



“How To” Series: Diagnosing an Ailing Pond

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All pond owners envision a beautifully landscaped pond with “Gin Clear” water so they can enjoy their pond and fish without a lot of maintenance and cost. So, when the pond is constantly ailing (usually pea-green water or string algae) despite best efforts of doing everything expected to be correct, frustrations are sure to run high. So, how do we diagnose the cause(s)?

We want to identify potential causes and provide the basic action-based way to evaluate your pond and zero in on solutions in the simplest way.

The EasyPro® Customer Support Team receives thousands of call each year; many of them deal with these issues. Without a review process, many pond owners have simply been relying on pond treatments to solve their problems.

Natural pond treatments are certainly part of the program, and problem solver pond treatments may be the right thing to do to help a pond get back in balance. However, way too many times they are used to treat the symptoms instead of correcting an underlying persistent problem. In most cases when we review, these six areas are what we find to be contributing causes.

AREA #1

Sometimes it is just as simple as having a better understanding of how and when “Mother Nature” naturally influences our ponds. Having this information enables us to either plan ahead and/or patiently wait on “Mother Nature” to complete the process without complicating the situation.

AREA #2

Have we been testing the water quality with a test kit? We can not tell if ammonia, nitrites, nitrates, pH and salt are in balance without testing. Many pond and fish health issues can be prevented with proper testing and simple corrective action.

AREA #3

Are we on a regularly scheduled water treatment program? Doing the right things at the right time makes all the difference in the world.

AREA #4

Are we confident that the filtration flow rate properly matches the filtration needs? Sometimes we do not have the flow rate we think we have. This can happen due to a reduced flow rate after lift to the waterfall, or reduced flow from an undersized pressurized filter. Sometimes the fish load has increased to the point that the demand has exceeded the original design and flow rate. Sometimes a pond design is not correct from the very beginning. So, when someone has a persistent water quality issue, double checking the numbers never hurts.

AREA #5

Does the pond have the proper balance of water garden plants? Plants play a very significant role in aiding pond filtration, assisting with algae control, and contributing to fish health fish.

AREA #6

Does the pond have an aeration system and is it being properly utilized for each season? Dissolved Oxygen Concentration (DOC) is extremely important.



AREA #1: Seasons & Mother Nature



In the spring pond water goes through a natural balancing process. Algae and beneficial bacteria feed on the same nutrients in the water column.

However, single cell algae and string algae are active while beneficial bacteria are slow to get “fully active” until the water temperature warms up over 45 degrees. Bacteria really gets going in the 50s. So, algae are at the banquet table without a lot of competition.

In a perfect spring, when temperatures rise and hold, this process will take 2 weeks.

(See TIP 1)

TIP 1: Get the filtration system up and running to introduce beneficial bacteria sooner, rather than later.

(See the Water Temperature Action Guide for more information)

TIP 2: During the first month of the spring, as the pond is seeking balance and cleaning itself, clean the filter pads out weekly. Clean the pads within 3 to 4 days after using an algaecide or EasyPro® Water Clarifier. If the pads are full, they will no longer assist in removing the algae and free-floating particles out of the water column.

It is OK to perform a 25% water change in the spring as part of the spring-cleaning process. But **DO NOT perform repeated water changes just because the water is pea green. That would start the process all over again.** *(See TIP 2)*

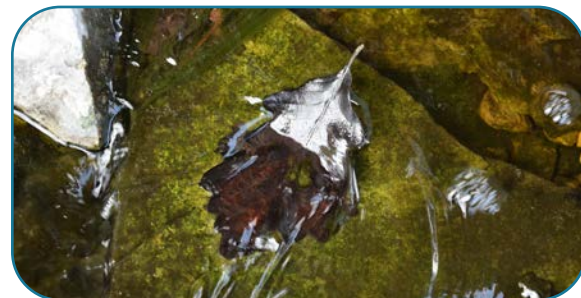
You will not need to do this as frequently during the season, but this simple practice will have significant benefits.

