Utah Water Garden & Koi club

June Newsletter

Hello Everyone!

June is here and we hope your gardens (and you) are flourishing! It feels great to see our ponds come to life, our fish swim in the sunlight, and our waterlilies start to bloom. With COVID restrictions easing, we were able to have our first meeting of the year on June 18 at the Avellars' lovely home. Everyone enjoyed a light dinner and social. We will announce plans for our July get-together soon.

With the cutbacks to some of our summer plans (which would have been incredible – so hold on for 2021!) we will be able to stretch 2020 dues through 2021. So: if you have paid for 2020, you will not need to pay for 2021. If you have not paid this year don't worry – it's fine. Your dues will start again in spring of 2021. It is wonderful to associate with each of you and to be able to connect, even virtually.

Please feel free to join us at our coming meetings – **our next meeting will be on July 16 at 7:00 pm.** at Utah Water Gardens, 5911 South 1300 East (just south of Cottonwood High School). Hope to see you there! And if you are not comfortable coming out under current conditions – we get it! Stay safe and enjoy your beautiful gardens. Enjoy reading the newsletters. We will see you again soon.

Happy gardening!

Best,

Utah Water Garden & Koi Club officers

In this issue

The 2020 Pond Tour is going virtual!

That's right – we will have a 2020 Pond Tour, but it will just be a bit different. **We're going virtual!** And we invite each of you to participate. Send us a couple of photos or short video of your pond, together with a description, **by July 31st** to Utahwatergarden@gmail.com. We'll put it together in a video and post it online for all to enjoy!

We Held a Meeting!

We held our first pond club meeting of the year on June 18th – a slightly-delayed opening social at the Avelar's home. We enjoyed light hors d' oeuvres and great company! Despite social distancing and face masks, it was great to be together and enjoy each other's company.

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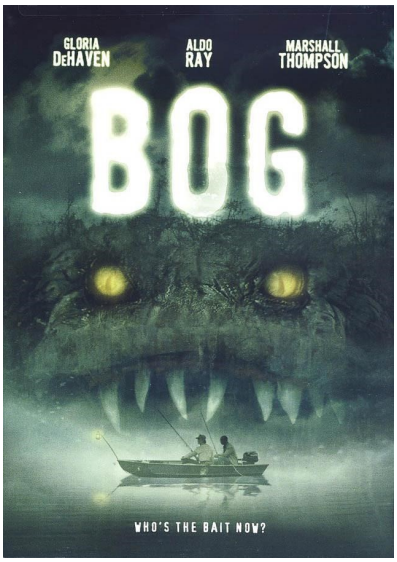
Bogs are not evil!

A bog is an area that consistently has a water level several inches below the “soil” surface. In nature, bog soils are usually very high in organic materials and low in pH. Traditionally, using semi-permeable liners, ornamental bog gardens have imitated these conditions in order to grow plants that have adapted to these areas, such as pitcher plants.

For filtration purposes, bog filter gardens are constructed using waterproof pond liner and pea gravel. They may utilize a wide range of marginal pond plants, bog plants, and even many terrestrial garden plants.

These bog filter gardens have two primary functions: beauty and filtration. The bog filter provides a perfect background for the pond, showcasing plants while allowing more pond surface area to remain open. It also provides a natural looking transition from land to pond, and enhances the landscaping around the pond. Bog gardens are the ultimate pond filter for water purity, clarity, and low maintenance. Unlike manmade filters, bogs can completely process organic waste, including solid waste, and even process some inorganic waste, such as minerals. Manmade filters merely mechanically trap debris and some biologically detoxify waste. Waste by-products still build up in the water and create various problems, including a build-up of nitrates and phosphates that promote algae growth. In a bog filter, gravel traps organic debris until it can be broken down by bacteria and used by plants. By-products are processed and used as food by microbes and plants.

