The pond industry has long been a “wild west,” with few governing bodies and regulations to control or police it. But are we really better off without them? In the first installment of a multi-part series, Kent Wallace explores the ramifications of the legislative freedom pond builders enjoy — and suggests some best practices to protect the industry’s future.

55 New Association

The Irrigation Association has introduced a new Water Features and Lake Management Common Interest Group. With training and certification opportunities and a forum to discuss best practices, the new CIG is sure to give your pond business a boost.
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Publisher’s Perspective

Happy Spring, everyone! After what seemed like an endless winter (what’s a polar vortex, anyway?), things in the pond world are officially in full swing. I hope that you are experiencing a fuller schedule and that your phone is ringing with new calls and possibilities.

From what I hear out there, the economy is reviving and folks want to build ponds again — those wonderful water gardens, waterfalls and water features that YOU can provide for them! So this issue is all about getting you excited and arming you with information to help make this your most successful season yet.

First off, we have a great deal of wisdom and experience in the realms of pond construction and maintenance. Alan Koontz shares some tips for giving your pond project that naturalistic “wow factor” on page 8, and Demi Fortuna offers detailed instructions on how to perform skin scrapes and diagnose parasite problems.

On the flora and fauna front, Paula Biles will need all her forensic know-how to conduct a criminal investigation (pg. 13) and discover who’s killing the aquatic plants! For those whose aquatic ailments pertain to koi rather than lilacs, turn to page 25, where Ellen Kloubec gives detailed instructions on how to perform skin scrapes and diagnose parasite problems.

If you’re not quite ready to get your hands dirty, turn to page 46, where Mark Battersby explains the nuances (and potential problems) of classifying your workers as independent contractors. Also, be sure to check out “The Round Table” (pg. 50), where Rick Smith lays out the laws and rewards of leadership that will make your company thrive.

Speaking of thriving companies: The Irrigation Association recently formed a common interest group catered specifically to lake management and backyard water gardens and features. Still in its infant stages, the CIG will represent all builders, retailers and manufacturers in the pond and lake industry and provide training and certification opportunities, discussions on best practices and much more. You can read about that on page 55. Happy PONDering!
by Alan Koontz, Carolina Pondscapes, Inc.

Building a water feature — and making it appear as natural as Mother Nature would intend it to be — can be a huge task. Unfortunately, many pond builders have a hard time understanding this when installing a water feature in someone’s landscape.

Many companies offer pond building services with little or no experience, training or artistic ability. Thus, sometimes a pond owner who previously had a pond installed in their landscape by an inexperienced company will want to tear it out and rebuild it to make it look more natural. Anyone can build a pond, but adding enhancements that create a well-constructed and natural-looking water feature will set you apart from the by-the-numbers pond builders. Walking away and being excited about the feature you just built not only brings you happiness, but it also brings out the “Wow Factor” in the customer’s mind.

**Case Study**

Dwayne Chambers (chief marketing officer of Krispy Kreme) and his wife, Dee, wanted their water feature to sound good and appear as though it had been taken straight from the Colorado Mountains, since that is where they are originally from. After evaluating the hillside behind their house, which had a slope of about 45 degrees, we knew we had the perfect setting to create an amazing waterfall using large boulders. We knew the techniques we’d use, too. Using weathered or mossy logs, echo chambers and shadow effects — and paying attention to the characteristics of the stones — will bring out the best in any water feature construction, and that was definitely true here. When constructing a natural water feature outdoors, you must always think about what Mother Nature would do.

**Boulders Must Have Character**

Japanese wisdom states, “You can grow moss, but you cannot grow character.” When visiting the stone yard, look for boulders that have character to them — ones that have been exposed to the natural elements and the environment. Think about what type of boulders will enhance the area you have chosen. There is a place for each boulder, so before you start placing stones, study them, flip them over and look at them from every angle … but try to always make sure the weathered side is up. Broken, triangular and square boulders should be left at the stone yard. They are unattractive when placed in a water feature.

To add to the natural appearance, look for moss and lichen growth and even stones with small plants growing from them. Choose stones that have different layers or grooves in them.

Once you have chosen the perfect boulders, have them loaded onto a flatbed trailer where they can be removed by the use of a Bobcat or forklift instead of having them dumped on the ground with all of the other stones. Chipped and cracked stones will tend to ruin your masterpiece. If you have to move a stone around several times just to highlight the character portion of that stone, do so!

**Creating Shadow Effects**

The goal when creating natural water features is to build them like Mother Nature would have … or at least try to imitate her handiwork! And a big part of that...
natural beauty is lighting. Many contractors make the mistake of not creating shadows in their features. They place boulders that have no irregular shapes or natural appearance in the stream or in the waterfall and expect the water to perform the magic. Stones that are too geometrical in shape do not create interest and end up appearing man-made.

Shadows, on the other hand, provide a 3-D appearance, which draws the eyes into the feature and creates depth. If you look at a waterfall in nature, you will see that the water has carved through the stones due to its force over time. The carved appearance leaves the top of the stone in place, while underneath you will see a shadow where it has been cut away. This provides a real, natural appearance in your feature.

Echo Chambers

When you are trying to increase the sound and direction of the water, adding an echo chamber in the waterfall can be just the trick. Make sure to place boulders in the waterfall where you have a void or cave-like area behind the water. This will enhance the sound coming from that location in the feature. Echo Chambers are like small amphitheaters, creating their own sounds during Mother Nature’s concert.

Mossy Logs

Okay, so the water feature is built, the water is running… now what? This is the time to start visualizing what would happen if there were a storm or a flood or some natural event that Mother Nature decided she wanted in this area.

Step back and observe the entire area around the feature. Are there trees? Are there additional boulders in the landscape or any other existing natural features? The goal is to make this feature look as though it has been there for years, so you may have to add these elements!

Tree limbs or weathered logs that have moss on them will always add interest to your water feature. In nature, you may see fallen trees laying down along the waterfall or up against the side of the river or stream. Adding some type of weathered, mossy log or branch to the feature will fine-tune it and give you that “wow factor.” You see them in nature… why not on a man-made project? By adding a tree branch or log and visualizing it falling over the feature, you again add that three-dimensional effect.

Once the water feature has been installed, it’s time to get as many plants around it as possible to soften the appearance. Look for plants that grow over the stones and stick out into the stream or waterfalls. This will greatly enhance the natural appearance.

Waiting for Spring

With all the elements of our customers’ water feature in place, we are now eagerly waiting for spring to arrive to see it filled with plants of all types. This final touch will really soften the appearance and give the project its striking natural beauty. Then, we’ll be ready for the final step that all pond builders want to perform: stepping back to say, “WOW!” or

Layers, like the ones in this boulder, should be used where the water is flowing. This boulder appears to have had water carving it out over a long period of time. Adding a log to the stream softens the appearance. In nature, you see many trees or logs that have fallen over and have become part of the feature itself.

About the Author

Alan Koontz is the Owner of Carolina Pondscapes, Inc. and has been building water features for over 17 years. He is a past director of the NAPP (National Association of Pond Professionals) and the Advisory Board for the Southern Ideal Home Show in Greensboro, N.C. He served eight years in the US Army as a Paratrooper and Drill Sergeant and has a background in mechanical, computer and electrical engineering. Alan and Sherry, his wife of 27 years, have four children, with whom they spend time with at the gym and ball field. Alan enjoys working out in his spare time with his sons’ wrestling team, and is a certified firearms instructor.
Nowadays, forensic science principles are being applied in many fields. The good news for those of us in the field of aquatic flora is that careful examination of dead and dying aquatics can lead to fewer deaths, happier customers and occasionally, increased profits.

Water gardeners get spoiled because there are far fewer pests to deal with in ponds than in any other garden. Unfortunately, they are unprepared when mayhem does strike. When plants start dying, the result is customer dissatisfaction and numerous complaints. Thankfully, this presents numerous opportunities for knowledgeable businesses to solve pond plant problems quickly and profitably.

Let’s begin with an examination of the evidence.

**Mysterious Holes, Spots and Tracks**

Different insects and small animals that prey on aquatic plants each leave a specific kind of damage. The good news for those of us in the field of aquatic flora is that careful examination of dead and dying aquatics can lead to fewer deaths, happier customers and occasionally, increased profits.

Water gardeners get spoiled because there are far fewer pests to deal with in ponds than in any other garden. Unfortunately, they are unprepared when mayhem does strike. When plants start dying, the result is customer dissatisfaction and numerous complaints. Thankfully, this presents numerous opportunities for knowledgeable businesses to solve pond plant problems quickly and profitably.

