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POND OWNERS MANUAL

General Maintenance for all Ponds & Water Features

It's amazing to think that you now have an aquatic paradise in your very own backyard, and you're all hung-ho to get started and educated, but the truth is, you don't even know where to begin!

There is a ton of information out there about water gardens and ponds, but it's contradictory and just plain confusing sometimes. This owner's manual is designed to provide you with the right information to help you make an informed decision about maintaining and or building a naturally-balanced, beautiful water feature.

There are many different ways to build and install ponds, and we hope that you can put your trust in us to either sell you the proper components for you to install yourself or install it for you! Filtration is one of the most important components in a pond, and most importantly, producing a gorgeous end result with little maintenance and a lot of enjoyment. Take the time to look through this information guide and explore the world of water gardening as we take you through creating and enjoying your ecosystem water garden.

Perhaps the first and most important thing you'll want to learn is how a naturally balanced pond ecosystem functions and the importance of each element and the role they play in your water feature. Keep in mind, what we have done in creating a pond, is essentially tried to mimic Mother Nature the best way possible, but with using artificial components. Be patient and educated yourself as much as possible!

1. Filtration System

Filtration systems should include the use of both a biological and mechanical filter. A Biofall or Biofilter provides surface area for beneficial bacteria to colonize and remove excess nutrients from the water. A Skimmer, which is a mechanical filter, will not only pre-filter the water and house the pump; it will also skim debris from the water's surface to prevent the accumulation of organic materials on the pond floor.

2. Rocks & Gravel

Rocks and gravel will not only protect pond liners from harmful UV light degradation, but they will also provide tremendous surface area for beneficial bacteria to break down excess nutrients in the water and dissolved organic debris on the pond floor.

3. **Recirculation System**

This is really just a fancy way of saying “pumps and plumbing.” The proper size pump and pipe diameter are extremely important for the aesthetics of a water feature. More importantly, an efficient circulation system will keep the water moving and provide the necessary oxygen levels for healthy fish and plants.

4. **Fish**

Fish are an integral part of any ecosystem. Unfortunately, fish are often seen as high maintenance. Contrary to popular belief, fish actually reduce pond maintenance, as they graze on string algae and will bottom feed from the pond floor. They also make very enjoyable pets, providing hours of natural entertainment.

5. **Aquatic Plants**

Mother Nature’s true filters, plants are great for adding character to a pond by providing color and texture, but from a filtration perspective, they’re second to none. Thriving from the excess nutrients in the pond and depriving algae of its food source, the aquatic plants in a water garden, given proper coverage, are critical for the overall health of the ecosystem.

Quick Fact:

A properly constructed ecosystem pond that includes the 5 essential elements will be easier to maintain that a similarly size plot in lawn, using less water!

A quick summary……The 5 essential elements that are needed to create low maintenance water feature are: fish and plants, a biological filter, a skimmer, rocks/gravel, and aquatic plants.

Now, How Do All These Elements Work Together?

In order to have a successful water gardening experience, you must think systematically and understand the critical role of each ingredient in Mother Nature’s recipe.

- The fish nibble on the plant life (and everything else), including the algae.
- In turn, the fish produce waste, which, along with other forms of natural debris, falls to the pond’s bottom.
- Debris is broken down by the aerobic bacteria and the other microorganisms colonized on the rocks and gravel all over the pond bottom.
- Once broken down, these substances are absorbed as nutrition by the plants.
- The plants grow and are once again nibbled on by the fish…round and round it goes, infinitely.

A simplified cycle follows:

1. Fish eat food.

2. Fish excrete ammonia (which is highly toxic to fish in quantity).

3. Bacteria break down ammonia to nitrite (which is toxic to fish in quantity).

4. Bacteria break down nitrite to nitrate (which is fairly harmless to fish).

5. Plants consume nitrate.

6. Fish eat plants

7. The cycle begins again.

The above is a simplification of the cycle, and is basically how it works in nature, and how we should mimic it.