Mother Nature in the Summer

Warmer water does not hold as much oxygen and oxygen is extremely important for beneficial bacteria to multiply and perform properly. *(See TIP 3)*

Mother Nature in the Spring and Fall

The pond may be impacted by tannin. All plant leaves have tannin in them. In the spring, as leaves bud out, they drop their scales releasing tannin in the water. Spring maple seeds and leaves in the fall will also release tannin in the pond. Or, if a leaf net is full of leaves when it rains it will act as a tea bag and release tannin. The pond can then take on a tea color, brown or even black appearance. *(See TIP 4)*

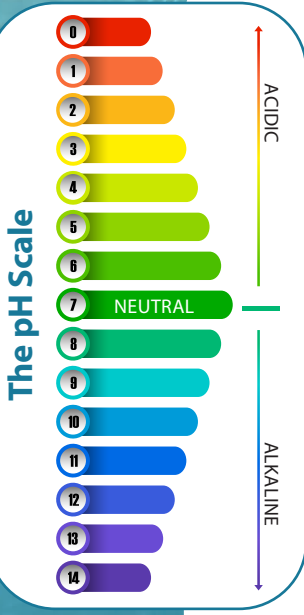


TIP 3: Bottom diffused aeration offers huge benefits, especially if you have fish. Consider installing one of the EasyPro® Koi Loving Care Aeration Systems. You will also want it for the winter months to keep a hole in the ice open.



TIP 4: The best practice is to use a leaf net or remove with a pond net. Although tannin will not harm the fish, performing a 25% water change will aid in cleaning up the water in the quickest and most economical way.

AREA #2: Testing the Water Quality



Using a water test kit on a regular basis is the only way to know if problem areas exist with an imbalance in ammonia, nitrites, nitrates, pH and salt levels.

If we identify one or more areas out of balance, the solution(s) are quick and simple. However, if left unchecked it can lead to a constant struggle with algae and water clarity. Poor water quality has a negative impact on fish health and over a prolonged period of time may lead to loss of fish.

Ammonia should test zero. Ammonia build up is fatal to fish. A 25% water change is required as soon as possible. And then retest and repeat if necessary.

Nitrites should ideally test zero, although levels may vary slightly. A 25% water change will temporarily reduce the levels. Clean filtration and add **EasyPro® All Season Bacteria** to improve bio filtration process.

The pH levels for a healthy pond should read 6.5 to 8 although a reading in the 7.2 (neutral) to 7.8 is ideal. pH can fluctuate from morning to night in addition day to day, or even after a rain fall. So, taking a reading morning and night for two days will provide you the best average. Fish can handle a wide range of pH. However, they struggle with rapid pH changes.

pH Up and pH Down



This is a safe, effective way to control pH. It will treat either fresh or salt water and is phosphate free. Safe to use with plants and fish.

The pH readings can vary through out the day. Fish can tolerate a wide range of pH, but do struggle with rapid changes that may occur during or after a rain.

Apply 1 oz. per 600 gallons of water.

TIP 5: If your water source is from a well that draws from a limestone aquifer, your pH may read consistently high.

TIP 6: If there is a UV filter in use, turn it off for 24 hours to allow the beneficial bacteria to settle out of the water column and find a surface area on the rocks or in the bio-filtration system to call home.

TIP 7: The use of EasyPro®'s Barley Straw Liquid Extract will help keep algae in check. The EasyPro® Rock & Waterfall Cleaner is a great way to clean algae off any water feature.

pH and nitrites have a relationship to toxicity levels and how it impacts fish health! Here's how it works.

Let's say we have an elevated level of nitrites and the pH goes up just one integer (say from pH of 7.2 to 8.2) the toxicity level (to the fish) just went up times 10. If you have a high level of nitrites and the pH goes up to nine (9), you

will start losing fish. The quickest answer is a 25% water change and apply pH Down from EasyPro®. Then, clean pond filtration pads, and work at improving the overall filtration of the pond with EasyPro®'s All Season Bacteria. (See TIP 5)

AREA #3: Pond Treatment



Achieving and maintaining healthy water, that is ecologically balanced, relies on the teamwork of oxygen rich water, proper application of natural water treatments, and proper filtration basics.