China Mark moth larvae are nefarious destroyers of lily and young lotus leaves, lurking on the undersides among harmless snail eggs.
list are large snails and various caterpillars. Snail damage usually starts along leaf edges and quickly expands to huge swatches. Caterpillars are easy to spot since they move slowly and leave droppings. Some cause big holes all in a row (leafrollers) while others only eat the top leaf layer. Their destruction appears more irregular than most other leaf damage. Harmless small snails (like ramshorn) often appear on damaged leaves but are not at fault; they’re just cleaning up the debris. It’s only when some -thirds become more common as everyone in the neighborhood uses sprays to enhance the leafy aquatics, usually in dry conditions. These tiny insects literally cause a more subtle distortion in some leafy aquatics, usually in dry conditions or climates. Tiny insects literally suck the juices and color out of leaves, leaving faint webbing and tiny speckles. Severe aphid infestations cause enough damage on new leaves to make them curl and become stunted.

**Underlying Causes of Violent Crime**

Dastardly plant killers almost always attack sick plants, since healthy specimens can defend themselves. So the first sign of invaders is likely to appear on plants that are stressed. Overcrowded and overgrown plants are constantly fighting for limited space and nutrients, which makes them highly stressed. These conditions are the most frequent causes of poorly performing plants (especially lilies and lotus).

Unhealthy plants are prime targets of opportunity for nefarious killers. The first signs of attack will appear on new growth or dying and dead leaves. Elaborate sleuthing is not required to prevent plants from becoming easy prey. Just watch for the first signs of aquatic overcrowding and nip them in the bud — pun intended. (The March/April 2014 aquatic propagation article covered this in more detail, with photos.) Regular reporting and dividing is easier than waiting until the overgrown plant mass is being circled by buzzards. Then it will need protection from the baddies and major surgery. Reporting is also an excellent opportunity for add-on sales — supplies, fertilizer, services and classes.

**Case Histories**

Just as in any criminal investigation, getting a detailed case history from the plant owner is necessary to obtain an accurate diagnosis of the problems. Ask the following questions to reconstruct conditions leading up to the crime:

- When was the plant bought, repotted, and divided?
- How is the pond operated, fertilized, watered, or drained?
- Is there any evidence of animal activity or predators?
- Are other plants and pond denizens out to harm aquatic plants?
- Are overcrowding conditions likely to develop?
- Are there any underlying causes of violent crime?
- Did the pond plant mass have signs of attack, or did the invader catch the owner by surprise?

**Nutrient deficiencies may cause distorted lily pads. Notice the new leaves are normal after repotting.**

**Ugly, Contorted Limbs**

A waterlily may have distorted pads in spring because of a nutrient deficiency that it will outgrow after reporting. Crispy and curled leaves (or flowers) are caused by excessive heat or drought. Luckily, new growth usually returns to normal when the extreme conditions pass. Rolled up leaves of cannas and other broad-leafed aquatics are sure signs of leafroller caterpillars enjoying a salad in the pond. Mites and control things.

**Dangerous Shifty Behavior**

The first symptom of something amiss with a pond plant is shifting leaf colors. This is not the normal yellowing of mature leaves as they fade and die. It is a color change from healthy deep green to sickly yellow and is a sure sign of nutrient deficiency. When left untreated this leads to plant starvation, which leads to reduced blooms, which leads to unhappy customers, which leads to money out of your pocket to fix things. So … pay close attention to changing leaf colors! If you are colorblind, get help to recognize those starving yellow-green colors that indicate a lack of fertilizer or pest damage.

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fertilized or divided, and what size is the pot?
What are the symptoms, especially changes in leaf size and color or flower numbers and frequency?

Digital Sleuthing

If your investigation gets stuck, a bit of technology may help. Cut off the injured leaf or blossom — along with the culprit devouring it. Then, take a good, close-up photo of the perp in action and save it on your computer.

Next, go to Google image search, click on the camera icon in the search bar, drag and drop your image into the box and click “Search by image.” Google will search for similar images to match the one you provided — potentially with identifying data. Hopefully you will get lucky and your mystery killer will be identified!

After the Arrest

After the perp has been caught, the obvious step is treatment for the victim. This article doesn’t have room to provide all the options, but here are some strategies and resources. The most critical step is to act while the infestation is small and easily contained.

Use treatments in this order; it is the best way to go easy on affected plants, fish, water quality and environment.

The first level is the least invasive: treatment by hand. Remove as many damaged leaves as possible, then destroy or burn them. (Leave at least four or five pads on lilies.) This prevents spreading the problem and makes the pond look better. Squish invaders when possible, like China Mark moth larvae, caterpillars and snails. Spray aphids off with a hose blast, then overflow the pond or container garden to wash them away. Repeat as needed.

The next level of attack also avoids chemicals. Leave a layer of newspaper over aphid-infested leaves for an hour to drown the little buggers. Other steps to combat chewing insects are to sprinkle diatomaceous earth on leaves or use Bt (Bacillus thuringiensis), natural bacteria that only affect chewing insects and not fish, pets or people. It is the active ingredient in many biological controls used for terrestrial and aquatic plants.

The final level of treatment is chemical, starting with the least toxic. Whenever possible, remove the affected plant from the pond for treatment, rinse it off and then return it. In some cases it might be more cost- or time-effective to replace the diseased plant with a healthy one.

Wrapping Up the Case

The aquatics you sold, installed or maintain in clients’ ponds are counting on you to keep them healthy, thriving and beautiful. So stay tuned to slight changes in their appearance and conditions. Be vigilant for warning signs of danger to prevent needless plant crimes before they happen. The lotus will thank you. The lilies will reward you with blooms. The marginals will jump for joy. And most of all, your clients will think you can walk on water. Case closed.

Five Steps to Crime-Proof Your Aquatics and Prevent Senseless Deaths

The only thing more important than catching criminals is keeping them from attacking in the first place. These steps keep the plants healthy, the pond more attractive and the water quality better.

- Keep plants healthy and well-fed
- Regularly spray foliage to wash away potential pests (e.g., when topping off)
- Trim off dying blossoms and leaves that can harbor invaders
- Repot or divide aquatics before they become overcrowded criminal targets
- Teach pond owners to recognize warning signs of plant problems

About the Author

Paula Biles was diagnosed at an early age with CPO (chronic plant obsession). The constant compulsion to have growing leaves and muddy hands led to an obvious treatment: water gardening. Paula belongs to the Garden Writers Association and has been a regular columnist for numerous hobbyist and trade publications. Her articles and photographs have appeared countless times in water garden magazines, newspapers, books and online.

Large snails leave wide areas of deforestation starting around the edges. Small aquatic snails usually don’t cause problems.

Extra-hot summer sun can burn lily blossoms. Cut burned ones off. New flowers should be okay.
So You Want a Crystal Clear Pond
A (nearly) maintenance-free system for clean, beautiful water

by Mike White, White Water Filters

When I was asked to write about what it takes to have a crystal clear pond, a lot of ideas came to mind. This is a topic I could easily write an entire book on and still only scratch the surface. So instead of glossing over all the factors contributing to a crystal clear pond, I will focus on the most important one: filtration.

There are several different types of filtration, but the two that will have a major impact on the clarity of your water are mechanical and biological. While both of these filtration types can be man-made or naturally made, I am going to cover man-made filtration specifically.

Of course, just because we are building the filter doesn’t mean that we can’t use natural materials for the media. Thus, I’ve chosen to write in detail about a natural media that, in a lot of circles, may be considered a dirty word: rock and gravel.

The grid piping is being installed to utilize as much of the bottom surface as possible.
Rock and Gravel

A very old type of filtration media, rock and gravel were used for a long time but have lost favor with many ponders. One of the reasons for the falloff is that the surface area per cubic foot is not very high — or so people think. Yes, rock is a solid material that takes up a lot of space, but it is also a natural material that’s formed on a very fine structure and then is eroded on a microscopic level. With that in mind, the surface would have a fairly high microscopic surface area, which is never included when talking about gravel surface area.

Even taking that into consideration, a filter using rock or gravel will require a larger footprint to handle the same size pond as some of today’s newer medias. But the smaller the filter, the more frequently it requires maintenance. Thus, the small amount of maintenance required to maintain many rock or stone filters is not easily accomplished with other media.

Rocks on the Bottom

When we talk about putting rock and stone on the bottom of the pond, we immediately stir up passionate feelings in some people. There is a lot of debate about whether a pond should have stone on the bottom, and the argument boils down to the buildup of debris in the gravel.

There is a lot of debate about whether a pond should have stone on the bottom, and the argument boils down to the buildup of debris in the gravel.