So, in a naturally balanced water garden, you have this never ending aquatic circle of life where all parts complement the others, and play critical roles in the pond's natural born harmony.

POND FAQ'S

Can I learn everything I need to know about ponding from this FAQ?

Answer: No! A ponder never "knows all." By sharing knowledge and experimenting in there own ponds, the most seasoned ponder still acquires new knowledge on a regular basis. This FAQ is only a portion of the total knowledge you will need to be a successful ponder. Check out newsgroups and Koi clubs, go to pond building seminars, check with your local pond society, and look to the web for other pond sites and links. Collect information and don't just take someone's word for it. Ask around! Ponders are always willing to share their secrets and will willingly help you out.

How deep should my pond be?

Answer: Depth is more for preference. People who complain of green ponds often regret their deep ponds because they can never seem to see their fish. Water lilies generally require at least 18 inches. Koi need at least 18-24 inches. You generally can never go wrong making your pond too deep, unless of course your fish never rise from the bottom and you have proper aeration and filtration. The only thing you'll need is a slightly bigger liner. Many suggest that the volume (in cubic feet) should be at least twice the surface area. Extensive shallows in a pond will greatly increase the likelihood of algae, no matter the volume to area ratio. The water will circulate continuously through shallow areas and produce the perfect environment for high levels of algae to grow throughout the pond. Many pond owners created multiple levels to accommodate for the various types of plants they enjoy.

Does my pond need to run 24 hours a day?

Answer: Yes, absolutely! With an ecosystem pond it is mandatory that your run your waterfall filter 24 hours a day in order to maintain life in your ecosystem. If you shut off your pump, the filter will potentially drain and dry out the filter media (where the beneficial bacteria live). The beneficial bacteria in the filter must remain submerged in water for it to live!

Can I put my waterfall on a timer or remote control?

Answer: Positively not! Your pond or water features must run 24 hours a day as explained above.

What precautions should I take with electricity?

Answer: Water and electricity do not mix. Whenever an electric appliance is used in a pond environment such as pumps, UV's, lights, etc., they should always be connected to a protection device.
In the United States, these are called GFI's (Ground Fault Interrupters). In Europe, they are known under several names such as ELCB (Earth Leakage Circuit Breakers) or RCD (Residual Circuit Device). They should not be considered optional.
They detect a fault and cut the electricity of in milliseconds, virtually eliminating the chance of an electric shock. You can buy just one breaker and connect all pumps, UV's, etc. to it. This simple device could one day save your life.
If a pump or UV should flood, and the water comes in contact with the electricity, it will cut the electricity. If you touch a live wire, it will also cut. You may feel a slight jolt but it will not kill you.

Whenever you remove a pump or clean it, always unplug it from the electricity.
Ultraviolet tubes should always be switched off when water is not flowing through them. If you switch your pump off, make sure you switch your UV off as well.
If you are not confident with electric installations, get a professional to do it for you. Note: in some areas, it is illegal to do electrical wiring if you are not an electrician.
If you run electric cables underground, make sure you use armored cable or protective casing.
Use proper waterproof outdoor connections and switches.

What kind of maintenance can I expect with this kind of water feature?

Answer: Depending on location and design, a pond can be maintained with around 1-3 hours per week. Surrounding trees are the biggest contributor to pond debris and maintenance.

How much money does it cost to run a pond each month?

Answer: You could spend up to 15 bucks a month in algae control products and in most ornamental pond applications up to 11' x 16' x 2' the cost to run the waterfall pump 24 hours a day is approximately one dollar a day. So with that being said, depending on how many hours a day you plan on circulating your waterfall system will determine your cost. 24 hours a day at a buck a day plus the 15 bucks a month in algae control products should set you back just under 50 bucks. One thing I do want to be very clear on is, “What are your expectations of your waterfall? Often times people request waterfalls that are BIG, LOUD, RAGING and with lots of volume. You can count on paying more for electricity on more elaborate applications.

What kind of water consumption should I expect from this water feature?