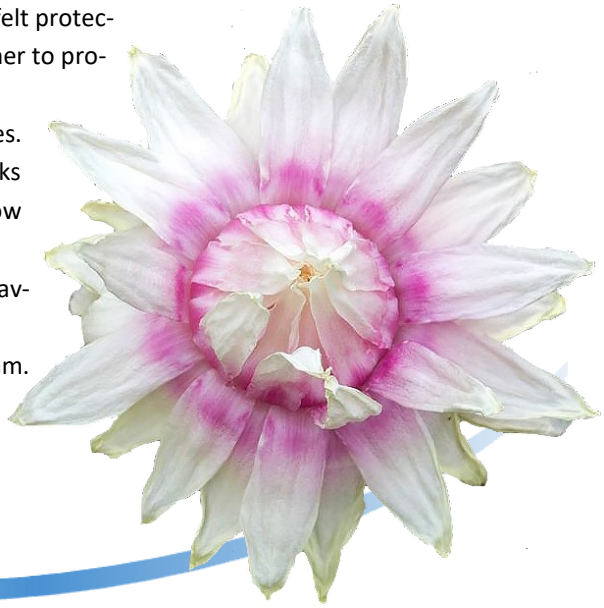


Ponds with bog filters usually experience no algae blooms, even when brand new, and those that do quickly balance themselves. Bog filters are also extremely economical to build and maintain, and are compatible with other filtration systems if you desire them. Once you’ve used a bog filter, you won’t ever want a pond without one.

Typical Bog Filter Construction

1 – The size of bog filter required varies according to the organic load it is expected to process, often a function of how much fish food is used. For most purposes, a bog filter whose surface area is 10% of the surface area of the main pond will suffice, with up to 20% or more for heavy loads. Intense sunlight and high temperatures stimulate algae growth and so require higher performing bog filters, while lower temperatures and light levels reduce demand. Shape is more of an aesthetic function, dependent on each pond’s landscaping. Bog filters are often placed opposite from where people usually view the pond as they provide a beautiful background for the pond, and can wrap around several sides if desired.

2 – Excavate an area next to the main pond to a depth of 12-14". Shallower bog filters provide less filtering area and heat up quickly, while deeper ones tend to create too many anaerobic low-flow zones (a certain amount of anaerobic activity is normal and even beneficial, but too much can produce toxic quantities of by-products). Build a retaining wall of concrete or concrete blocks to separate this area from the main pond. The top of the wall should be 1-2" below the pond surface when filled. Remember to make the wall for the bog filter level, and to allow extra liner for the sides of the retaining wall. Use felt protection mat or scrap liner to protect the liner from rough or sharp edges. Fill in any large cracks deeper than 2" below pond surface which would “leak out” gravel, using mortar or black expanding foam.



An alternate filter placement is to build the bog as an extra-wide shelf, place the liner, and build the retaining wall on top of the liner, using rock if desired. Another style is to retrofit one end or corner of the pond into a bog filter.

3 – Place liner in pond and bog filter, following vendor's liner installation instructions. Hide all liner after construction.

4 – Install the pump in the pond as far away from the bog filter as possible, using a pump which circulates pond volume at least once every two hours for ponds under 4,000 gallons, and at least once every four hours for ponds over 4,000 gallons (more is better). Use over-sized pipe or tubing to maximize flow to the bog — 2" diameter is standard. Screen or pre-filter the pump enough to prevent clogging, but do not over-filter; let the bog filter trap and eat the detritus. Some people split and valve the output from one pump to operate both a waterfall and a bog filter, while others use two pumps. The waterfall can even empty into one end of a wrap-around bog filter, with water falling into the pond at the other end of the bog.

5 – Use PVC pipe to build a distribution manifold the length of the bog. Drill 1/4" holes about 3" apart, in a line about halfway between the side and bottom of the pipe, or cut slots into the pipe (we prefer slots). Use an elbow at the end of all manifold lines, add a short piece of pipe to bring it to the bog surface, and glue a male adapter with a threaded cap on it for cleanout. Center the pipe along the bottom of the bog. Bogs wider than 3' benefit from multiple lines set 12-18" apart.

6 – Place decorative (usually flat) rock across the top of the retaining wall, allowing small cracks between and under rocks for water flow. Water will be pumped from the main pond into the bog filter, through the gravel, and flow back into the pond over the retaining wall through cracks between rocks.

7 – Fill bog filter with 3/8" diameter rounded (pea) gravel, mounding the gravel so it is 2" to 3" above water level for most of the bog. Having gravel above the water surface is important because water will follow the path of least resistance; if allowed to go over the gravel, water will bypass most of the gravel, bacteria and plant roots doing the filtering. Using smaller or crushed gravel or sand restricts water flow and clogs too easily. Using larger diameter gravel or rock is less hospitable for plant roots, and provides insufficient surface area for colonizing bacteria. It's all right to mix larger pieces of river rock into the top layer of gravel for a more natural look. Incorporate some of the rock that is around the pond and landscape in the bog filter as well, to visually tie the landscaping together. Feel free to use some large pieces of wood or other decoration in the bog. While all this decoration is likely to be covered by plant material soon, it looks more natural in the meantime, and the filter will be exposed from time to time after harvesting or during winter dormancy.