Undergravel Suction on a Small Scale

What is an undergravel suction grid filter? Well, most of you are familiar with its smaller counterpart: the undergravel suction filter in aquariums. A filter like this is built with thin slots in the plate, which is supported off the bottom of the aquarium. Small gravel is placed on top of this plate, and water is sucked through the gravel and the slots.

These filters work great for a while, but then they need to have a lot of maintenance done or they fail. By “maintenance” I mean the gravel on top of the filter suction plate has to be cleaned. Anyone who has done this maintenance on his fish tank knows it is not a fun chore. In a busy aquarium full of life, waste and debris quickly build up in the slots, causing the gravel to clog up faster than you can (or want to) clean it.

Ponds vs. Aquariums

If we want this type of filter to work in a pond, we have to look at why it has problems in an aquarium. The real difference between the undergravel grid in a pond versus in an aquarium is the space in the grid. In the aquarium, the space between the pieces of gravel and in the slots in the suction plate is very small compared to the waste produced. In order for the system to allow water to flow through and not clog up, the waste has to be almost completely eaten by bacteria. This process takes longer than it takes for the gravel to clog up. Therefore, the filtration simply cannot keep up with the waste. The filter clogs up and fails.

To avoid this problem in the pond I built, I designed the undergravel filter to have a series of pipes on the bottom with ¾-inch diameter holes drilled in them. The pipes were buried in ¾- to 1-inch round gravel with about two inches above the pipe. The spacing between the pieces of gravel is fairly large, and the holes in the piping are large compared to the waste to be broken down. All the holes in the suction pipes are six inches apart, providing the waste a lot of area to fill.

In this grid there are six inches in every direction that would have to clog up before this filter would need to be composed of gravel.
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Half the bottom of this pond is undergravel suction grid, and the other half is undergravel pressure grid filter — all being run off submersible pump.

Success Story

Earlier I wrote a little about the 22-year-old pond with a gravel bed that has never been cleaned. This happens to be my own koi pond and my design. Located in Batavia, Ill. (about 35 miles west of Chicago), this pond was built to be as maintenance-free as I could make it.

No, it is not completely maintenance-free … but it is close. It is about 18,000 gallons and requires an average of three minutes of maintenance a week. None of the maintenance is spent on the undergravel suction grid filter. The pond has never been emptied or cleaned since it was built. Based on what I have seen, the filter will not clog up as long as I am alive or as long as the liner lasts. My guess is that the liner will last for another 25 years.

I did make a mistake when I designed and built this pond. I used ¾- to 1-inch round limestone gravel. The problem is that after 22 years, the limestone gravel is shrinking in size. I believe I may have to remove this gravel and replace it with gravel that takes longer to erode.

Of course, I never thought that the filter would go this long with no maintenance required. Sometimes you stumble on the right combination of ideas and designs and things work far better than expected. Is it working in Illinois because of the climate but possibly would not work elsewhere? I would say no. I just returned from California, where I saw a pond that’s about six years old and has one of these filters. It is over-stocked with koi, and they eat well. But the grid is working great and has not been cleaned. I saw this pond two and a half years ago and it looked good then — but it looks even better now.

Will this design work in every situation? That I can’t answer, because this type of filter hasn’t been used in every possible circumstance there is. But it has worked perfectly every time that I know of it being tried.

I have also used this system as a pressure undergravel grid filter, and it has performed perfectly for the last seven years. The only complaint from that customer is that the water is too clear. A suction undergravel grid filter normally uses an external pump or air lift system to run it, but a suction filter can also use a submersible pump. A pressure undergravel grid is built similarly to the suction grid, but water is pumped through the grid. The pond that is pictured above uses both suction and pressure undergravel grid filtration. The picture was taken when the pond was five years old. Both systems are being run off the same submersible pump.

This is a very formal pond and we kept everything inside the pond.

Versatile and (Almost) Maintenance-Free

In conclusion, the undergravel suction type of filter I’ve described will give you a great mechanical and biological filter. It is hidden in the pond and doesn’t require an area larger than the pond. If done correctly, it has proved to require little, if any, maintenance. It can be used with either external or submersible pumps. It also works great with the latest air lift technology.

I don’t know if “the perfect filtration system” really exists. But this one comes close enough for me.
If your koi are behaving oddly, you’ll need to determine the reason for the strange conduct in order to resolve the issue that has occurred. First, analyze pond or tank water with a test kit to determine if all water parameters are within acceptable levels. Simple tests can rule out water quality as the trigger for unusual koi behavior and point you in a different direction. If water quality passes with flying colors, then proceed to parasite activity as the next possible cause.

**Fish Parasites**

Fish parasites are both microscopic and macroscopic. Skin scrapes must be performed to identify microscopic parasites, as this type cannot be seen with the naked eye. Fish parasites are usually discovered this way; the majority of harmful koi parasites are microscopic. (Fish are like dogs and cats in that if you don’t actively prevent parasites, you will end up treating for parasites.)

The purpose of taking a skin scrape is to obtain a sample of mucus from a koi’s cuticle, or slime coat, for analysis under a microscope. The mucus specimen is examined for significant parasite existence. Remember that parasites are always present in low numbers, but when a koi has been stressed the parasites will flourish and can become problematic. Typical koi behavior suggesting that skin scrapes should be performed:

1. Flashing and darting, or rubbing on pond edges, as if to rid an irritant
2. Loss of appetite and general sluggishness

Skin scrapes are vital to accurately diagnose fish parasites. This photo illustrates the proper technique for performing a skin scrape.

**Koi Skin Scrapes**

**A How-To Guide**

by Ellen Kloubec, Kloubec Koi Farms

**DISCOVER THE DIFFERENCE**

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Performing Skin Scrapes

Fill a koi viewing bowl with water from the tank or pond just to a depth sufficient to cover the fish. Using a soak net, carefully put one koi into the viewing bowl. You will be holding the fish with one hand and performing the skin scrape with the other. Try not to touch the areas designated as scrape sites. Never blot, wipe or wrap the koi in a towel. This would remove the mucus that you are trying to capture from the cuticle. When handling koi you should try to remain calm and maintain quiet surroundings. If the koi is of substantial size, a helper may be needed. It is a good idea to give your koi a break and a chance to breathe in between each scrape. By applying slight pressure you should be able to scrape some mucus from the skin. You only need a small amount; about the size of a pencil eraser. The intended prize, mucus, will be clear or vaguely opaque.

Top Five Places to Perform Skin Scrapes on a Koi Fish

- Flank: Along the fish’s side above lateral line
- Chin: Cleft between gill covers
- Caudal: Body onto tail
- Pectoral: Scrape towards the tail, or onto a pectoral fin
- Head to tail, or with the scales

Once you have a sample on the slide, place one drop of pond water on top of the mixture and gently place a cover slip on top of the mixture. The cover slip will force the mucus to spread out on the slide, perfect for viewing under a microscope. Place your prepared slide on the appropriately labeled paper and keep it out of direct sunlight. Now, move on to gather more samples.

For best results, your samples should be examined within 30 to 60 minutes of being collected. Tweezers will come in handy if any macroscopic parasites are discovered, such as anchor worm or fish lice.

Gill Biopsy

Taking a sample from the gill of your koi is a little trickier. Fish really don’t like to cooperate with whomever is lifting their gill plate cover (operculum) or sticking an object under it. You will most likely need a second set of hands to help when taking gill samples.

Now is your chance to get a good look at the gills and visually inspect them for damage or signs of tissue malfunction.

Prep Work

Things you will need to perform successful skin scrapes:
- Sock net
- Koi viewing bowl
- Sterile glass slides
- Sterile plastic cover slips
- Microscope
- Pen and paper
- One cup of pond water
- Eye-dropper
- Tweezers
- Hand towel
- A helper

Assemble all of the necessary equipment on a clean, dry surface. Before you begin, decide how many scrapes you will be performing. Set out a clean piece of paper for every scrape, and label and number each one with a corresponding scrape location: left flank, flank to tail, right gill, etcetera. These sheets of paper will keep your slides organized and provide a great place to jot down notes both during sample collection and during examination with a microscope. See the sidebar for a list of suggested skin scrape sites. Once you’ve made these preparations and have chosen your sites, you’re ready to begin!

Obtaining a sample of gill tissue is challenging but crucial for properly diagnosing gill parasites and/or gill disease.

Flank: Along the fish’s side above lateral line

The caudal region is the second-easiest area for performing skin scrapes. Scrape downward into the tail, or onto a pectoral fin. Always scrape in the direction from head to tail, or with the scales. Do not go against the scales as you may cause serious damage to the koi. Always keep prepared slides out of direct sunlight for best results, your samples should be observed under a microscope within 30 to 60 minutes after being collected.

