Good Water Garden Plants for Minnesota

**Floating:**
Water Lettuce - *Pistia stratoide*
Water Hyacinth – *Eichornia crassipes*
American Frogbit – *Limnobium spongia*
Azolla – *Azolla caroliniana*

**Hardy Bog:**
Blue Flag Iris – *Iris versicolor* (Native)
Aquatic Mint – *Mentha aquatica*
Arrowhead - *Sagittaria latifolia* (Native)
Bog Bean – *Menthyanes trifoliata* (Native)
Water Forget-Me-Not – *Myosotis scirpoides*
Pickerel Rush – *Pontederia cordata* (Native)
Horsetail – *Equisetum hyemale* (Native)
Water Horsetail – *Equisetum fluviatile* (Native)
Dwarf Horsetail – *Equisetum scirpoides* (Native)
Lizard’s Tail – *Saurus cernuus*
Mare’s Tail – *Hippuris vulgaris*
Marsh Marigold – *Caltha palustris* (Native)
Dwarf Cattail – *Typha laxmannii* (Native)
Miniature Cattail – *Typha minima* (Native)
Variegated Sweet Flag – *Acorus calamus variegata*

**Tropical Bog:**
Taro – *colocasia or alocasia* (Imperial, Black Magic, Red-Stemmed)
Canna – (Erebus, Black Night, Florence Vaughn)
Papyrus & Umbrella Palm – *Cyperus*
Water Zinnia – *Wedelia trilobata*

**Deep Water Plants:**
Floating Heart – *Nymphoides peltata*
Water Lilies – *Nymphaea*
  - Small (Helvola, Perry’s Baby Red)
  - Medium (Pink Sensation, Joey Tomocik, Chromatella, Attraction)
  - Large (Colorado, Mayla, Denver)
Lotus – *Nelumbo* (Double Rose, Chawan Basu, Mrs. Perry D. Slocum, Empress)

**Avoid**
Yellow Flag Iris – *Iris Pseudocaris*
Native Cattails – *Typha latifolia* (Native)
Building a Water Garden

Types of Water Features:

**Pondless**
Flowing water disappears into rocks. Sound of water without plant or fish maintenance. Can be small as a gurgling fountain or bubbling rock. Can be large as a roaring waterfall

**Bog**
Features plants that like wet feet. Can be done with still (no electricity!) or moving water. Blends seamlessly into perennial garden or water garden.

**Container**
Features water plants. Best for small spaces or focal points. Changeable and moveable. Can be done with still water or use a spitting fountain.

**Water Garden**
Fully contained ecosystem with plants & fish. Most often with moving water and additional filtration. If built correctly, can be lowest maintenance part of a garden

Common Water Garden Mistakes:

**Choice of Site**
- Want: Focal point, good drainage, see from favorite hang-out spot
- Not: Low spot, run-off

**Shape of Pond**
- Want: Irregular shapes, sloped sides
- Not: Concentric rings

**Streams**
- Want: Various widths, occasional pooling of water, different size rocks
- Not: One width channel, sides lined with one size rocks

**Liner**
- Want: High quality fish-safe EPDM 30-45mil, with enough overlap to go well beyond edge rocks and splash zone, and to allow for settling. Can also use lighter-weight HDPE. Protect liner below with padding. Protect liner above from very large or sharp rocks
- Not: Cheaper product or roofing material. Don’t trim too close to edge.

**Pump**
- Want: Quality pump with low energy consumption. Size larger and if needed, use a valve on the outflow to reduce output. Use largest size hose that’s practical.
- Not: Don’t restrict intake. In general, cheap pumps cost more to run, and fail more quickly.

Filtration

**Mechanical**
Barriers that capture large debris. Clean regularly

**Biological**
Living organisms which feed off nutrients. Provide lots of surface area for bacteria to grow, make sure it’s in contact with moving water. Seed (add new) whenever pond is cleaned with chlorinated tap water, or to replenish old. Don’t clean during growing season! Provide floating and underwater plants.

