

Mid-Atlantic Koi

The Magazine of The Mid-Atlantic Koi Club

January/February 2006



At the New York Botanical Garden

Mid-Atlantic Koi Club *At* **The New York Botanical Garden**

by Charles L. Ruby, MAKC Executive Vice-President

I accepted a unique opportunity to participate in the New York Botanical Garden's first annual "Dive into Water Gardening" seminar that was held on Saturday, September 10, 2005. The two hour lecture "The Pond of Your Dreams" was well attended and laid out the core differences between a traditional watergarden and a Koi pond, provided a beginner's introduction to Koi, a discussion on design and construction, as well as a virtual pond tour of some of our region's best ponds.

In addition, the event included the national release of the long awaited "Mid-Atlantic Koi Club's Top 25 Tips" – a compilation of successful hints and tips to help design, maintain and enjoy a successful water feature and care for its inhabitants. The list in its entirety is reproduced within this article, as well as a summary discussion around each of our top 25. A special thank you goes to all those members who provided their thoughts, insights and efforts to make the list as useful and informative as it is. I enjoyed assimilating this information and presenting our findings directly to the New York Botanical Garden seminar participants. I would also like to acknowledge the efforts of Andrea Russo of the New York Botanical Garden for her assistance with the presentation, which was very much appreciated.

The students who attended the New York Botanical Garden's course, "The Pond of Your Dreams", found this list invaluable as it provided a solid building block on which to increase their knowledge base and learn from those who have earned the right to provide these insights. Ms. Sabine Stezenbach, Program Manager, New York Botanical Garden:

"The Botanical Garden was very pleased to have Charles Ruby participate in our first annual Water Gardening Saturday program. His session, The Pond of Your Dreams, was engaging, informative, and well received by students. We hope to have Charlie back at the Botanical Garden in the future to share more of his experience and insights."

In an effort to, as Tom Burton always says, "build your last pond first", I hope you find our list enjoyable, informative and

an invaluable resource as you construct a new water feature, upgrade an existing pond, or simply get the most out of what you already have.

Mid-Atlantic Koi Club's *Top 25 Tips*

- 25 – Join a Club (Visit MAKC.com, AKCA.org, KOIUSA.com, TomsKoi.com)
- 24 – Buy Fish Only From Reputable Dealers
- 23 – Pond Edge Above Surroundings (Avoiding Contamination)
- 22 – A Watergarden is NOT a Koi Pond
- 21 – Automatic Water Shut-off

- 20 – Keep Plants and Large Koi Separate
- 19 – Vertical Sides - No Planting Shelves
- 18 – Weekly Water Change (Dechlor and Testing)
- 17 – Over-winter Koi (enclosures, heater etc)
- 16 – Separate Returns - Seasonal By-pass of Waterfeatures

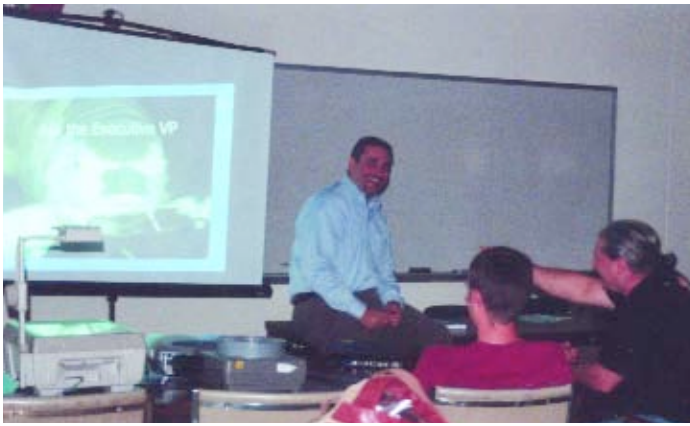
- 15 – Keep Water, Not Fish
- 14 – Filter/Skimmer Super-sized; Less Maintenance & Better Performance
- 13 – Visit Town Hall and Build to Code
- 12 – Pond – Bigger is Better Within Reason
- 11 – Build Where You'll Enjoy it All Year

- 10 – UV to Assist with Green Water
- 9 – Patience is Paramount
- 8 – Quarantine for New or Sick Koi
- 7 – Additional Aeration (Waterfalls, Current, Air Stones)
- 6 – Own at Least One "Expensive" Koi

- 5 – Frequent and Regular Maintenance
- 4 – Less Fish = Full Potential
- 3 – Build Waterfeature Unique to You
- 2 – Bottom Drain(s) and No Stones on Bottom of Pond
- 1 – Read, Consult, Learn, Volunteer, Be Involved. . .

