

# Can Anyone Out There Build a Proper Koi Pond?

## *aka In Search of the Right Koi Pond Builder*

by Tom Burton, New Jersey

Photos Courtesy of Tom Burton



pond," only to build a water feature just like they've been doing only now they call it a fish pond. I've seen this sad story repeated over and over in the eleven years I've been at this koi keeping hobby. I say sad because these ponds are just not an appropriate habitat for koi and in short order the fish start dying and what should have been a delight turns into disaster. In most cases its not because they intend to deceive, its just a lack of knowledge and sometimes, its just a "water feature is a water feature" mentality (aka no concept). I'm hoping that this article will convince some of the very talented and artistic builders out there to learn that a proper koi pond is different

**I**n today's economic environment there is more and more demand for elaborate big houses, gardens, pools, ponds — you name it. And we ought to have what we want, right? So if that's a beautiful koi pond with knockout landscaping, gorgeous waterfalls and streams and plants and fish, all we have to do is find "Mr. Right" to build it, right? Sounds easy but therein lies the rub. All too many of the swimming pool and water feature/landscape guys with the equipment and technical knowledge either don't know where to go for information or just refuse to learn what it takes to build a koi pond.

Too many swimming pool builders take on pond projects and use the same techniques they'd use for pools; same bottom drains, filters and pumps. Then they call it a fish pond when in fact they've missed the mark by miles. The same thing happens with some landscapers who say "Oh yeah, I can build you a koi

from any other water feature. And if they are willing to read my article on pond building and adhere to and apply the tried and true directions therein, I can pretty much guarantee long term success. There's a tremendous demand out there and I'm sorry to say there are all too few builders that are up to the task which is why most people end up building their own.

After I went to the University of Georgia for their three day crash course in fish health, I came back to New Jersey and started what we call the "Health Hotline," in our Mid-Atlantic Koi Club ([www.makc.com](http://www.makc.com)). We hear from and respond to people who have problems with their pond or fish or both. I'll never forget getting a frantic call from a lady here in New Jersey whose fish were dying as we were talking. The 2000 gallon pond had only been in for about four months, it was late summer, and she had been buying fish regularly from a local

garden center. Since she wasn't far away (and I'm retired so I had time) I went to have a look and to see if I could help. What I saw was a rather nice water garden, two feet deep, about 10 by 12 feet, no bottom drain, no filter system, several plants in pots in the water and a little waterfall. There were about 40 fish anywhere from six to 15 inches long and all the survivors were looking very stressed and some were barely hanging on to life. The water was green and the pH was very high but the killer was ammonia as determined by testing the water. Too many fish, no filtration, algae doing the photosynthesis thing and creating more stress by denying oxygen for part of the day, all were compounding the problem. A 50% water change and a long conversation about koi keeping and the differences between a water garden and a koi pond helped for the future but it was too late for most of the fish. I suggested she switch to a few single-sex goldfish to avoid a population explosion and enjoy her water garden. Needless to say, she was devastated by the loss of her by then, treasured pets, all of which could have been avoided had the builder known how to build a proper koi pond and had appropriately advised the lady on how to make things work.

Another troubling case here locally was a swimming pool builder who entered into a contract with a homeowner to build him a fish pond. What the owner got was a miniature shallow concrete swimming pool painted blue (koi ponds should always be black to enhance the viewing of the multi-colored fish) with a two inch bottom drain feeding a typical swimming pool sand filter with a 3/4 HP Hayward pump drawing about 12 amps and costing four times as much to run as the typical pumps used in koi ponds. It was about 30 inches deep and about 15 by 20 feet. The owner had called me to ask why he had to backwash the filter so often. It turned out that the pond had been in for over a year and contained around 50 fish anywhere from babies of five inches to several over 20 inches. The fish waste from that mob was just too much to make it through the fine sand in the filter thus necessitating the backflushing routine a few times a day just to try to keep the water flowing. After testing, this pond too showed the presence of ammonia but the owner had been able to keep the fish alive by doing major and frequent water changes. To put things right, I

suggested adding a proper filtration system, an aftermarket bottom drain (necessitating taking a pipe through the wall of the pond to gravity feed the filtration system), and emptying the pond in order to coat it with a black rubberized paint from Hecht Rubber in Florida. I also suggested reducing the number