8 – Plant the bog filter, using any moisture loving plants. Your choices will be dictated by climate to a certain extent, unless you are willing to sacrifice or repot and bring in tender species. Different plants obviously thrive in different climates.

We emphasize using two plant categories for greatest efficiency:

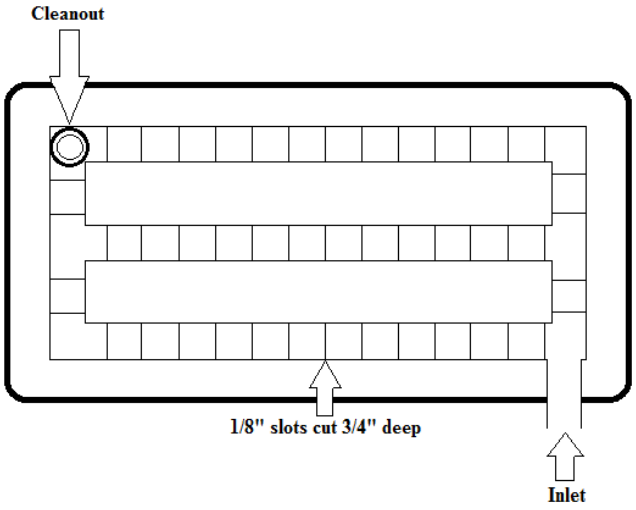
- Tall plants with persistent (year-round) fibrous roots such as various rushes, Thalia, Iris pseudacorus, Iris versicolor, and cannas–their fibrous roots

provide excellent colonization sites for beneficial microbes in both summer and winter. Gunnera and Thalia make great focal points. Other tall plants include cattails, pickerel, Louisiana iris, lizard's tail, ribbon grass, horsetail, hostas, and daylilies.

- Short "ground cover" plants around the bog edge and among the tall plants. Excellent fast-growing ground covers include parrot's feather, creeping Jenny, variegated or green water celery (edible!), and aquatic mint (edible!). Shade loving plants such as aquatic forget-me-not and watercress can find homes in a bog filter. These fast growers provide the bulk of the nutrient absorption, and soften the transition between pond and land; in fact, they will probably grow out into the soil bordering the bog. Use only a few varieties to minimize an untidy look.

Remember, bog filter plants have their roots in the water but their crowns above water, plus the water is fresh and highly oxygenated. This means you can use plants that are not usually considered aquatic, such as impatiens. Most ferns are also moisture-loving. Now may be the time to experiment with hydroponics tomatoes!

Typical Bog Gravel Filtration System



When planting the bog filter, do not strip the soil away from the plant's root ball. Instead, gently remove the plant from the pot, and plant the entire root ball in the gravel, soil and all (but definitely without the pot!). This small amount of soil will not harm the pond or filter, and will help the plant quickly adjust to its new home.

To achieve a full effect, use up to one plant per square foot of bog filter surface; or use as few as one plant per three square feet and let time do the rest. Fewer plants means reduced filtration until they grow and fill in.

9 – For faster cycling of nutrients, inoculate the pond with a pond bacterial culture. This can help with a new pond, or if the pond accumulates organic debris quickly. While occasional bacterial inoculation may be useful with heavy organic loads (overcrowding and overfeeding fish ponds is the #1culprit), it is not normally needed.

10 – Little maintenance is required, other than harvesting excess plant material and some trimming of dead foliage in the fall. Trim and divide plants as needed. When plants are overcrowded, they can't do their job–their growth slows, and they are not pulling as many nutrients from the water. Groundcover plants grow especially quickly. Pulling plants out of gravel is quick and easy, as is trimming. Don't feel bad about harvesting them, as they make great compost, and your garden is a better place for the nutrients than your pond. Watercress is enjoyed by people and koi. With the right balance, sediment will build up very slowly, if at all. Every 5-10 years or so, a partial cleaning of the gravel may be required in areas where large amounts of inorganic debris are deposited, such as dry, windy climates where wind blows a lot of dust in.