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Charles Ruby Seminar Presenter

25 – Join a Club (Visit MAKC.com, AKCA.org, KOIUSA.com, Tomskoi.com)

Open and honest communication – sharing with others what has worked, and especially what has NOT worked, is one of the best ways to promote success and avoid failure. Doing it right the first time is less expensive and more enjoyable than struggling to find the solution to a problem. Most of the people that fall within the category of “prior pond owner” do so because at some point – owning a pond was more headaches, heartaches or hassles than not owning one. Learning from others helps every time.

24 – Buy Fish Only From Reputable Dealers

Spend your money with one or just a few dealers and ensure that the dealer you chose to do business with complies with all the current best practices regarding fish husbandry and importing/quarantining practices. By restricting your purchase dollars to a small group of retailers, you have a better chance of knowing what you are getting for your money. If something isn't right, you have a better chance of having the issues resolved in a timely fashion and with an acceptable outcome.

23 – Pond Edge Above Surroundings (Avoiding Contamination)

There are many harmful contaminants in our yards, and the yards of our neighbors. Fertilizers and pesticides are two that come to mind, and both can be extremely toxic to our fish and our ponds. By constructing our pond's edges slightly above the existing ground level (5 inches or more) and making sure the landscaping slopes away from the pond, not towards the pond, you'll guarantee any contamination from outside of the pond stays outside the pond. Another item to note is that rain water run-off from roofs can be contaminated with asphalt and other petroleum-based contaminants, as well as acid rain, and should always be directed away from the pond.

22 – A Watergarden is NOT a Koi Pond

There are several major differences between a watergarden and a Koi pond. You could (but shouldn't) have a Koi in a watergarden, and you could, (but shouldn't) have potted plants in a Koi pond. A watergarden is generally a pond that houses plants and just a FEW goldfish, with a general depth of approximately two feet and limited filtration and water flow. A Koi Pond is basically an aquarium in the ground – is a minimum of three feet deep, 3,000+ gallons, with one or more bottom drains feeding an extensive filtration system and superior water flow.

21 – Automatic Water Shut-off

Tap water contains chlorine or chloramines (combination of chlorine and ammonia). These chemicals need to be treated and when “topping off” a pond – adding too much untreated tap water can upset the balance of the entire pond (temperature, ammonia, PH) often killing the fish within hours. Adding automatic water shut-off to the water source allows the operator to dial in the total gallons needed to refill the pond; once that exact amount of water is added to the pond, the device automatically shuts off the water flow. I would recommend buying one of the mechanical devices that does not rely on electricity but has a simple interior paddle construction that counts the number of rotations the paddle makes to calculate the volume of the flow water. As discussed below – always add the appropriate chemicals to neutralize any chlorine or chloramines that may be present in your water source.

20 – Keep Plants and Large Koi Separate

Small Koi and large plants make a perfect combination. But small Koi very quickly turn into large Koi, and large Koi love to use all sorts of plants as soccer balls. The first time you have a container flipped over within the pond – with all its contents, including your exotic waterlilies and its soil floating, will be the last time you have both plants and large Koi together. In addition, Koi use vegetation as an environmental stimuli and the lack of plants in the pond helps deter unwanted spawning and the negative results of the spawning activity – damage to the Koi itself and ammonia spikes associated with the spawn. A simple way to enjoy both plants and large Koi is to have interconnected ponds with barriers to keep the Koi and water plants separated. If done correctly, this technique can result in a visually appealing pond that has the best of both worlds. The Koi benefit from the presence of the water plants removing some of the pollutants. Plants benefit from the presence of an ever-ready supply of fertilizer in the form of the by-products of your Koi living and breathing.

19 – Vertical Sides - No Planting Shelves

One of the best ways to get the most volume out of a certain area is to increase the length, the width, the depth and maintain

vertical or straight walls. This is important as a pond with sloping sides can often have only half the volume of a pond with vertical sides and furthermore the sloping slides allow better ingress and egress for pond predators, such as wading birds and raccoons. Planting shelves remove a massive amount of water from the total pond volume calculation and at best only serve as an unsteady base for marginal or bog plants. A better alternative is to place the individually potted plants on cinderblock bases and attach the empty pots directly to the base with water resistant nylon cording through the bottom drainage holes, then fill the pots with an acceptable planting media. When a large predatory mammal visits the pond, it is less likely to overturn a pot that is secured directly to a cinderblock base than it is pushing the same pot off of a narrow unstable planting shelf.