Answer: The amount of water that you use due to evaporation in your pond should be minimal. Everyday backyard sized pondless waterscapes typically holds less than 300 gallons of water. In the winter you will experience little to no loss of water due to evaporation and in the summer months you should expect to loose a reasonable amount of water. If you have a properly installed automatic water fill valve and you still need to add water to your pondless waterscapes it is very likely that you have a leak. Consult with your installer ASAP. Some things you may consider during the design of your pondless waterfall are; summer temperatures and the overall height of your waterfall. Also take into consideration, the taller the waterfall is, the more splash you will receive, creating greater evaporation rates and larger water bills.

Why did my pump burn out?

Answer: There are three likely causes of pump burnout: overheating, electrical short or plainly the pump died. There is not much you can do about an electrical short (except to never allow water to get into a pump that is not meant to be submersible). Protect yourself, your fish, family and pets by always plugging all pond electrical equipment into a Ground Fault Circuit Interrupter (GFCI, or GFI). These are usually replacement receptacles that you can purchase at any hardware store. In many areas they are legally required for all outdoor applications.

Running the pump dry can cause overheating. No pump should ever be allowed to run dry, particularly submersibles. The other leading cause of overheating is blockage at the input. Many pumps come with a very small screen to prevent them from inhaling leaves and other objects, but the screen is often too small. Place the pump under a plant basket weighted with a stone, inside a crate filled with lava rock, inside a milk crate covered with window screen or wire two baskets around it like a clamshell to increase the surface area of the screen.

Some pumps will also run too hot if they are allowed to run continuously against too little pressure. Some believe that pond pumps should never be allowed to run at more than two thirds of their maximum capacities. This may be excessive, but it's certainly true that it does no harm to restrict the output flow from most pumps. If you are pumping to a waterfall, you probably have sufficient back pressure in anyway.

Should I put plants and fish in my pond?

Answer: Fish and plants are not mandatory for all water gardens. You can have fish only, plants only or both fish and plants. Plants are often necessary for clear water. Fish are a pleasure to enjoy because they move about and provide excitement. It is all personal preference as to the ratio of fish to plants goes.

Pro-fish people say that plants obscure the view of the fish and the pro-plant people say that fish will damage the plants. Yet most people want that happy medium, both fish and plants. Here's the news: you can have both. Fish waste provides a source of nutrients for water plants and the plants' use of these nutrients helps lessen the need for filtration. Fish provide movement and interaction that plants cannot. Plus they keep the insect population, including mosquito larvae and plant pests, in check.

Fish will eat or nibble on many aquatic plants; this is fine if your intended use of the plant is as a food supplement for your fish, but not so great if the fish are chowing down on your precious water lilies. Koi are particularly violent toward pond plants. Their enthusiastic feeding, breeding, and scavenging behavior can result in significant damage. Having said this, there are some things you can do to alleviate the problem. Avoid overstocking your pond with fish. Many suggest that you add a 1 inch layer of gravel (1/2 inch diameter or more is best) over the surface of all potted plants. This will help keep the pond from becoming muddy as the fish play around the plants. It will also keep the fish from uprooting most plants. Leave enough room when potting so that the gravel is well below the lip of the pot. The top of pots can also be covered with a large diameter mesh, such as leaf netting, which discourages fish from rooting in the pot but allows the leaves and blooms to grow right through. Oxygenators such as anacharis can be completely enclosed in a mesh bag for protection. Spawning mats during the spring can be used to capture the eggs although the long roots of hyacinth and other plants may work just as well.

Should I fertilize my water plants?

Answer: Some pond plants are heavy feeders and will need regular fertilization during the growing season, while others will need no nutrients beyond what they get from your pond's water. More specifically, water lilies, lotus, and marginals will usually need supplemental fertilizer, while oxygenators and floating plants will generally get what they need from the pond, particularly if you have fish. There are fertilizers made especially for pond plants, and some people also report good results using fertilizer for terrestrial potted plants. Fertilizer comes in liquid, granular, and solid form, the latter consisting of tablets or spikes. Granular is handy for adding to potting mixtures. Tablets or spikes are easy to use for periodic fertilization; they can be pushed down into pots without removing them from the pond. Don't fertilize your plants when they become dormant during the winter.