Caudal: Body onto tail

Find the area around the wound for an accurate picture of the extent of parasite infestation. Always scrape in the direction from head to tail, or with the scales. Do not go against the scales as you may cause serious damage to the koi. Always keep prepared slides out of direct sunlight for best results, your samples should be observed under a microscope within 30 to 60 minutes after being collected.

Pond: Chin between gill covers underneath the fish

You will need to tilt the koi on its back to obtain a sample from underneath the chin or cleft between the gill covers. You will need a sharp object to scrape the mucus sample from the chin. Begin at the shoulder and drag a glass slide toward the tail. You should accumulate ample mucus for your sample.

Wound or Ulcer: A sore or any spot that shows damage

If your koi has a lesion or ulcer you can that a biopsy of that location is sure to be rich with parasites. Scrape the entire area around the wound for an accurate picture of the extent of parasite infestation.

Instead of obtaining a mucus sample with the edge of a glass slide, this time you will use a sterile plastic cover slip to retrieve the gill sample.

Performing Gill Scrapes

Again, hold your fish against the side of the viewing bowl. Working quickly, lift the operculum and gently wipe the gill filament with a corner of the cover slip, then release the fish. This sample will look different than a body skin scrape. It will be pink or red and look like tissue rather than clear mucus. Don’t be alarmed if you get a chemical burn.

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little bit of blood with the sample or if the fish bleeds from the gill following the procedure. Place the cover slip, sample side down, on a clean glass slide. To stay organized, set the slide down on your previously numbered sheet of paper. Now you can study the scrapes under a microscope and review your notes, or continue taking more samples.

**Happy, Healthy Fish**

Performing a skin biopsy or skin scrape can be intimidating, and getting good quality scrapes will take practice and patience. But if your koi are not their usual, lively selves, getting quality skin scrapes — and learning to analyze them — is the first step in restoring them to health! The sooner you accurately diagnose the existence and type of parasites that may be plaguing your koi, the sooner your fish will be bright, active, and happy again.
Pondliner did it again. Water Garden Expo offered two days of seminars, round-table discussions and booths to browse. New this year was a how-to pond-less water feature step-by-step hands-on build by Demi Fortuna (top and left). Demi and his crew built a feature for the front of the Heart of Oklahoma Exposition Center in two days’ time.

Over 150 people attended from all over the United States. There was even a FedEx sponsored Nascar car to check out and 24 door prizes. Be sure to put this on your calendar of must-attends in 2015!
Installing aeration is the single most valuable water management and water maintenance strategy that can be implemented. The movement of oxygenated water from the bottom up provides a long list of benefits to a body of water.

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There’s some good general information out there about aeration — including a great article by Rick Weidman in the March/April issue of POND Trade Magazine on how profitable lake aeration and maintenance programs can be — but there’s very little readily available information about the mechanics of aeration. A good working foundation in the dynamics of subsurface aeration will help you and your customers achieve cleaner, clearer ponds and lakes that require fewer cleanups, cost less to maintain and provide a great source of additional income.

The Importance of Proper Oxygen Levels Year-Round

First, let’s go over why proper oxygen levels are critical. In both summer and winter, to keep your ponds and lakes clean and clear. Of course, all fish, animals and plants require oxygen to live, so keeping oxygen levels as high as possible keeps fish, frogs, plants and other life happy and healthy.

The amount of oxygen that water can carry goes down as temperatures go up, so the heat of summer can be stressful, especially when there’s no breeze to help mix the air into the water. The lowest oxygen levels occur on still summer nights just before dawn, when photosynthesis reverses and plants pull oxygen (O_2) out of the water and exhale carbon dioxide (CO_2) into it. The warmth of the water also increases metabolic rates of plants and animals, so fish require more oxygen just as levels decline.

The major algae blooms that occur in summer threaten O_2 levels at night, and they can remove all the oxygen if there’s a mass die-off, as the algae decompose. To make things worse, the warm

by Demi Fortuna, Atlantic Water Gardens
Winter

Winter waters hold more oxygen, but when water gets too cold and freezes, ice can seal off the surface, cutting off the supply of oxygen available to fish and other aquatic organisms and allowing carbon dioxide to build up to lethal levels. Snow cover makes things worse, reducing the amount of light so aquatic plants can’t produce O\textsubscript{2} and consume the CO\textsubscript{2}.

The bubbles of an air diffuser set just below the surface will circulate warmer water upwards to melt a small hole in the ice, even under extreme conditions. The photo below shows an ice cube that formed as the bursting bubbles re-froze immediately in temperatures of 20 degrees below zero Fahrenheit, but the aerator was still able to keep oxygen levels up and fish safe. It’s important to keep the air diffuser shallow in the winter, so the deepest waters, which are the warmest in wintertime, aren’t disturbed. My friend Warren Franz tells of intentionally setting a diffuser at the bottom in a small, deep pond to test what would happen in a Wisconsin winter. The rising bubbles kept the water in motion while the water temperature dropped below 32 degrees, until finally, the super-cooled pond froze all at once — solid ice to the bottom, 13 feet down!

Bacteria

But aeration isn’t just important for animals and plants — they’re only two thirds of the story. Bacteria, the third group of organisms in the aquatic cycle, convert wastes and toxins to nutrients that feed plants and animals alike at the very base of the food chain ... and once again, oxygen plays a critical role.

Bacteria such as the nitrogen-converting bacteria that turn toxic ammonia to plant-feeding nitrates are aerobic; they require oxygen. Other bacteria have the faculty of digesting wastes either way, with or without oxygen, which makes them facultative heterotrophs ... but even if they can work anaerobically, they metabolize wastes far better with a ready supply of oxygen.

Think of bacteria as engines that work tirelessly converting ammonia and organic wastes to nutrients for higher organisms. Oxygen is just as essential to their performance as it is in an internal combustion engine, and for the same reasons. A gasoline or diesel motor may still fire up with a clogged air filter, but it will run more slowly and inefficiently, smoking and stinking — and the same goes for bacteria. Without oxygen, aerobic bacteria can’t ‘burn’ ammonia, and heterotrophic bacteria consume wastes more slowly and produce smelly, toxic methane and hydrogen sulfide.

On the other hand, given enough oxygen, aerobic bacteria will convert ammonia from animal wastes into nitrates that then get consumed by plants. Heterotrophic bacteria break down the sludge at the bottom of the pond or lake, removing nutrients that would otherwise fuel algae blooms. Aeration supercharges these reactions, increasing both ammonia conversion and sludge digestion exponentially. The rising bubbles of a well-designed and well-placed aeration system can even create powerful currents that bring the anaerobic sludge at the bottom up into the water column, allowing half a foot of movement per year to be converted to carbon dioxide and just bubble away! Sure beats shoveling that sh— ... uh, stuff!

One caveat: mixing in too much low-oxygen bottom water or anaerobic sludge all at once could drop the total dissolved oxygen levels too quickly, so aeration and the addition of aerobic bacteria should be started slowly to avoid fish kills when more than one-sixth of the volume of the pond or lake lacks oxygen.

Using Aeration Effectively

Now that we understand why we want to use an aerator year-round, let’s look at how to use subsurface aeration most effectively to get the most oxygen in and the most carbon dioxide out.

The dynamics of aeration depend as much on surface area and circulation as air volume, and the depth of the water makes a big difference.

volume, and the depth of the water makes a big difference. The deeper the water, the greater the fetch; that is, the more water each rising bubble will displace upward as it makes its way to the surface. The greater the total volume of water that gets pushed upward, the wider the water will spread out when it reaches the surface. And all that water being lifted upwards needs to be replaced, by a counter current that sweeps along the bottom inward to the diffuser, to be lifted upward in its turn. A relatively modest amount of air can move tremendous volumes of water under ideal conditions. The best-case scenario is a fine bubble air diffuser set just off the bottom in a deep, bowl-shaped depression with smooth sides. The rising column of air bubbles carries deeper, colder, denser water from the bottom up toward the surface, moving up to 10 times its own volume of water — especially remarkable because of how much more water weighs than air. It’s not a perfect ratio, because the heavier bottom water tends to slip off to the sides of the column as it’s moved into warmer, lighter surface water, decreasing the efficiency somewhat. And wind and thermoclines can
increase that slippage, but the bubbles keep moving water upward regardless. The “boil” of rising water at the surface lifts water a few inches, and the water spreads out over the surface, as much as 100 feet outward. Manufacturers reliably claim that up to 10 acres can be aerated with a single three-quarter horsepower air pump and properly placed diffusers, as long as the lake is deep enough.