There are many variations to this basic design. Existing ponds may be retrofitted with a bog filter by making the bog slightly higher than the main pond, and connecting bog and pond with a streambed or piping (they don't even need to be close to one another!). Or make a bog in the corner of an existing pond, create a bog island, convert a waterfall filter, use oak barrels or ceramic pottery bog filters…you are limited only by your imagination.

Bog filters work incredibly well in promoting crystal clear water, and they exert a high degree of control over algae. Use and enjoy their beauty and simplicity.

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Why Aerate Your Water Garden?

When the sun goes down, fish and plants both use dissolved oxygen in your pond water. Aeration systems ensure oxygen levels stay high day and night to keep your fish, plants, and pond ecosystem healthy. Subsurface aeration works from the bottom up, circulating the water and infusing oxygen into the pond. If you do not already have an aeration system, here are six great reasons why you should consider adding aeration into your pond.

1. **Limitations of Water Features** – Most water gardens rely solely on waterfalls, fountains, or spitters to circulate and aerate the water. These units can be effective; however, they are only adding oxygen to the top portions of the water. This leaves many areas of the pond, especially the bottom, untouched allowing for the accumulation of organic debris. Using a properly-sized aerator starts moving the water at the bottom of the pond, allowing for improved circulation and dissolved oxygen levels.
2. **Beneficial Bacteria** – Like your fish, beneficial bacteria are aerobic and need oxygen to survive. These bacteria consume the excess nutrients in your pond which act as fertilizer for algae growth. Aeration makes these bacteria work harder to clean up your pond leading to a cleaner pond with less build-up in the water column or at the bottom of the pond – which is something your fish will thank you for.
3. **Winter Water Quality** – Though your fish and filtration system goes dormant for the winter, the organic debris will continue to decompose and release gas into the water column. When ice is formed completely over the pond, the gasses become trapped, replacing the oxygen and leading to a fatal situation for your fish. Heaters and de-icers keep a hole open in the ice to allow for ventilation, but they are not able to circulate the pond to move those gasses out. In comes aeration, providing a continual supply of oxygen. Additionally, moving all that water also helps to discourage ice formation, which means that you can use a smaller wattage de-icer and reduce your energy costs.
4. **Saves Money** – Aeration systems are energy-efficient and can help you cut down on your energy bill. These systems are designed to run 24/7, yet only cost a few bucks per month. Rather than running a costly waterfall pump all the time, use it only when you are there to enjoy it and rely on a properly sized aeration system to keep the dissolved oxygen levels raised. This small change is not only better for your fish, but can save you hundreds of dollars each year.
5. **Reduced Maintenance** – In conjunction with proper filtration, adding aeration will keep your pond cleaner longer. This means you can spend more time relaxing around your pond rather than cleaning it.
6. **Fish Love it** – Your fish will gather around and enjoy the bubbles coming from the diffusers. With all the benefits that an aeration system can provide, you pond will become a balanced ecosystem that will make any fish happy.

Pond Fish

If your pond is new and the filters are not mature yet don't buy a lot of fish, just buy a few cheaper ones and buy more (about 2 every 4 weeks) when your system has matured (in about 4 weeks).

Make a point to buy one fish that is white. When water conditions deteriorate a white fish will have its fins turn pink or red and the whole fish could blush giving you a visual indicator that something is wrong. You cannot do that with fish whose fins and tails are colored.

When to buy. The best selection of pond fish can be found in the spring although you can find some fish during the winter months it is suggested you do not put them in your outdoor pond as the temperature shock can kill them. If they are small enough keep them in a 20 gallon aquarium at room temperature until the outside ponds temperature more closely matches the aquariums.

Where to buy. It is important to look at the state of the ponds and fish at the shop you are intending to buy from. Make sure the water is clean and doesn't smell. If there is a strong fishy smell and the fish don't look happy it could be worth avoiding that dealer.