How many plants should I have and what kind?

Answer: Surface coverage of 50-80% (less for larger or shadier ponds, more for smaller or sunnier ones) helps keep algae growth in check and keeps water temperature lower in locations with hot summers. Use water lilies, lotus, floating plants, and marginals with floating leaves to accomplish this. One water lily or lotus will take up 1 square yard or more of pond surface. One bunch of oxygenators for each 1-2 sq. ft. of pond surface is recommended to help keep water clean. Additional marginals are added for contrast and interest.

Will my plants survive the winter?

Answer: Pond plants vary in the amount of cold they can endure. Zone information, if known, is given in the plant descriptions. These are the standard USDA hardiness zones. If you live in a cold climate, plants that aren't hardy will need to be wintered inside, or else treated as annuals and replenished with new stock when the weather warms.

What do I do about pond plant pests?

Answer: Never use an insecticide or any other product that is not specified to be safe for aquatic life if you have fish, snails, or other pond inhabitants. Many pests can be eradicated or at least controlled by either squirting with a stream of water or shaking the leaves underwater to knock the bugs into the water. If you have fish, they will help out by eating the bugs.

For aphid/whiteflies/spider mite control, we suggest mixing one tablespoon of dishwashing detergent with one cup of cooking oil. Mix 2 1/2 teaspoons of this mix to one cup of water; spray on water lilies every 10 days. The detergent emulsifies the oil so it does not leave a film on top of your pond. We have successfully tested the technique on water lilies with aphid infestations.

How much sun and/or shade do I need?

Answer: Most water plants require sun at least half of the day, but preferably more. Sun may increases the probability of algae, but the plants in the water will compete with the algae for nutrients and generally solve this problem. Sufficient plant coverage on the surface is almost a necessity for clear water in most garden ponds. Try water lilies, lotus, water lettuce, and hyacinth to provide shade for your pond. Other plants will tolerate shady conditions. Check with pond suppliers for additional suggestions.

What do I do with my new fish after purchase?

Answer: Never just release (or throw) your new fish into the pond. When you come home from the pet store with your fish in their plastic bag, float them for 15 minutes on the surface of your pond, allowing the temperature to equalize. Goldfish tolerate temperature extremes very well, but sudden rapid changes can be fatal. Next add some of your pond's water to the bag of existing water and fish and let them sit for another five to ten minutes on the pond's surface. This allows the pH to change gradually to match that in the pond. Sudden changes in pH are far more detrimental to fish health than pH which has gradually become too high or too low. The pH should be treated to gradually return it to normal, however. Finally, open the bag and allow the fish to swim out at their leisure. Make sure the bag does not collapse and smother them. Give the fish enough time to decide they would like to check out the pond on their own.

How much do I feed my fish?

Answer: Some say you shouldn't. Fish can perfectly exist on the algae growing on the sides of your pond. The more of it they can eat, the less you see. There is plenty of food for the fish with algae, bugs, eggs, larvae, etc. Many people never feed their fish at all.

The general consensus is to feed the fish as much as they can eat within 5 minutes. The best advice is usually on the label of the food. Feed only when the water temperature is steadily above 55 degrees Fahrenheit. Feed one to three times daily depending on the temperature (of the water, not the air!). If the temperature is lower, feed less. If higher, feed more. Try not to feed more than four times a day.

Note: Koi will nearly always appear hungry. Do not mistake this behavior as a call to eat. Overfeeding may cause illness and water quality problems. Koi are omnivorous and cold blooded. They will eat anything and as the water temp goes down so does their metabolism.

What do I do if I have too many fish?

Answer: If you wait long enough you probably will need to reduce your population of fish in the pond. Many pet stores will take them (Rail City Garden Center!). Ask around to other pond owners. Someone is always looking for new fish. Check with your local water garden or Koi club and see if they will take them at their next meeting.

One of my fish died for no reason. What's wrong?