Shallow bodies of water (under four feet in depth) are actually harder to aerate. Although they aren’t usually as stratified and rarely suffer from thermoclines, diffusers generally fall into two types. Needle-punched EPDM diaphragms from the wastewater treatment industry are high-pressure units that put out relatively large bubbles and resist clogging. Fine bubble ceramic and extruded diffusers are designed to de-stratify and oxygenate ponds and lakes. Bubble size and restrictions are the key factors. The smaller the bubbles, the greater the surface area in contact with the water, facilitating both the movement of water as more friction is generated and gas exchange of both oxygen and carbon dioxide.

To illustrate, let’s analyze what happens to surface area as bubble size shrinks. A bubble 6mm in diameter, about one-quarter inch, has a volume of 36π cubic millimeters and a surface area of 36π mm², while a 2mm bubble, the diameter of a pencil lead, has a volume of 4/3π mm³ and a surface area of 4π mm². It takes 27 of the 2mm bubbles to hold the same volume of air. 27 x 4/3π = 36π, but the surface area of the 27 little bubbles is 27 x 4π = 108π mm² — three times as much as the big bubble! Three times as much surface area means three times the gas exchange and much more friction to help carry water upwards with the same volume of air — and the tinier the bubbles, the better it gets.

The next most important factor is the resistance or pressure it takes to force water through the diffuser, expressed in inches of water. Adding the friction of the diffusers and the friction in the piping to the actual depth of the pond or lake will give you the actual depth or pressure the air pump will have to overcome. IMPORTANT: The relationship between depth and pressure is simple, and you probably already know it if you spec pumps for water gardening. It takes the same 1 psi to push air down 28 inches or 2.3 feet as it takes to lift water 2.3 inches, so 5 psi is the pressure at 11.5 feet.

The table above will let you calculate how many additional inches of water the pump will have to handle to compensate for friction in 100 feet of pipe. For example, let’s imagine you want...
to set a diffuser that handles 5 CFM and adds 12 inches of resistance, at the end of a 200-foot pipe run so the air source can be located under cover in the barn, and your pond is seven feet deep. What pressure would you need to get that volume of air through 3/4 inches of pipe? 1' + (2 x 5.0') + 7' = 18', or divide by 2.3 for the pressure in psi, about 8 psi. You might consider changing to one-inch pipe to lower the pressure required – 1' + (2 x 1.7') + 7' = 11.4' or 5 psi, and now you can use a smaller pump that costs less to buy and to run.

**Air Pumps**

Diaphragm air pumps are perfectly suited for ponds down to about nine feet deep, 4 psi and under 10,000 gallons. These are aquarium pumps on steroids, using rubber or silicone diaphragms attached to magnets that oscillate back and forth between two cavities fitted with flexible check valves to alternately draw air in and push air out. Typically producing 15 psi, and now you can use a smaller pump that costs less to buy and to run.

**Linear Piston Air Pumps**

Linear piston air pumps trade double-sided diaphragms for a single air chamber with a single large, magnetically driven piston sliding back and forth on a cushion of air. When the electromagnet is energized the piston is drawn back against a return spring, drawing in air, which is pushed out as the current is cut and the spring drives the piston forward. Linear piston pumps are more expensive, typically quieter and perform longer before servicing than diaphragm pumps, and perform in the same general range: up to 4 psi, 9 feet and about 5 CFM max.

Linear diaphragm pumps combine the linear motion of the piston pumps with heavy-duty diaphragms for a more powerful pump capable of up to 9 CFM and 7 psi, or 15 feet. Rotary vane compressors work like a Wankel engine, with rotating vanes compressing it and exhausting it as the rotor spins inside a chamber fitted with intake and exhaust ports. Mostly for commercial use, linear suction and exhaust pumps are available in models where the suction is driven by a separate motor, and there are a couple of guidelines to follow. Moving the full volume of the pond every 24 hours is an ideal situation (that may not be possible, but it’s a good starting point). The most efficient systems can move about 2000 gpm for three-quarter hp under ideal conditions.

Next, figure the pressure of your system. Add the resistance of the diffuser(s) you’ll be using, to the pressure required to overcome the friction in the pipe, to the depth the diffuser(s) will be set. A 90’ x 7.5’ deep pond = $3,000 cubic feet, so we’d want to move 2,200 ft³ per hour or 37 CFM. A good fine-bubble diffuser in deep water will move six times as much water as its rated air volume, so we want 37/6 or about 6 CFM. For a two-system diffuser set up, each is rated at 3.0 CFM and 12 inches of resistance, with 150 feet of low restriction 1/4” tubing in 7 feet of water, we’ll find we need a pump that provides 6 CFM at (2 x12”) + (0.0”) + 7” = 9’ or about 4 psi. (* = Negligible resistance.) Two diffusers each rated at 3 CFM driven by a linear diaphragm pump that will handle 6 CFM at 4 psi would do nicely.

For further assistance with your calculations, and for assistance with large lakes, visit a couple of different manufacturers’ websites and ask for help for the tough ones. They have folks on staff who are real experts, and will be able to give you a much better idea than this simple overview. Remember, proper aeration in conjunction with a maintenance program that includes regular applications of heterotrophic bacteria can:

- Cut your customer’s long term maintenance costs drastically, by eliminating drain-down cleanups.
- Maintain excellent water clarity and clarity, eliminating odors and increasing customer satisfaction.
- Pay off for you and your company, with “bread-and-butter” money that comes in regularly.

**About the Author**

Demi Fortuna is Director of Product Information for industry leader Atlantic Water Gardens, traveling and working with contractors and distributors alike in developing targeted Atlantic sales support materials. Fortuna has over 25 years of experience in all aspects of water garden design and construction, the last 10 years of which were in product research, development, sales and product training.
The Spice of Life
The many beautiful varieties of goldfish

by Joe Pawlak,
Blackwater Creek Koi Farms, Inc.

Part of the allure of koi keeping and water gardening is the variety of species available to choose from. As for goldfish, new varieties have become very popular — and more available outside of the secret society you once had to be in to have access to them.

The history of goldfish dates back to 960 AD in China, where they were produced for food as a means to supplement protein sources. Over time these fish were developed into cherished pets.

As America evolved in the early 1900s, “five-and-dime” department stores such as Woolworth introduced and gave access to these exotic fish (which we now know as common goldfish). The result: the beginning of the tropical fish industry. In-home fish-keeping was begun. Over time, goldfish bowls evolved into tanks and then small goldfish ponds. The pond hobby was started and continues to grow.

Ideal Pond Fish
Goldfish, or Carassius auratus, make a great pond fish because:
- They are hardy fish that are cold-tolerant and can withstand many months of below-freezing weather, living just fine under the ice.
- They grow to a typical maximum size under 10 inches, allowing more people to enjoy the pond-keeping hobby in vessels as small as a rain barrel. From a retailer’s standpoint, this opens up a larger pool of customers.
- Smaller environment requirements also mean that these “pets” can be brought inside and placed in an aquarium during the winter for year-round enjoyment.

The recent boom in water gardening and the fish pond hobby has allowed the fish farmer more incentive to produce some new varieties of goldfish never before commercially available.

Some of the more impressive varieties:
- Sanke Gold has a comet-shaped body with markings similar to that of a koi. This variety has a white body with red and black markings rivaling some top-grade koi.
- Calico Wakins and other color varieties have proved top sellers in retail outlets.
- Watonai are double-tailed goldfish with a similar body shape to Wakin, but with a longer flowing tail. Recent developments from our breeding program have resulted in some very unique fish.

Fish Like Diamonds
I think what drives most fish farmers’ passion, not pocket books, is the really unique and special opportunity to see and have a hand in the production of some truly unique fish. I often compare our fish farms to diamond mines; we go through an awful lot of dirt to get a few diamonds! But the allure of the unknown — that chance of finding that one “diamond” in the net when the fish are harvested — that’s the reward that drives most of us.

It may not be the best business plan, as making those few diamonds takes tremendous resources. Most farms choose the route of mass production that favors a more consistent income stream with much less financial risk. But while these crazy-looking fish typically come with an appropriately higher price tag, these higher prices become a lot more reasonable when one knows the “true costs” of production, similar to the diamond mine I mentioned before. True aquatic diamonds, such as these one-in-a-million fish, attract buyers who desire the best and rarest goldfish available. The best part, from a shop owner’s perspective, is the little space and care these fish need compared to the notoriety, traffic and cash flow they can produce.

The photos below portray some truly unique specimens that were found during the 2013 harvest here at our farm. The recent developments from our breeding program have resulted in some very unique fish.
making a profit, what should a shop carry?

My response is based on what is best for the customer; what is best for you, the shop owner; and what is best for the hobby.