**Chemical**
Needed only in cases of heavy load like large quantity or size of fish, super-sunny sites. Use natural products like barley straw or activated carbon. UV filters best for koi ponds with no plants. Avoid herbicides like algaecide.
General Care & Maintenance
Of Your Water Garden

**Small Ponds & Fountains:**

Small ponds and fountains can be maintained in a “sterile” way by using chlorine bleach. This will NOT work for ponds with fish (chlorine is toxic to fish), but will be fine for ponds visited by birds, frogs and other wildlife. Basically, it would be similar to pool maintenance, adding a small enough amount of chlorine to kill the algae, but not harm plants or wildlife. Start out by adding ¼ cup of bleach for every 100 gallons of water. Too much bleach will cause the water to foam up. This will go away after a few days on its own, otherwise, pond supply companies sell a “defoamer” which is usually a liquid silicon-based product. Wait about 1 hour. If there is still too much algae, repeat the dose. Chlorine dissipates rapidly in moving water that breaks the surface of the water. This application would be repeated as needed throughout the summer. In the hottest, sunniest of cases, it would need to be applied about once a week. Otherwise once every 2-3 weeks is usually sufficient. I usually add bleach after rocks get a green tint, just when a green fuzzy slime just begins to form. If you wait too long, the dead algae adds to the debris causing larger algae blooms later. A less toxic method is to turn the fountain off and spray hydrogen peroxide directly on the algae. Wait 20 minutes and then turn the fountain back on. Hydrogen peroxide gets too diluted in water, so this is only good for applications above water.

**Ponds with Fish Summer Care:**

Run the pump continuously. Pond pumps were made to run constantly. Running water helps aerate the water, preventing it from becoming stagnant and smelly. Running water also helps feed the bacteria that will grow on the rock & pond surface, helping to control algae. Running water also prevents mosquitoes from breeding in the pond.

Give the naturally occurring bacteria a kick start by adding bacteria to the pond. Do this per manufacturer’s instructions. Usually, an initial dose, and then add more every 1-4 weeks whatever the label says. Bacteria can be found in liquid or powder form and can be purchased anywhere that sells pond supplies and is usually listed as “Bacteria” or “Pond Clarifier”. The label should list “bacteria” somewhere in the description. Better yet, buy a product that lists both “bacteria” as well as “enzymes”. Enzymes will help digest leaf litter that rest on the bottom of the pond. Anytime the pond is filled from the tap water more than ¼ of the volume of water, add new bacteria, since the chlorine found in tap water will kill any existing bacteria. I do NOT recommend using algaecides. These products kill all algae, which overloads the filter, which then breaks down, and the algae
then comes back worse than before. This causes huge swings in pond chemistry. It is preferable to use natural products to keep algae in check. However, most strains of good bacteria are ineffective in water temperatures below 50°F. So be patient in the spring, when the sun is strong, there is not shade from the trees of plants in the pond, and the water is cold.

Natural "good" bacteria attach themselves to surface areas and need water to flow through them to do their work. Adding "media" with a lot of surface area within the flow of water is excellent for helping to populate the good bacteria. Some natural products: pea gravel, lava rock. Some man-made products include: Matala, bio-balls or bio-beads.

Bog plant roots also do a great job helping with water quality by consuming the same nutrients that algae feeds upon. Having a well planted bog garden (water-loving plants planted in no soil, but direction in gravel with some water flowing through it) is an excellent natural way to maintain a healthy ecosystem.

Barley straw is a natural material that has algaecidic properties which do not harm the naturally occurring good bacteria. This works when the barley straw starts to decompose. As such, it takes about 3 weeks before bags of barley straw start to take effect. Then, they can be depleted in 3-4 weeks after that. If you use bags of barley straw, add one bag immediately in the spring. After one month, add a second bag. After two months, remove the first bag and add a third bag. Continue with this method staggering new bags every month and leaving old bags in the pond for two months each.

If long filamentous string algae forms on the waterfall area, you can turn off the waterfall, remove the largest portions of the algae by hand, and spray the remaining rocks & algae with hydrogen peroxide (the same you use for cuts & scrapes, sold at any pharmacy). Let the hydrogen peroxide sit for about 15 minutes, and then turn the waterfall back on.

You can add pond plants in pots in the pond if desired. This will help shade the pond from the sun, and take up nutrients from the water that competes with the same nutrients that algae feeds on. Covering about 60-70% of the water’s surface with plant material is the most ideal for algae suppression.