Answer: Put the fish in a plastic bag and get a water sample. Take both to the local pet store (Rail City Garden Center) and see if they can identify the problem. If they can not diagnose a problem, the death of the fish may have just been random. Fish sometimes die just like humans. You may want to do a water test to find out the pH, nitrate level, etc. This may be beneficial in the diagnosis. Do not add chemicals or antibiotics without being absolutely sure what the problem is. Never add antibiotics to your entire pond. Only do antibiotic treatments in a quarantine tank or pond. Antibiotics can have bad effects if unnecessary in your water pond.

How soon can I add fish after creating my pond?

Answer: Do not add fish before your water has aged for a minimum of two weeks, and preferably a month. This still applies if you use a de-chlorinator which says that you can add fish immediately, and even if people you know have done it successfully. In the early days after stocking a pond chemical fluctuations are common and expected. Allow the beneficial bacterial colonies time to establish. The fish need these microbes for their survival. When the fish get in there and start processing food the ammonia level will go up. Without the bacterial colonization and efficient plant life it will kill the fish. If you absolutely cannot wait, buy a bottle of bacterial starter (liquid bacteria) available from your pond supplier and pour this in. This gets that bacterial colony in shape prior to adding fish life! Do not add fish to an unfiltered pond which has no plants. There will be no means of neutralizing fish wastes and no places for the fish to hide from predators and weather.

How do I test my pond water?

Answer: There are three primary test kits that pond owners should think about purchasing: pH, ammonia, and nitrite. These tests are most likely used to diagnose problems in a pond. Nitrate, oxygen, and chlorine are also useful test kits, but usually not as necessary to test. Liquid tests kits are the most accurate and most commonly used. Other tests kits like strips are easy to use, however, they are not as accurate.

New ponds should be tested every few days while existing ponds should be tested periodically (every few weeks or months). Instructions are usually printed on the box for each test kit. Most kits are very easy to use. Test kits normally advise what to do if you get adverse readings.

My water is green. What do I do?

Answer: Before battling algae, learn as much as you can about the natural balance of a pond. Realize that new ponds must go through a growth period which usually means green water before balance occurs.

You probably do not have enough plants or you have too many fish. Plan on 20 gallons of water per goldfish and at least 100 gallons of water per Koi and as many plants as you can afford to buy.

New ponds nearly always go green before they clear up. You may also be over feeding your fish and as a result, feeding the algal bloom. The green water which troubles water gardeners is caused by suspended algae. It is important to remember that the green algae you see are not bad. It is only a visual nuisance. The green, fuzzy algae on the sides of the pond are good algae and help to balance the pond.

Some people claim that high algae content in the water actually improves the color of fish. Your best remedy is to add plants of all aquatic types. Plants such as water lilies which have spreading pads shade the water depriving the algae of sunlight it needs to survive. Underwater plants and floating plants with free roots absorb nutrients directly from the water. Various bog and veggie plants filter some of the excess nutrients that feed the algae. Since algae are the lowest life form in your pond it will not be able to compete with these higher order plants for nutrients and will die.

If the bottom of your pond is covered with submerged plants you will rarely have green water. Determine the maximum number of fish your pond can support and aim for several fewer than that. Do not change your water unless you know contaminants have entered your pond. To change your water is to begin again with a new algal problem. Your pond must be established in order to fight the algae. The best advice is to be patient!

Finally, all ponds naturally get green from time to time. Spring time is a good example. Before the plants fill out the fish are beginning to resume their active life styles and the sun is heating up. Algae are delighted by this, and begin to grow and blossom. There is some degree of algae in your pond even when it seems clear. You can never totally eliminate your algae.

Algae require three major conditions - Nitrogen, Phosphorus, and Light. Eliminating any one of those prevents the growth of algae. Green water is particularly annoying as it prevents you from seeing into the pond. Phosphorus is probably the most difficult element to deal with, as it is often present in your water supply. You need the light if you have plants, though shade from outside the pond might be possible if you only have fish. In a planted pond, lilies and floating plants like water lettuce and water hyacinth will eventually block light from the algae.