Outdoor ponds are a joy to their owners, and the aquatic pets that they keep quickly become members of the family. Sadly, smaller fish are an easier target for predators such as birds. Thus, I recommend only keeping elongated-bodied goldfish, such as those mentioned above, because of their ability to swim fast. Stubby body fancy goldfish have a lot higher risk of being eaten. There is nothing more discouraging than having your pets disappear. Happy customers will be back for more fish if the ones they purchased from you originally survived and flourished as cherished family pets.

**Starter Fish:**

I was very typical in my progression in the tropical fish hobby. I started with a dollar’s worth of feeder goldfish and stocked them in my “hand-made,” 150-gallon concrete pond. Over time I developed an interest that turned into an obsession with tropical fish and pond fish. As time went on, a career developed and I ended up with a fairly large business of three koi farms spread across 300 miles of Florida.

I think every shop owner should have some starter fish of low cost. Not necessarily feeder fish, as they typically are not handled or treated for long term survival (indeed, the term “feeder fish” is fitting). Feeder fish may harbor diseases and die or pollute your “new-to-the-hobby” customer’s pond. Instead, offer them a three- or four-dollar fish ... one that’s affordable but still offers a high probability of success. Great choices include Sarassa Comets, Shubunkins and Wakin.

**Stubby Body Goldfish:**

These fish have more health problems and cannot swim well enough to be in outdoor ponds with larger fish or fast-moving currents. They’re great for aquariums, though.

**Higher-End Fish:**

Keeping a tank or pond of specialty pond goldfish will keep customers coming back as their tastes change and they desire better and more exotic fish. These fish can offer great profits and an edge that your competitors don’t have.

**Imported Goldfish:**

I am a bit biased to American-produced fish. Not only because of my involvement in the industry, but also for the more important reasons. Due to the difficulty in production, imported fish come from many different suppliers, thus increasing disease risks. As I like to say: “Kiss too many people and you’re likely to catch a cold.” Buy from too many sources and increase your risk — and more importantly, your customers’ risk — of getting a disease. Buying from a reputable producer rather than a broker/mixer will insure that you have happy repeat customers due to fewer problems.

Selling goldfish is no longer a “five-and-dime” affair. Goldfish can increase traffic, increase cash flow, and most importantly, increase your selling season. The setup costs are low and the possible rewards are many.

Good luck, enjoy this great industry and have a great season!

### Goldfish Quick Facts:

- Originating in China around 960 AD, goldfish have been domesticated for over 1,000 years.
- Japanese goldfish varieties, including Wakin, Ranchu, Ryukin Fantail and GloFish Endelman, date back as early as 1500 AD with the first goldfish show in Tokyo in 1845!
- The average lifespan of goldfish is 10 years. Some live much longer.
- Goldfish are part of the Cyprinidae family. This family of fishes contains some of the most intelligent species and is among the largest family of fishes in the world.

### About the Author

Joe Pawlak is president of Blackwater Creek Koi Farms, Inc., a group of three koi farms located in Florida. He is vice president of Aquatic Nutrition, Inc., a company that produces fish and other aquatic diets, sport fishing products and private label products. Joe is a former chairman of the board for the National Organization of Goldfish Growers.

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Sarasa Comets

Originating in China around 960 AD, goldfish have been domesticated for over 1,000 years. Japanese goldfish varieties, including Wakin, Ranchu, Ryukin Fantail and GloFish Endelman, date back as early as 1500 AD with the first goldfish show in Tokyo in 1845! The average lifespan of goldfish is 10 years. Some live much longer. Goldfish are part of the Cyprinidae family. This family of fishes contains some of the most intelligent species and is among the largest family of fishes in the world.

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Independent Contractors

Contractor Crackdown
The heavy cost of misclassified workers

by Mark E. Battersby

Independent contractors have long been a proven path for garden pond professionals, businesses and other employers to achieve workforce flexibility and save money. Unfortunately, a recent Department of Labor study revealed a whopping 30 percent of businesses “misclassified” employees as independent contractors. Cracking down on employee misclassification has proven such a revenue generator that the Internal Revenue Service has devoted millions to enforcement efforts.

At its most basic, the employee/independent contractor controversy boils down to the argument that by labeling a worker as an independent contractor rather than as an employee, a pond retailer, distributor or installation business can avoid the voluminous paperwork and payroll tax burden. A pond professional who is an independent contractor can exclude certain types of compensation from income or deduct work-related expenses.

It is no secret that the self-employed and independent contractors contribute greatly to the ever-increasing “tax gap” — the difference between the taxes owed and the taxes actually paid. The Government Accountability Office estimates that the misclassification of workers costs the federal government $2.7 billion each year.

More recently, under the Affordable Care Act (often referred to as Obamacare), pond businesses with 50 or more “full-time equivalent workers” will soon be required to offer health plans to employees, or pay stiff penalties for each uncovered worker beyond 30 employees. Some employers may be tempted to reclassify employees as independent contractors as a way to sidestep this mandate — but beware: this is a strategy fraught with problems if the IRS comes knocking and the worker classification rules are not properly followed.

Who Is and Who Ain’t

When disputes reach the courts, many factors contribute to deciding whether a worker is an independent contractor or an employee. Although the courts and the IRS often rely on a 20-factor test when determining just who is and who isn’t an independent contractor, generally the relevant facts fall into three main categories: behavioral control, financial control and relationship of the parties.

Is the worker subject to the control of the service recipient, not only as to the nature of the work performed, but the circumstances under which the work is performed? Individuals who follow an independent trade, business or profession in which they offer services to the public are not employees.

Bottom-line, it is usually up to those pond operations and other businesses that wish to use independent contractors to create a situation in which they do not control how the individual performs a particular task for them. Misclassifying a worker as a nonemployee can result in liability not only for employment taxes, but also for the 100-percent penalty for failure to collect and account for employment taxes.

Relabeled as Employees

From the workers’ standpoint, it is not always a bad deal for people calling themselves independent contractors to be relabeled as employees. After all, a worker may receive employee fringe and pension benefits; may be entitled to reimbursement for business expenses; may be entitled to federal and state minimum wage and hour standards; and may receive coverage under nondiscrimination laws, unemployment insurance and workers’ compensation protection.

Not too surprisingly, the IRS has a special form, Form SS-8, that will allow either a worker or an employer to quickly obtain an official determination of a worker’s tax status. Although the IRS SS-8 program is helpful, there is some risk involved. According to the IRS, over 72 percent of all Form SS-8 requests received by the IRS resulted in determinations that the workers in question were employees. Only 3 percent resulted in determinations that the workers in question were independent contractors.

Volunteering to Reclassify

Late in 2011, the IRS launched a new Voluntary Classification Settlement Program, or VCSP, that allows employers to prospectively reclassify — as employees — workers that they have erroneously treated as independent contractors or as other “nonemployees.” The new program

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Illustration by Curt Spannraft, Badfish Digital Studio
carried generous settlement terms and provided audit relief for previous years. Any garden pond professional accepted into the VCSP agrees to prospectively treat the class of workers as employees for future tax periods and in exchange:

A. Pays 10 percent of the employment tax liability that may have been due on compensation paid to the workers for the most recent tax year, determined under the reduced rates of Code Sec. 3509;
B. Won’t be liable for any interest and penalties on the liability;
C. Won’t be subject to an employment tax audit for the worker classification of the workers for prior years; and
D. Agrees to extend the period of limitations on assessment of employment taxes for three years for the first, second and third calendar years beginning after the date on which the taxpayer has agreed under the VCSP closing agreement to begin treating the workers as employees. Even better, the IRS rejection of a VCSP application will not automatically trigger a Federal tax audit. A rejected pond business could, however, be audited for another reason … but not as a result of filing Form 8952 (Application for Voluntary Classification Settlement Program (VCSP)).

The New, Expanded Voluntary Changes

Under the expanded VCSP program, employers currently being audited (other than an employment tax audit) can qualify for the VCSP. Also, employers allowed into the program will no longer be subject to a special six-year statute of limitations instead of the usual three-year period that normally applies to payroll taxes.

To be eligible for the VCSP, an employer must currently be treating workers as independent contractors or nonemployees and consistently have treated them as such in the past.

As mentioned, employers cannot qualify for VCSP if they are currently being audited by the U.S. Department of Labor or a state agency concerning worker classification — or be challenging worker classification in court. What’s more, the employer cannot, as mentioned, be undergoing an employment tax audit.

A Safe Harbor from Morphing Liabilities

Liabilities for violations of the wage and hour laws, discrimination, wrongful termination and similar rules can be easily minimized simply by not having employees or keeping their ranks to a minimum. And, as some pond professionals have discovered, it is possible to have some workers operate as independent contractors, thus side-stepping a panoply of tax and other liabilities — maybe. Or, relief can be obtained with a unique “safe harbor” in our tax laws.