18 – Weekly Water Change (Dechlor and Testing)

The solution to pollution is dilution, and by removing water directly from the system you can even further reduce the accumulation of unwanted contaminants. By undergoing periodic water changes you are removing toxic chemicals and by-products that naturally accumulate within the pond. By manually removing approximately 10 percent of the pond's total volume once a week, often performed as part of filter maintenance, you are effectively adding fresh nutrients to a closed system. Topping off a pond that loses water due to evaporation does not count, as that practice still allows for a buildup of harmful contaminants.

17 – Over-winter Koi (enclosures, heater etc)

Koi are not true cold water fish. It is true that they can over-winter within the pond with nothing more than a small surface area kept free from ice. However, our goal is not to merely allow the Koi to survive, but to thrive. By heating a pond, you can extend the feeding season much longer

into the fall/winter and, during the unpredictable weather patterns of spring, bring some much needed consistency, ensuring the water temperature does not fall below critical levels. Simply enclosing the pond or adding protective barriers can keep the wind chill factor from affecting the Koi and give them a much better chance at entering spring with all the vigor needed to thrive in your pond during the summer months. A pond that is covered may maintain a constant temperature of 40 degrees. A similar pond with large waterfalls and ornamental streams feeding it may reduce the water temperature to 32.1 degrees, which is within the generally accepted danger zone for our Koi.

16 – Separate Returns - Seasonal By-pass of Waterfeatures

As summer turns into fall, one of the best ways to maintain consistently warmer water temperatures is to shut down the adjacent waterfeatures – especially high waterfalls or long shallow streams. By having your pumps plumbed to both a waterfeature and directly back into the pond (below the surface of the water) with separate returns, you can maintain adequate flow and minimize temperature loss. In addition, in the dead of winter, you will also not “super chill” the pond water by allowing the warmer water and lower air temperatures to interact with each other. In the largest ponds, the water temperature actually increases as you go from the surface to the bottom in the winter. In the summer the reverse is true, the temperature at the surface is slightly higher than the temperature on the bottom of the pond.

15 – Keep Water, Not Fish

This is a very important tip as it reminds us that it is indeed the Koi's environment that allows the Koi to thrive. If your focus is on the quality of the water – maintaining all the parameters (Ammonia, Nitrite, Nitrate, pH, etc)

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within acceptable levels, your Koi will greatly benefit. You'll get the most potential out of them including increased growth, better body conformity, magnificent colors, and a deeper, richer sheen. Invest in a good quality pond test kit and use it consistently. By checking the pond's chemical parameters you can set up base-line data and then very quickly react should one or more start to reach unacceptable levels.



14 – Filter/Skimmer Super-sized; Less Maintenance & Better Performance

There really isn't a small black box that can handle all the filtration needs for a large pond full of many many adult Koi. It is agreed that the larger the filter, generally the more load it can handle without clogging or substantially slowing down the water circulation throughout the system. With surface skimmers, the same rule applies. A small skimmer will clog quickly and only draw a limited amount of water from the surface of the pond. A larger skimmer will drastically increase the amount of debris that never enters the water column and,

therefore, never makes it to the bottom of the pond and hopefully through the bottom drain(s) and into the super-sized filter.

13 – Visit Town Hall and Build to Code

Unlucky 13 is held for trials and tribulations associated with working co-operatively with town hall. Most States and many municipalities have construction codes or ordinances that directly relate to the construction of waterfeatures on your property. Requirements include restrictions on overall total surface area, maximum depth, minimum distances from structures and property lines, safety requirements (i.e. only allowing waterfeatures to be constructed in the rear yard (not front or side yards)) and requirements that waterfeatures be enclosed within a fence (similar to swimming pool safety requirements). Should you construct a waterfeature that is not within compliance to existing Codes, and should you eventually decide to sell your home, you risk the chance that a Certificate of Occupancy may not be issued. You would be required to address the outstanding issues or, worse yet, backfill the beloved waterfeature. Last, do not forget to contact the local utility company so they can mark underground utility lines (gas, electric, water) so you will not have any major surprises as you start to excavate your dream pond. One last note – many older homes also have underground oil tanks. Should you uncover one during your excavation, it must be removed and de-contaminated consistent with Federal, State and local requirements.