Many algae will preferentially get their nitrogen requirement from ammonia (fish waste). The best solution to the presence of ammonia is a working biological filter. However, filters usually only convert ammonia to nitrite to nitrate. Algae will use nitrates too, but other plants will compete for it.

Other great tips to keep out the algae:

- Net the pond during the fall to keep leaves out of the pond.
- Trim dead growth from the plants and remove floating tropicals if you live in colder climates.
- Lower your number of fish and do not over feed the fish. Reduce the amount you are feeding your fish, or reduce the number of actual feedings.
- Add many plants of any type. Marginal plants such as reeds, cattails, iris, pickerel weed and arrowhead are good. Try floaters such as water hyacinth and water lettuce. Place underwater plants such as anacharis, which uses the nutrients that the algae prefer.
- Provide plenty of shade. Lilies, floating plants (water hyacinth and water lettuce), and artificial shade (shade cloth, umbrella, arch or trellis planted with vines) will prevent the sun from finding the algae.
- Clean the debris from the bottom of the pond. Some people use snails to chew on the debris. This leaves less decaying matter for the algae to take up.
- Reduce or stop fertilizing your plants. Fertilizer may also promote algae growth.
- Use mechanical filtration to remove fish waste. This could be a settling chamber in your filter or the first row of brushes in your filter media.
- Construct a bog filter with a surface area ten to twenty percent of the surface area of your pond. Pump the pond water through the filter at a turnover rate of one-half to one-fourth of the total pond volume per hour. Veggie filters use many of the nutrients and provides a good place for bacteria to grow. Build it with a bottom drain (or two) for ease of cleaning. This may prevent backups and leaks over the edge. A veggie filter can also be as simple as floating water hyacinth at the top of your stock tank filter.
- Purchase a sludge-eating product (concentrated bacteria culture).
- Many people use an Ultra-Violet clarifier to destroy floating algae. This is good if you are very sure that you have zero ammonia. This will cost more than most pond products and you will need to change the bulb every year.
- Add a bale of barley straw to your pond for string algae. Barley straw has been shown to kill it and corn meal will take it out of suspension and it will sink to the bottom of the pond. However, in both cases you're adding even more organic matter to the pond, and you need to remove it when it has done its job.
- Chemically, 5 parts per billion of Copper Sulphate will destroy algae, but lower your oxygen levels dramatically in your pond water…be very careful!
- A phosphate remover usually found near the aquatic plant fertilizers in hardware stores and garden centers is an option. Measure the amount suitable for your pond size, place it

in a mesh bag, and soak it in a pail before placing it in the filter. It needs to soak because it gives off heat when it first becomes moist.

- Most of all, be patient!!

Why is there foam at the base of my waterfall?

Answer: Foam in the pond is rarely caused by soap as many would guess, but by the agitation of water containing dissolved organic compounds (DOC). DOC may be caused by fish wastes or by decaying plant matter. First clean the bottom of the pond and ensure that there is no decaying leaf mold. Skim the foam with a net. If you have eliminated the source, no more foam should appear.

If the source of the DOC is your fish, you can remove it with activated carbon (sources claim from one to eight pounds of carbon per one thousand gallons) placed in the filter (or in the base of the waterfall). Put the carbon in a pantyhose leg so that you can easily remove it later. It should be removed once the foam disappears.

How often should I change my pond water?

Answer: You should never do a full water change. When you change your entire pond's volume of water you are in reality starting from ground zero. Do not do a total water change unless you know your water has been contaminated with a toxic chemical. Most Koi breeders say that a 10% water change weekly is a good promoter of Koi growth. A slight water change is good for your pond periodically. If you do change any of the water in your pond, USE DECHLORINATOR! Tap water usually contains chlorine and chloramines which are deadly to fish. Use the prescribed dosage of dechlorinator to make sure that the chlorine is effectively removed from your pond.

Some people prefer to use a carbon filter to remove the chlorine and chloramines from their water.

How and how often should I clean the pond?