Created in 1978, Section 530 of the Tax Code provides relief from reclassification liabilities when an employer misclassifies workers. The safe harbor provides protection when an employer has classified a worker as an independent contractor and the worker is reclassified as a result of an audit. The employer is relieved of liability if the tax returns, including Form 1099, show that all similar workers were consistently treated as employees for future tax periods and in exchange:

A. Pays 10 percent of the employment tax liability that may have been due on compensation paid to the workers for the most recent tax year, determined under the reduced rates of Code Sec. 3509;
B. Won’t be liable for any interest and penalties on the liability;
C. Won’t be subject to an employment tax audit for the worker classification of the workers for prior years;
D. Agrees to extend the period of limitations on assessment of employment taxes for three years for the first, second and third calendar years beginning after the date on which the taxpayer has agreed under the VCSP closing agreement to begin treating the workers as employees. Even better, the IRS rejection of a VCSP application will not automatically trigger a Federal tax audit. A rejected pond business could, however, be audited for another reason … but not as a result of filing Form 8952 (Application for Voluntary Classification Settlement Program (VCSP)).
The Independent Contractor/Employee Question

In today’s tough economy, employers are looking for every possible way to stay competitive and get the work done. Choosing to classify workers as independent contractors, instead of employees, can result in liability not only for employment taxes, but also for the 100-percent penalty for failure to collect and account for employment taxes.

Unfortunately, short of treating everyone as an employee, there is no easy solution to the employee/independent contractor conundrum. It is clear, though, that many pond businesses do not routinely examine their worker relationships before they are confronted with an audit (by the IRS, Labor Department and more). And workers rarely look beyond the anticipated tax breaks when assuming the independent contractor label.

While the IRS’s recently expanded Voluntary Classification Settlement Program may provide an answer for some pond business owners caught up in the ongoing employee or independent contractor brouhaha, this is one area in which a little thought, a little preparation and some professional guidance can be better than a cure.

25 years of professional experience in the fields of taxes and finance enable Mark Butterly to write on unique and topical subjects. Although no Repeatable professional should ever render specific advice at arm’s length, he does craft unbiased, interesting, informative and accurate articles. Mark currently writes for publications in a variety of fields. He also writes columns for trade magazines and has authored four books.

by Rick Smith, EasyPro Pond Products

Early in my sales and marketing career I was fortunate to be surrounded by great mentors. All were successful businessmen in their own right, but the reason they excelled beyond pond owners was because they understood and demonstrated the laws of great leadership.

One of those early mentors told me to always be a student of the business. His meaning was to truly understand your customer’s business — their needs — and to become highly skilled with the best business practices and leadership abilities.

This led to a career-long commitment to learning and putting into practice the best and most successful business principles I could find. I did this by reading at least one business- and one psychology-related book a year while learning from successful business owners and team managers.

During this time, I worked for many bosses, but few understood the laws and rewards of leadership where people followed and contributed because they wanted to — not because they had to in order to avoid negative attention or just blindly complied “because the boss said so.”

When I worked for someone who understood the laws and power of leadership, everyone felt part of a team where their contributions were important to the success of the team and its vision. This leadership/team culture ignites the human psychological need for contributing to something bigger than oneself by bringing value to others. It feeds the need for appreciation and recognition of one’s contributions, and the team and personal rewards of success. When a visionary leader empowers a team culture, the difference in styles and the level of success is striking.

Elements of Great Leadership

Here are a few of the elements of great leadership that I’ve picked up over the years:

Vision — Share your vision and action steps for achievement with your team. This simple action clearly points the way and allows your team to focus on and contribute to the common goals of achievement. This is The Law of Navigation. Anyone can steer the ship, but it takes a leader to chart the course.

Values — Share your personal values with your team. This is The Law of Magnetism. Who you are is who you will attract and how you will represent your vision.

Empower — Only secure leaders give credit for success. This is The Law of Sacrifice. A leader must give up to go up.

Encourage — Encourage your team to share ideas, and provide them with a safe environment for success — and, yes, sometimes failure. Provide them with the tools required for success. Encourage them to share their own ideas to achieve the vision. Those closest to the task usually have great ideas on how to make it better.

Recognition — Great leaders are quick to give credit for success. This is The Law of High Morale. When you’re winning, nothing hurts.

Reading Resources

Three of my most cherished business books are John C. Maxwell’s “The 21 Irrefutable Laws of Leadership,” “The 360 Degree Leader” and “The Indisputable Laws of Teamwork.” If you are looking to take your business to the next level, these books are well worth the investment — and the dedication to putting these laws into practice.

In “The 21 Irrefutable Laws of Leadership,” John points out that “whatever you accomplish is restricted by your logical need for contributing to something bigger than oneself by bringing value to others. It feeds the need for appreciation and recognition of one’s contributions, and the team and personal rewards of success. When a visionary leader empowers a team culture, the difference in styles and the level of success is striking.”

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Designing and building live water features is an interesting and challenging area of construction. A few years ago, “Water Garden News” published a story that included data from the National Association of Pond Professionals claiming that approximately 80 percent of the ponds built nationwide fail within the first year — and 80 percent of those fail within the first six months! This might be an arguable number, but I believe it’s close to the truth. I’ve been in this business for over a decade now, and I know from my experience (and my accountant) that 80 percent or more of my business is rebuilding poorly designed, poorly conceived, and poorly constructed ponds. I have spoken with many in the industry who have the same record. The failures span a broad range of conditions, from leaks and high-maintenance ponds to poor water quality and sickly fish. High electrical use is also a recurring theme.

The Wild West

It is my opinion that many of our industry failures are due to what I call the “wild west” of construction practices, with no official codes or specs that “contractors” must follow. Nationwide, there are no contractors’ licenses that specifically address the design and construction of living water features. While there are licenses for pool contractors, landscapers, and, in some cases, “water feature” installers, an actual trade test for our industry does not exist.

There are a few guidelines for lake construction and some codes that apply to safety concerns in bodies of water over 18 or 24 inches deep, but nothing else. The consumers are not represented by or armed with any set of guidelines that they can use to keep a pond builder in line, and most consumers are unaware of the needs of fish and aquatic plants.

The future of our industry begins with each of us.
plants over the long term. While there have been several attempts at starting organizations with the intent of helping to teach and guide pond builders across the nation, most of these have struggled at best and slowly failed over time at worst.

The “rules” we use are largely anecdotal and have their roots in the backyard, “this worked for me” syndrome. Others are simply the techniques promoted by various manufacturers over time to help the pond builders they are trying to sell to avoid codes and regulations. Few, if any, of these anecdotal guidelines truly address the needs of the plants, the fish or the owners and rarely take geographical location into consideration. Manufacturers regularly overstate the performance of their products because there is simply no one telling them they can’t.

I’ve designed and built ponds all over the country and we have never come across any inspectors or regulating bodies that are any better-informed than the consumers they would supposedly protect.

I have also seen several extremely large ponds or small lakes of more than a million gallons under construction in different locations across the country that were designed and built by very well-known and respected engineering firms and contractors. These projects failed in several ways, but the most important failures were what I consider “pea soup-green,” water quality, poor circulation and little or no filtration. In short, they gave a general first impression of “Yuck, don’t fall in there.”

The most recent of these is one built right here in Las Vegas, my hometown. After a 30-million-dollar park renovation and a multimillion-gallon pond renovation, it’s still a disaster. Everything from the water up is gorgeous, but after only three months of operation the water looks like a stagnant sewer.

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looks like a stagnant sewer.

Sadly, this is a common scenario. When I was a child we played in this water body as a natural pond. Over the years, man-made “upgrades” have been attempted, and the water quality has become progressively worse with each upgrade. At some point you have to take Mother Nature into consideration. Mother Nature has a set of rules that we need to learn. We will never know them all and we’ll barely understand the ones we observe. The very best we can hope for is a draw. We will never beat her, but whenever we build a pond, we’re challenging her. We’re drawing a line in the sand and stating, “Cross this and see what happens.” That’s when she sends you a creative landslide which consists of all the things you didn’t consider.

Do I want an outside group of “un-know-it-alls” regulating our industry? No! But I would like our industry to clean up its act and start putting the customer first.

Offering the customer choices through knowledge is a good start. Having a good working knowledge of all the different types of equipment and styles of construction is a must. Eric Triplett, “The Pond Digger,” is one of my closest friends in the industry. I introduced him to bottom drains and pre-filtration and, in return, he taught me loads about the water garden industry, marketing and branding.

What Kind of Pond?