12 – Pond – Bigger is Better Within Reason

There are many items that need to be considered when designing a pond. Some basic parameters that should be addressed are flow rates, volume, and dimensions (length, width and depth). The entire volume of the pond should be filtered no less than once every four hours (once every two hours is ideal). When it is time to net a Koi, a maximum width of 12 feet makes it easier and a length of a pond of 22 feet works well with two bottom drains situated equally distant from each other. Larger surface areas allow for increased air/water contact and increased oxygen transfer. Although two ponds may contain the same volume of water, the pond with a larger surface area (length and width) and less depth will have more transfer of oxygen from the air to the water. However, maintain a minimum pond depth of three feet (Koi Pond) or a maximum pond depth of 30 inches (watergarden).

11 – Build Where You'll Enjoy it All Year

It's a fact that if you build one, they will come. Waterfeatures will be enjoyed by wildlife, as well as by you and your guests. By constructing your waterfeature in a spot that can be viewed and appreciated during all four seasons, you are more likely to quickly notice if something is wrong and keep up with all the required and necessary maintenance. Also, this is a great way

to bring the outdoors indoors and get the most out of your investment. Some other basic tips include siting a pond in the shade to reduce algae and avoiding excess leaf litter by limiting large deciduous trees overhanging the pond. Both of these items can be overcome, so it is our suggestion to build the pond where it is best viewed from both the indoors and outdoors.

10 – UV to Assist with Green Water

Ultraviolet lamps have long been used in aquariums to remove harmful parasites from the water column. However, the real value of the UV in a pond setting is its role in reducing “green water”. By damaging the outer cell membrane of the free floating single cell algae that gives water its green tinge, UV effectively breaks the life cycle and allows other forms of algae to get a foothold and out-compete the very opportunist single cell algae for available nutrients. Each and every pond is different. Nutrient levels in the water, stocking rate, number of hours of direct sunlight the pond gets, and general climate all affect the amount of UV necessary to maintain crystal clear water. One important item to note is that when you plumb the UV lamp, make sure its return back into the pond does not flow over a waterfall or another route that you would anticipate shutting off during the winter because, in the early spring, with water temperatures still low and the weather still very unstable, you will want to restart the UV before you will be ready to turn on waterfalls or other waterfeatures that could further chill the water.

9 – Patience is Paramount

We’ve all heard about new pond syndrome – I’ve heard it shortened to just the time it takes to cycle the water and reduce the ammonia level to near zero. That is not necessarily true. It’s better to view the pond as hostile, to say the least, to its inhabitants early on and understand that it can take many months to several years before all is in balance. It is not

uncommon for the pond to look and act its best in the third year, when the filters have been running for an extended period of time and the plants and the fish are all doing well. If every time the water turns green you drain the pond and fill it with “fresh” water, you’ll always re-fight the new pond syndrome. If, when one fish shows signs of illness, you treat the entire pond for anything and everything that could be wrong, you’ll always be one step behind. Patience is very important and not rushing to judgment or haphazardly treating problems will ensure that this hobby is indeed a relaxing one.

8 – Quarantine for New or Sick Koi

Having a facility ready to go should you need it is very important and can literally be the difference between life and death. You don’t necessarily have to have it up and running 24/7, but having a container large enough to house several of your largest Koi, as well as appropriate filters, heaters, food, water conditioners, medicine, etc. to maintain the Koi for several months will be vital to your (and their) long term success. Sooner or later, something will go wrong and, more often than not, it will affect your favorite Koi or next year’s Grand Champion.

7 – Additional Aeration (Waterfalls, Current, Air Stones)

Koi and other aquatic life like to live in water that is at or near its oxygen saturation level. This is best maintained by adding additional air, or simply increasing disturbances to a body of water. Skimming water off the surface of the pond is a very efficient way of increasing the air/water exchange rate. Adding air stones directly into the pond or into the body of the filter is another way of achieving a similar result. Waterfalls also raise the level of oxygen in the water and you’ll see a noticeable increase in Koi activity when a pond is at or near complete oxygen saturation levels.

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Healthy Koi often live in well filtered ponds with strong currents and plenty of available oxygen. An important note is that water plants, including algae, actually remove more oxygen from the pond than they produce. If your Koi are at the surface gulping air in the early morning hours, then it is safe to say your pond does require the addition of one or more of the items discussed above.