Answer: Pond cleaning may depend on many factors. There will be significantly less detritus if you are not near deciduous trees, have a surface skimmer, or if you place a net over your pond during the fall and winter.

Frogs must be able to bury themselves in the muck in the bottom of the pond so do not keep the bottom extremely clean if you plan to keep them. If you do not have frogs, clean the bottom of the pond in the late fall and also early spring. If you do have frogs, clean the pond as soon as the frogs become active in the spring.

You can use a strong net to scoop the muck from the bottom, a common pool skimmer net for the sides and bottom, or a Shop-Vac for a vacuum of the entire surface. In a concrete pond, a rake is an option.

I just cleaned my pond and my water turned brown. What's wrong?

Answer: More than likely, nothing is wrong. When you messed with the filter apparatus and adjusted plants and moved rocks you stirred dirt into the water and moved the algae on the walls. More than likely within a few days' things will settle and your water will resume its former clarity.

I haven't cleaned the pond in months and the water is brown. What's wrong?

Answer: You may need to get in there and do some cleaning. Your house will be dusty if you don't clean it periodically. The same is true of your pond. It is an unnatural environment.

Sometimes the water clarity will change and this is natural. Check how your water looks on days with different types of weather. Sometimes the pond will look brown, sometimes clear, and sometimes green. Remember that this is a living system and will change. It may be a more serious problem, however. It may mean your dog has been swimming in it or your fish have been rooting in the lily pots. If your fish decide to stir up the muck in the bottom the water will become unclear as well. If the water smells sour or foul, you may have a more serious problem. Test your water quality or have your pet store do it for you. Act accordingly once your find out if something is out of balance.

Will a pond attract mosquitoes?

Answer: Mosquitoes are attracted to stagnant water so the answer is yes and no. With a pond you are dealing with some sort of waterfall or stream with chaotic moving water that is less than appealing to the pesky mosquitoes. What your pond will attract is dragonflies and birds, which both prey upon mosquitoes. So it could be debated that a pond may even decrease the amount of mosquitoes on your property! I wonder if we should start marketing the ponds that way? Just kidding.....

Can I run my pond in the winter?

Answer: Running your water feature in the winter is a great idea. Some preventative things will need to be done differently compared to summer use. Ice can and will build up, so you will want to monitor the amounts because as the ice forms it's essentially removing the water from your pondless reservoir. Some important things to look for… Make sure the ice doesn't divert the water out of the stream area and if it does carefully remove the ice. Do not use any sharp tools to remove ice as they have potential to damage the rubber liner. Hot water and rubber mallets have worked well for us. You will also need to periodically top off your feature because automatic fill valves have to be shut off for the winter months. Keep a garden hose in your garage, so that you can easily connect it and add water to the feature as needed. If you choose to shut your feature down for the winter, you need to remove you're pump and store it in the garage. The pump(s) should be removed from the pond and thoroughly cleaned. Oil filled pumps need to be stored in a bucket of pond or distilled water to prevent the seals and gaskets from drying out. Magnetic and epoxy sealed pumps can be stored dry. With all this in mind enjoy your water feature all year long!

Troubleshooting Pond/Liner Leaks

Note: *Pond Leaks - "Anytime you are troubleshooting for pond leaks in extreme heat it is mandatory that you provide aeration to your pond when you have your pump shut down for any period of time!"*

Step 1: Does Your Pond Actually Have A Leak?

It's hard to imagine how much water can evaporate from a pond during the dog days of summer.

1. It's been our experience here in **Northern Nevada** that you can typically lose 1" to 1 ½" inches of water each week.

2. Pond owners in the hot, arid climates of the upper and lower deserts, Southern California, have reported evaporation levels in excess of 3" a week.

Remember, these are averages. Some ponds may not experience evaporation levels this high, while other ponds with large pumps pushing high volumes of water, and /or ponds designed with multiple waterfalls with a lot of cascades and splashing, may have evaporation rates much greater than these.