The proper application of beneficial bacteria should be applied on a regular schedule to reduce ammonia, nitrite, nitrate, and phosphate. To ensure a high count of beneficial bacteria, especially in the first month of spring and in the fall, use **EasyPro®'s Seasonal Boost Cold Water Bacteria**. For the rest of the season, use **EasyPro®'s All Season Bacteria**. (See TIP 6)

A water conditioner needs to be applied every time we add water to the pond. This removes chlorine, destroys chloramines, and detoxifies heavy metals found in city water. Even well water has heavy metals. Use **EasyPro®'s Water Conditioner** whenever adding water. (See TIP 7)

High levels of nitrates and phosphate, along with sunshine, contributes to algae blooms. Fish food not eaten within 5 minutes will decay and increase the phosphates in the water that can contribute to algae.

AREA #4: Proper Filtration Rate

TIP 8: Provided that the pond has proper filtration and flow rate, a general rule would be 250 gallons of water per 18" or longer koi fish.

TIP 9: To select the proper size pressurized filter, match the required filtration gallons per minute needs to the filter's maximum gallons per minute flow rate.

TIP 10: Know the maximum recommend gpm flow rate for flex PVC tubing:

1" = 25 gpm

1 ½" = 60 gpm
(3,600 gph)

2" = 90 gpm
(5,400 gph)

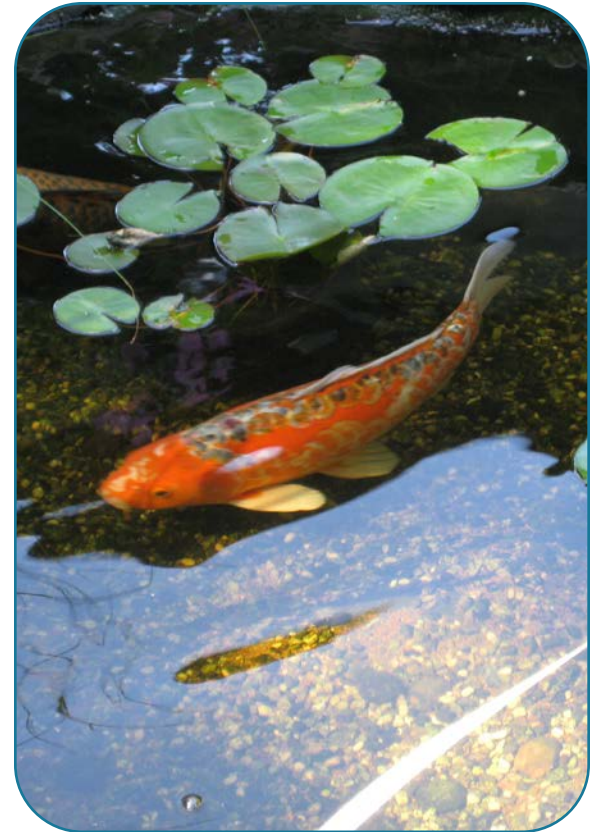
3" = 225 gpm
(13,500 gph)

Sometimes we think they have something we don't - the proper filtration flow rate. The general rules are:

- If you have fish, you need to filter the water volume once every hour. Koi grow larger than other varieties of fish and produce more waste, I personally filter or turn over the water volume every 30 min.
- If there are no fish, you will need to filter the water column once every two hours.

Let's say you have a 3,000-gallon pond with fish, and we need to filter the water volume once an hour. We will need a pump, filter, and plumbing that can handle 50 gallons per minute – after lift. Simple, Right? Well here are some reasons where a pond may fall short of those requirements.

- **The fish load has outgrown the original design** and continues to overpower the filtration system. Originally, the pond had a few small 4 to 6 inches koi and now they have grown to measure 18 plus inches. The answer is to increase the filtration or reduce the fish load. (See TIP 8)