If you add fish, they will need a place for shelter from the sun and predators. Add salt to the pond to help the fish maintain a healthy slime coat. Salt once only at a rate of 1 lb. Of salt for every 100 gallons of water. Use only pond salt or water softener salt. Do not use table salt, as it contains iodine, which is toxic to fish. This rate of salt is irritating to salt, and won't harm most water plants. Double this rate of salt starts to affect pond plants negatively. Add salt only
once when filling the pond with clean tap water after cleaning. Then don’t add again. Add pond plants to help take up nutrients from the fish waste.

**Winter Care:**

Remove the pump and store for the winter in a place that does not freeze. Don’t drain the pond. Even though leaves & debris will settle in the pond adding to the biological sludge, empty ponds attract nesting chipmunks, voles and moles that can chew through the liner. If you want to minimize the amount of debris in the pond, you can cover the pond with bird netting (1/2 inch squares) or pond netting (1/4 inch squares) during the fall season. Make sure you pull the netting taut to prevent it from sagging into the water. Sagging nets or nets that have openings along the bottom can trap birds, so be careful when placing the netting. You can also create an inexpensive netting framework out of PVC pipe that will allow the netting to “tent” over the pond. And the PVC pieces can be easily disassembled for the winter and stored in a small space.

**Wintering Fish:**

Fish can be wintered inside or outside. If fish are inside, set up the inside tanks several weeks prior to putting the fish in, or, fill the inside tanks with existing pondwater. Make sure to acclimate your fish from outdoor temperatures and water to indoors by slowly adding new indoor water to the outdoor pond water bucket where the fish are temporarily held as you catch them in the fall. If keeping indoor fish at less than 50 degrees, the amount of filtration and maintenance indoors is greatly reduced. In this case, a 50 or 100 gallon stock tank with aerator and bag of activated carbon will usually suffice. Measure ammonia levels regularly to ensure the tank is stable.

If wintering fish outside, the most inexpensive thing to do is to turn off the waterfall and add a quality indoor/outdoor aerator. Make sure to allow the pond to form a natural winter temperature inversion (water on top colder than water on bottom) by NOT circulating water from the bottom of the pond. Set up the aerator to “boil” the water at the top foot of the pond. These aerators run 25-50 watts of power and are adequate for most ponds. For those days that get below -20°F, supplemental help is usually required. You can add an insulated cover over the top of the aerator (high density Styrofoam or upside down storage bin floating with Styrofoam pool noodles). Make sure the cover is secure enough to not fly away in strong winds, and place the cover over the aerator before ice does not allow a proper seal to the water. Also make sure there is a small hole in the cover to allow gases to escape. A secondary way of providing help during the coldest days is to use a stock tank heater. Again, place the heater above where the aerator is bubbling and secure it in place. Only plug it in when the ice freezes over (usually about 2-3 weeks over a Minnesota winter). Stock tank
heaters typically take 1000-1500 watts of power. Don’t worry if the pond ices over for up to a week, and the size of the opening needs only to be the size of a quarter for it to work. If it does ice over, and you don’t have a heater, avoid chipping at the ice for two reasons: First, it can be dangerous, and the pond ice is much thinner around the aerator. Secondly, the percussive force adds significant stress to the fish. Better to boil a pot of water, and pour it over the ice.

**Starting up in the Spring:**
Completely drain and clean the bottom of the pond of all debris. Hook up the pump, fill the pond, and start the waterfall. After 1-2 days once the chlorine from the tap water has naturally dissipated, seed the pond with bacteria. Maintain the pond per directions under “summer care”.

If the fish are left outdoors for the winter, set up a holding tank near the pond. The first water pumped out of the pond should go into the holding tank. When there is less than a foot of water in the pond, catch the fish and put in the holding tank. Make sure there is a cover, as the fish like to jump. If you have large fish, or a large pond that will take several hours to clean, add aeration to the holding tank. Once the pond is clean, acclimate the fish by removing old pond water and adding fresh new pond water to the holding tank several times over an hour, until the holding tank is within 4 degrees of the pond water. Don’t forget prior to introducing fish to dechlorinate the new pond water if using city water.

**Jan’s Favorite Products for the Pond:**

*Sludge Remover:* EasyPro Sludge Remover Tablets or MicrobeLift Sludge-Away

*Bacteria:* EasyPro All Seasons Bacteria, MicrobeLift PL

*Algaecide:* Hydrogen Peroxide, Green Clean Granules, or Aquascape EcoBlast. (Algaecide kills good bacteria, so use sparingly and restart bacteria a day after algaecide use).