Step 2: Look For Low Edges

1. Here's a little secret. 99% of all "pond leaks" are not due to a hole in the liner, but rather water making its way over the edges of the pond, stream, or waterfall, and lot of the time this is due to an overgrowth of aquatic plants.

2. Look for any low edges. Settling at your pond's edge is the most common cause of a pond leaks in a new pond.

3. Typically, the low edges are found around the stream and waterfall where settling may have occurred after a few rainfalls. These areas are usually built up during the construction of the pond using the soil from the excavation, and are prone to some settling.

4. Low edge signs
   a. Wet mulch along the edge of the pond or stream
   b. Wet gravel along the edge of the pond or stream

5. You may need to move back the gravel in certain areas to find the low edge.

How to Fix a Low Edge

Low edges can be built back up by simply backfilling and compacting soil beneath the liner in order to raise the edge of the liner above the water level.

Step 3: Look For Obstructions in the Stream and Waterfalls

Check to make sure nothing is causing the pond leaks by restricting the flow of water down the "waterfall or stream". Any adjustment of the rocks in the **waterfall** may have inadvertently caused some of the water to be diverted over the liner.

Water can also make its way over the edge due to excessive aquatic plant or algae growth in the stream or biological waterfall filter. The water simply gets backed up from all of the aquatic plant growth. Plants and algae should be maintained by trimming them back in order to let the water pass freely.

Step 4: Shut Down the Pump

You have spent 15 minutes or so following the suggestions listed above and you still can't find the leak. Well, we now have to go one step further and try to narrow things down a little more.

1. Turn off the pump and leave the pond for a period of 12 hours or more (If your pond is heavily stocked with fish, provisions for supplemental oxygen may be necessary).

2. After 12 hours, look to see if the water level has dropped in the pond.

What Does This Determine?

1. If the water level has dropped then you know the leak is in your pond.

2. If the water level remains the same in your pond then it is assumed that the pond leak is in the stream or plumbing.

If the Leak Is In Your Pond or Reservoir

1. If you are concentrating on looking for the pond leaks in your pond or reservoir, then completely ignore the waterfalls/stream area.

2. When the water level has stopped dropping, then concentrate your search around the perimeter of your pond at the level that the water has stopped dropping.

3. If the water level stopped below the bottom of the skimmer faceplate or snorkel vault you can rule out the skimmer/vault and concentrate elsewhere.

4. If the water level is above the bottom of the faceplate you should investigate the skimmer/vault. It may not have sealed correctly, but don't tear apart the skimmer faceplate.

Algae Control and Preventative Maintenance

Some Causes of Excess Algae:

There are about 3 basic causes of excess algae or an algae bloom.

1. For survival, algae needs nutrition (nitrogen & phosphorus) and sunlight. This can be in the form of fish waste (too many fish), over feeding fish, decaying organic matter (leaves & plants), lawn fertilizers and decomposed fish. A build up of sludge on the bottom of the pond will feed the algae also.

2. New ponds are very likely to have an algae bloom. This is not necessarily a bad thing. The algae are actually consuming the excess nutrients in the water, helping with odors and clarity.

3. Because there is a constant supply of nutrients, string algae flourishes in waterfalls and shallow streams. The sunlight is usually unobstructed and the water is warmer. There may also be a higher concentration of algae around the shallow edges of the pond where the water is warmer and there may not be enough water circulation there.

Natural Algae Treatment:

There are several things you can do to lessen or eliminate a mild or moderate algae bloom with out the use of chemicals.

1. Manually rake or pull out all the large, physical algae you can reach. Use a soft brush and net if necessary.

2. Use GreenClean granular algaecide to clean up all the rest. GreenClean is basically a fish, plant, animal, and pond friendly round-up for your pond. First, turn off your pump. Then apply the GreenClean to the affected areas (just like you were to dust powdered sugar on your French toast). Let the algaecide sit for approximately 15-30 minutes. Turn you pump back on and boom, there goes the algae. Any large pieces of dead algae should be removed, as any left over dead algae remaining will eventually re-circulated back through the system and end up re-growing.