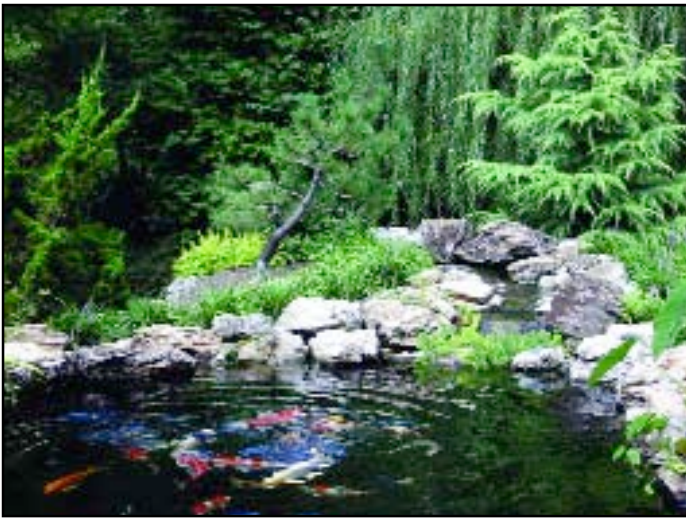
of fish and adding a skimmer. Today its functional but not very esthetically pleasing. All of this could have been avoided had the builder known how to do it right in the beginning. You only have to do it right once.

### ***Now let's get more specific.***

The only difference between a high-end and low-end koi pond is cost. It can be made out of pretty much anything that will hold water, from a rubber liner to concrete. The only difference between one pond and another is in the membrane that contains the water. Concrete or Gunnite ponds are no better than liner ponds as far as keeping fish is concerned but each has characteristics that adapt better in certain circumstances. Concrete may last longer but all the fish friendly rubber liners these days carry a 20 year guarantee. And since none of the liner should be exposed to the sun (ultraviolet light) anyway, will probably last even longer. However, for either to work as a safe and healthy environment for those beautiful living jewels we call koi, certain tenets must be adhered too. It must be deep enough (a minimum of three

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feet – four is better – and for jumbo koi maybe even eight feet), and big enough (about 12 feet by 25 feet is a nice size) to allow for proper exercise for the fish. Just like people, sedentary fish get big tummies and are less admired as a result. So let's just say that three to four feet is quite adequate for 99% of the hobbyists keeping koi.

Also, there must be a proper and adequate filtration system to accommodate the resident fish load and not only keep the water clear so we can see our treasures, but free of contaminants that can cause them harm. Nature provides a solution, but pond builders and koi keepers need to understand how this works and use that knowledge.

A proper filtration system is comprised of four components:

1. Purpose built bottom drains, either four or six inch in size, gravity feeding to -
2. A settlement chamber where large particles of debris and detritus can settle to the bottom by gravity before flowing to-
3. A mechanical filter where a series of brushes or other screening material collects (filters out) the lighter particles of debris so that the cleanest water possible goes to -
4. The biological processing station where Mother Nature provides "good-guy bacteria" that eat the toxic chemicals ammonia (given off by the fish and decaying waste) and nitrite (part of the bio process).

At the end of the filter process is a pump that moves the water back to the pond in any direction we choose. Maybe a waterfall or a stream, through a fitting in the side of the pond, whatever. It all sounds quite simple doesn't it?

In addition to the filter system above, we employ skimmers to clean the surface of the water and ultraviolet lights to help keep the single celled algae (spelled green water) in check. We place at least two opposing water returns in the side of the pond to create a swirling current which not only exercises the fish but keeps crud in suspension so that it will eventually go the way of all of the water in the pond — down the drains and into the filter system.

Once all of the above is understood, digested and applied, the rest of the total pond project rests with the imagination and artistic talents of the builder/landscaper and the customer. Factors which dictate the magnitude of the job are many, not the least of which is cost but other things like lot size and local zoning may come in to play as well. But whether high end (usually spelled EXPENSIVE) or low end, knowledge and application of the requirements of a proper koi pond should meet with landscape architecture to create a setting that is both



healthy for the fish and esthetically pleasing for the owner. This is what I advocate and that's the purpose of this article.

It seems that the more people that see koi, the more people there are that want to own one (or 10 or 50). But to make the transition from dream to dream pond, there's an awful lot of information that must be read/seen/heard and assimilated before one has even a chance at success.

*Old Japanese proverb:* More to koi stuff than meet eye. ❖

**Be sure to attend the MAKC  
Executive Committee Meeting  
Sunday, February 13th.  
More information on page 20.**