- **Check to see if the pump is the correct size** to produce the 50 gpm after lift (3,000 gallons divided by 60 minutes). Static lift is measured from the top of the water to the top of the waterfall or AquaFalls filter box. It is the reduction in water flow due to the effects of gravity when lifting water. Tubing runs of 100 feet or more reduce flow rate due to friction loss too. See our pump charts at www.EasyPro.com.
- **If you have a pressurized filtering system – it could be an undersized unit.** How can this happen? Pressurized filters are marketed with the statement "For ponds up to 'X' gallons." This is sizing based on a pond with **NO** fish or filtrations flow of once every two hours. If you have fish you need a flow rate of once every hour. (See TIP 9)
- **A pond can have the right size pump and still have a significant reduced gpm flow rate.** How can this happen? Flow rate can be reduced with tubing that is too small. Just because a pump has a 2" outlet it does not necessarily mean that 2" tubing is enough. (See TIP 10)

AREA #5: The Proper Mix of Water Garden Plants



Water garden plants play a very important role in the ecological balance of a pond and for the health of your fish.

Plants aid in the uptake of nutrients. They shade the pond from the sun, which helps control algae, and keeps the pond water cooler. Cooler water holds more oxygen, which benefits beneficial bacteria and fish health. Floating plants also provide cover for your fish from predators and they will be a lot calmer, which has significant health benefits. (See TIP 11)

Treatments from the Medicine Cabinet.

Algaecides and Water are only used when the pond needs assistance in getting back into a natural balance.

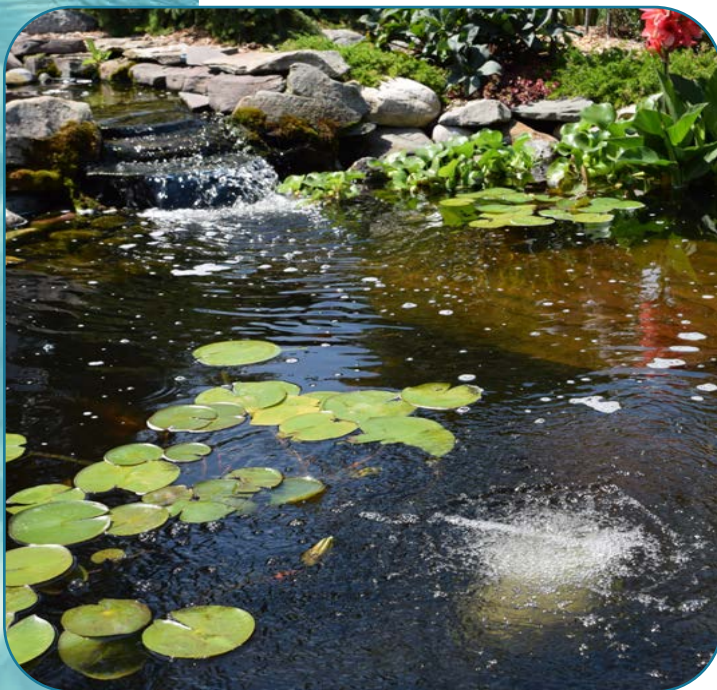
Water Clarifier is a formula that clears murky water fast. It attracts suspended particles together allowing them to clump together and settle out of the water column to be removed by the filtration system. (See TIP 12)

TIP 11: Water Hyacinth and Water Lettuce are rated as one of the highest in effectively reducing nitrates. Their long root systems are fantastic at cleaning the water. There also needs to be a balance of bog plants, submerged and floating plant life, each of which provides a benefit.



TIP 12: Use only treatments designed for backyard ponds with fish. When using these products, especially in the summer, make sure the pond has oxygen rich water from waterfalls and/or bottom diffused aeration.

AREA #6: Utilizing an Aeration System



For a healthier ecosystem and healthier fish, a proper oxygen level is essential. We refer to this as the Dissolved Oxygen Concentration or (DOC) in the water. Oxygen production and consumption will vary with the change of the seasons.

Oxygen producers like waterfalls and plants depend upon the water temperatures; and the amount of all living things growing in your pond depend on the oxygen supply.

When the demand exceeds the created oxygen supply, all living things in the ecosystem suffer, including beneficial bacteria and fish.

There is less dissolved oxygen at the bottom of a pond than near the top. Diffused aeration systems like the EasyPro® Koi Loving Care System (KLC) assists in mixing and providing even oxygen levels through out the pond.

For more details, see EasyPro®'s Pond Aeration for All Seasons - The Important Role of Oxygen.