6 – Own at Least One “Expensive” Koi

Number six on our list was the most debated of our Top 25. Owning one “expensive” Koi works magic as it relates to maintaining a healthy environment for the Koi which you own. By purchasing a Koi that you feel is expensive or maybe even considered an investment, you are more likely to continue to invest in its upkeep and general well-being. Whether you consider a \$10 or a \$10,000 Koi expensive really isn’t the issue, it’s the cost to you and the value you place on it. If you have a pond full of just pretty fish, and something goes wrong – due to your wrong doing or nature’s, then you are likely to simply replace the fish and, eventually, after several failed attempts, just backfill the pond. If you truly value one or more of the Koi within your pond, you’ll find yourself maintaining the pond even under the worst weather conditions and viewing the pond and its inhabitants on a much more frequent basis.

5 – Frequent and Regular Maintenance

We’ve all heard the saying about an ounce of prevention is worth a pound of something. This is especially true when it comes to maintaining a pond. Being both consistent and diligent will result in a much nicer and generally healthier

pond. The amount of maintenance and its frequency will change with the time of year and temperature, but should be generally consistent throughout the year. Water changes were discussed earlier on our list, but do generally coincide with filter and pond maintenance.

4 – Less Fish = Full Potential

A large pond with 10 jumbo Koi looks much better than a small pond with 100 tiny Koi. Finding a happy medium of number and size of Koi in a single pond has always been something of great interest. We all agree you can only house as many Koi as our filtration system can handle. But each year as your Koi grow, the demand on the filter system is greater and greater. Overstocking a pond just causes undue stress on the Koi and added maintenance for the Koi keeper. In addition, Koi continually release hormones that inhibit growth – a natural mechanism that is supposed to curtail issues arising from over population within a closed system (i.e. a pond). However, this is not fail-safe, the Koi do still grow, just at a reduced rate and often with stunted body conformation. To get the most out of your Koi and develop a real show stopper, less is best when it comes to the number of Koi in one pond.

3 – Build Waterfeature Unique to You

It’s not the responsibility of organizations like Mid-Atlantic Koi to tell someone what their pond should look like, just to suggest what makes the most sense as to its size and shape as well as what is and is not generally appropriate or what works or doesn’t traditionally work. Designing, constructing and owning a waterfeature is really something that should be uniquely yours – whether it’s a formal Koi pond, an informal



watergarden, a large waterfeature or a waterless streambed – as long as it's something you enjoy, and it's beautiful to you – it will be worth the effort, and much more.

2 – Bottom Drain(s) and No Stones on Bottom of Pond

It is generally agreed that the single most important item within a pond is the presence of bottom drain(s) and the absence of stones on the bottom of the pond; however, even this item doesn't hold the number one slot on our Top 25. Bottom drains move water from the bottom of the pond directly to the filter system and, in doing so effectively, keeps the bottom of the pond clear of accumulated debris. Any waterfeature that will contain fish should never have stones on the bottom. Any stones or pebbles on the bottom of the pond will simply catch and hold debris, including fish waste, and will continue to accumulate debris until it reaches a critical mass and health/water quality issues arise. Plus, the beautiful stones will take on a layer of green algae and lose their looks in just a matter of weeks, leaving you with hundreds, if not thousands, of nooks and crannies to capture all sorts of things that should have made their way directly to the filter system.

1 – Read, Consult, Learn, Volunteer, Be Involved. . . Enough said.



The above Top 25 and their discussion points were culled from hundreds of hot topics and represent information that the Mid-Atlantic Koi Club considers current and useful by the majority of individuals that own or want to own a waterfeature. As with any assemblage of information, not every item will apply to every person or in every circumstance and, as the number one item on our list suggests, be involved and question everything. I sincerely hope you find this list as invaluable as did the students at the New York Botanical Garden.

This list will be maintained on our website, www.makc.com, and will be updated periodically as warranted due to changes in general practices and as new information/products are introduced.

About the New York Botanical Garden

The New York Botanical Garden was incorporated in 1891 for the purposes of establishing and maintaining a botanical garden, museum, and arboretum. The Garden, located in Bronx, New York, is a private, not-for-profit corporation supported primarily by individual, foundation, and corporation gifts and by the State of New York through the Natural Heritage Trust. It is the Garden's mission to improve the public understanding of the natural world, horticulture and the relationships between plants and people and to expand humanity's knowledge of plants and how they are utilized.

The Garden is open Tuesday through Sunday (closed Mondays, federal holidays, Thanksgiving and Christmas.

Hours:

April to October: 10 a.m. to 6 p.m.

November to March: 10 a.m. to 5 p.m.

Should you need additional information, feel free to contact Sabine Stezenbach at sstezenbach@nybg.org. ❖

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