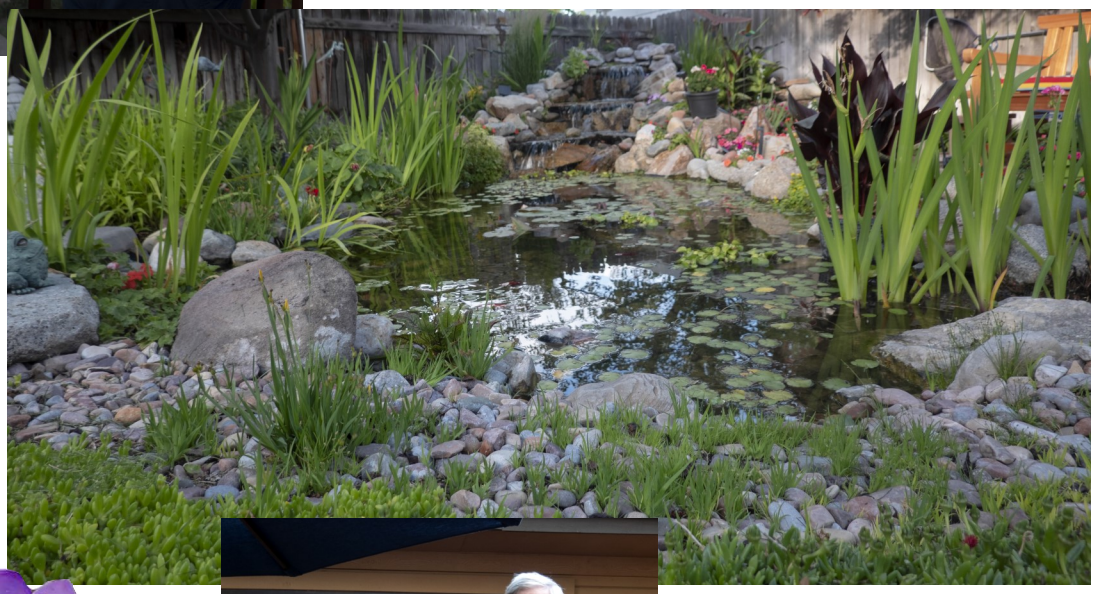
How many fish can I have in my pond? As a general rule of thumb, for koi, you should have 1 inch of fish for every 10 square foot of water and they should not be put in a pond smaller than 1,000 gallons. For goldfish, aim for 1 inch of fish for every 3 square feet of water. Plan on the size the fish will grow into since you will not want to give them away once they get too big for the pond. Koi can get up to 30 inches long and gold fish up to 10 inches. Over crowding will result in poor water quality and your fish population having many health problems and deaths. With proper filtration there is more room for fish.

Choosing fish. When you have seen a fish you like spend a bit of time watching it. It should be swimming normally, it shouldn't have jerky movements or have its fins clamped to its body. Make sure it doesn't have gill problems, it shouldn't appear to be breathing hard and its gill plates shouldn't stick out from the head. Also avoid fish with holes or raised scales, or fungus. If you decide you want the fish you can have a closer look at it when the dealer catches it, examine it for any redness or marks, or large parasites such as fish lice or anchor worms. And remember never buy a fish because some dealer tells you what a great fish it is, choose a fish because it is beautiful to you.

Transporting fish. When you have chosen your fish the dealer will bag it for you and fill the bag with oxygen. The oxygen is as important as the water, especially on a long journey, there should be enough water to cover the gills when the bag is on its side and the rest oxygen. fish are usually double bagged to avoid leaks, and should be kept in the dark on the journey, either in a black bin liner or in the boot. It is a good idea to put the bag in a box to minimize movement on the journey, lay the bag on its side so the fish has more room and is less likely to be damaged. When you get home float the bag on the pond for 20 minutes so that the temperature will equalize and then release the fish. Ideally new fish should be kept in a quarantine pond for a few weeks so no disease is introduced to the existing fish, but this is not normally possible for most fish keepers, it might be good to use an anti-parasite treatment to reduce the risk of disease. Do not put fish in a newly completed pond. Wait a couple of weeks for the ecosystem to get going and the chlorine to disapate. If you don't you may end up with dead fish within a week or so.

Want to Learn more? Check out the Club's website!

June Opening Social



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Who we are

The Utah Water Garden Club is a non-profit organization serving the greater Wasatch Front. We strive to foster an appreciation for and interest in the use of water in the landscape, through monthly meetings, educational programs, an annual pond tour, and sharing our water gardening experiences. We are a group of volunteers dedicated to water gardening, pond keeping, and koi. Our members range from novices to commercial professionals.

Our annual Water Garden Tour is a self-guided tour of out-standing local garden. Due to the current pandemic, we are holding a “virtual” 2020 tour!

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