A few years ago Eric developed a new sales strategy. He gives multiple bids on each job: a “Water Garden,” a “Hybrid Pond” and a full “Koi Pond.” The definitions of each of these distinctions are arguable depending on who you’re talking to, but the concept works. Eric lets the customer decide which level of pond design and construction he wants by explaining the pros and cons of each — along with the water quality and maintenance to be expected. I admire him because this takes both courage and knowledge.

My typical routine is to bid a koi pond and work backwards from there if the customer’s budget isn’t in line with my concept for their yard. Or, I try to establish their budget and work to give them the most within their limit. Whenever I’m working through an architect or general contractor, I act as the customer’s representative. After all, at the end, when everyone else is gone from the job, it’s just you and the owner who are left to deal with the future of the pond.

This series of articles will be geared toward helping you understand all the different construction and design techniques available as you confront different circumstances. If you are a “cookie cutter” pond builder, it’s time to stop! I’m not here to bash products I don’t like, but rather to address the pros and cons of each type so you can make the best choices in design and construction.

There are several styles of structure and circulation to consider, with at least half a dozen ways to pre-filter heavy solids, many different pump options (including air-driven systems) and multiple ways to address bio-filtration (both aerated and solids-trapping).

There are many good options out there from dozens of manufacturers and they all work. Some work better than others for a given design scenario. Helping you make those choices is the goal of this series.

New Association

IA Launches New Water Features & Lake Management CIG

The Irrigation Association has introduced a Water Features and Lake Management Common Interest Group (www.irrigation.org/About/Water_Features_and_Lake_Management.aspx).

Created to support the growing pond industry, the new CIG will provide a forum for IA members to discuss new technologies, identify training and certification opportunities, collect best practices and brainstorm ways to help pond professionals grow their businesses.

“We are happy to support the water features and lake management community,” said IA President Warren Thomas.

“They have been long-time members of this association and are an important related industry for many irrigation professionals.”

For more information or to get involved, contact Water Features and Lake Management CIG Chair Paul Amos (Amos Sales Associates, Ltd.) at paul@amossales.com or IA Business Development Director Scott Hersh at scotthersh@irrigation.org.
Blue Thumb Acquires Aqua Bella
Blue Thumb Distribution Inc. proudly announces the acquisition of Aqua Bella Designs. Aqua Bella is a manufacturer of custom, one-of-a-kind fountains supplying the water garden, pond and lake and lawn and garden marketplaces. The combination of Aqua Bella’s and Blue Thumb’s complimentary brands will enable Blue Thumb to offer all markets the most comprehensive lineup of water feature equipment and supply solutions in the industry from a single source.

Aqua Bella Designs pioneered the fountain industry when it first featured its patented design for disappearing fountains using its AquaBox in 2006 and has long been revered as one of the most installation-friendly, highest-quality brands in the water garden market today. Olga Sokolova of Aqua Bella says, “We are thrilled with Blue Thumb acquiring the Aqua Bella brand. We see endless possibilities to the market potential that now exists for our product lines. More importantly, we believe we will be able to service our customers better with a stronger infrastructure and forward-thinking management that Blue Thumb provides.”

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5327 N. Michigan Road
Saginaw, MI 48604
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GIE+EXPO Provides Broad-Reaching Benefits to Attendees
GIE+EXPO and Hardscape North America (HNA) will collocate in Louisville again in 2014. GIE+EXPO and HNA, to be held at the Kentucky Exposition Center in Louisville, Ky., will draw industry members worldwide Wednesday through Friday, October 22-24, 2014.

The presence of HNA not only offers expanded educational and business growth opportunities to the thousands of lawn and landscape professionals who attend the GIE+EXPO, but also additional attractions for over 2,400 design-build contractors, distributors, dealers, architects and engineers that have regularly attended Hardscape North America.

Online registration will open soon at www.gie-expo.com. Pre-registration for a three-day pass to the trade show is only $15 per person until September 10. Beginning September 11 the fee will increase to $30. The trade show admission for those who wait to register onsite will be $60.

For more information:
Sellers Expositions
800/558-8767 or 812/949-9200
info@gie-expo.com

GreenCleanFX Liquid Algaecide for Pond Openings
GreenCleanFX is great for green water algae and deeper water as it sinks to the bottom. It will not affect pH levels and continues to work up to 48 hours after application. With low application rates, GreenCleanFX is a highly effective and affordable solution. GreenCleanFX is an activated peroxide commercial strength liquid algaecide. GreenCleanFX meets the National Organic Program Standards for sustainability, is EPA registered, and made in the USA. GreenCleanFX Liquid Algaecide is available in 16-oz. and 32-oz. Tip ‘n Pour containers with 1 oz. free and one-gallon. It can be purchased as part of BioSafe’s new Pond POP Display.

For more information, contact:
BioSafe Systems
888/273-5088
traymond@biosafesystems.com

Little Giant’s F Series Pumps are the Heart of Any Water Feature
Because circulation is the key to a healthy aquatic environment, Little Giant pumps are the heart of any pond water feature. Our new F Series wet rotor water feature pumps offer flexibility from the start and are designed to tackle any job. They can be submersed or used externally and stand both vertical or horizontal. With NPT threads and SPG fittings built in, attaching plumbing is a breeze. Included pre-filter makes these pumps ready for any decorative water application. The F Series pumps are available in flow rates from 1250 GPH to 7100 GPH 150-660 Watts of power. All F Series pumps feature rugged construction with no mechanical seal for years of longevity.

For more information:
www.lg-outdoor.com
800/701-7894

IWGS Announces the 2014 Collectors Aquatic Plant of the Year
The International Waterlily and Water Gardening Society announces Nymphaea ‘Ruby Star’ as the 2014 Collector’s Aquatic Plant of the Year. This is an exclusive arrangement which means the IWGS will be the only source in the United States for the limited supplies of N. ‘Ruby Star’ in 2014.

The Collector’s Aquatic Plant of the Year program provides a limited opportunity to purchase new and/or rare aquatic plants prior to widespread distribution while also serving as a fundraiser for the Society.

The sale price for ‘Ruby Star’ will be $75.95, which will include shipping and handling fees within the continental United States. Shipment dates will be April 14th, May 12th and June 6th.

More information and ordering options can be found on the IWGS website at iwgs.org.
OASE acquires GeoGlobal Partners

GeoGlobal Partners, the leading North American provider of innovative water gardening brands, today announced that it has been acquired by The OASE Group headquartered in Hohen, Germany.

The merger brings together two leading water gardening companies to create the most innovative and comprehensive water gardening business in North America. Combined, the companies are poised to further strengthen Oase presence in North America while creating a global market leader in water gardening.

GeoGlobal Partners markets primarily in the begin-nerto-intermediate water gardening segments in various distribution channels in the U.S., Canada and Mexico. This fits perfectly with the complementary product range of OASE. The two lines of product will merge together harmoniously to serve the beginner-to-intermediate water gardening segments. The OASE START products will allow for significant expansion within the intermediate segment. Furthermore, OASE is the industry quality and innova-tion leader and the OASE PRO products will cater to the expert segment. The combined group can now provide the full-range of product diversity in North America as they have in their home market in Europe.

For more information contact:
Melodie Elliott
Sunwest Communications
melliot@sunwestpr.com
214/573-1601

ECOLOGICAL LABS GETS SPECIAL VISITORS

Ecological Laboratories, Inc. is proud to announce that a group of special visitors from the Environmental Protection Agency (EPA) of the People’s Republic of China recently visited the manufacturing and research facility in Cape Coral, Fla. They were taken on a guided tour of the five-building complex, in addition to several days of technologically enlightening seminars about Microbe-Lift line of products that these guests were very interested in using to help remediate waterways in China.

For more information contact:
Dave Jones
Aquascapes Foundation
www.aquascapesfoundation.org
413/569-9969
info@aquascapesfoundation.org

APPENDIX

IPPCA to Reassign Officers

The Board of the IPPCA met to reassign officers upon receiving the resignation and retirement of IPPCA president Rocke Huntington.

According to the current bylaws, all officers’ remaining positions are filled from the Board at Large. The Board accepted the nominations of Mark Gibson, Pieter van Westervelt and Gloria Jones to the Board at Large. We would like to take this opportunity to thank these members for stepping up and volunteering for these important positions.

Dave Jones, as the former President Elect, is now the President. Valerie Steele of Savio has moved up and volunteering for these important positions. Mark Lawson moved from the Board at Large to the Vice President. Gloria Jones moved from the Board at Large to the position of Treasurer. This now fills all of the officers’ positions of the executive committee.
Don’t miss out on this Market Place advertising opportunity. See our website:
www.pondtrademag.com/advertise/marketplace
FINAL THOUGHT...

Purple rain, purple rain.

Photo courtesy of Carolyn Weise, Ecological Labs, Inc.
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