

Urban Water-Quality Management

Winterizing the Water Garden

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Water gardens require maintenance throughout the year. Preparation for the winter months is especially important for the survival of both the aquatic plants and the wildlife in and around the pond. Some plants will not tolerate winter weather and must be removed from the pond while cold-hardy plants need only to be completely immersed in the pond. Debris such as leaves and dying plants must be removed, especially if there are fish in the pond. Fall is the time to take action. Prepare the pond for the winter months by managing the plants, cleaning the pond, and monitoring the water conditions. If treated properly, many aquatic plants and wildlife can survive in the water garden for years.



Manage the Plants

Many plants begin to go dormant as the weather becomes cooler in the fall. Stop fertilizing pond plants at this time to stop top growth and encourage root development. Remove all foliage that is yellow, brown, or decaying to keep it from falling into the pond. Take inventory and decide which plants can be overwintered in the pond, which ones must be removed from the pond for winter survival, and which ones should be discarded and purchased new the following Spring.

Discard

Removal and thinning of aquatic plants is required when there are too many plants to overwinter in limited pond space. Discarding unwanted aquatic plants requires knowledge of the growth habits and characteristics of each plant. Aquatic plants such as water hyacinth (*Eichhornia*) and water lettuce (*Pistia*) are excellent additions to the compost pile, adding nutrients and water, and degrading quickly. Other aquatic plants such as water celery (*Oenanthe*) and water pennywort (*Hydrocotyle*), which overwinter well, root easily, and spread by underground stems, can become weed problems in the landscape if added to the compost pile and not completely composted. These plants should be discarded with the trash. **Never discard water garden plants by putting them into lakes, ponds, ditches, streams, or other natural waterways.**

Tropical or Hardy?

This question is best answered by referring to the United States Department of Agriculture (USDA) plant hardiness map. Determine the zone in which the pond is located, and then refer to the hardiness rating for the plant. For example, many water lilies (*Nuphar*) are cold hardy in the entire state of Virginia while other water lilies (*Nymphaea*) are considered tropical and will not survive the winter even in the warmest location in Virginia. The following chart provides some guidance but is not inclusive. Many water-gardening resources are available to give the pond owner guidance on the winter hardiness of specific varieties of water plants.

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Common Plants and Hardiness

Plant	USDA Zone	Plant	USDA Zone
Arrowhead (<i>Sagittaria</i>)	5-11	Sedges (<i>Carex</i>)	3-9
Arum (<i>Calla</i>)	4-8	Sweet Flag (<i>Acorus</i>)	4-11
Calla Lily (<i>Zantedeschia</i>)	7-10	Taro (<i>Colocasia</i>)	9-11
Canadian Elodea (<i>Elodea</i>)	8-11	Water Celery, Water Parsley (<i>Oenanthe</i>)	5-11
Cardinal Flower (<i>Lobelia</i>)	3-9	Water Clover (<i>Marsilea</i>)	6-11
Cattail (<i>Typha</i>)	3-11	Water Hibiscus (<i>Hibiscus</i>)	5-11
Fairy Moss (<i>Azolla</i>)	5-11	Water Hyacinth (<i>Eichhornia</i>)	8-11
Floating Heart (<i>Nymphoides</i>)	6-11	Water Lettuce (<i>Pistia</i>)	9-11
Frogbit (<i>Hydrocharis</i>)	6-11	Water Lily - Hardy (<i>Nuphar</i>)	Varies by variety
Iris (<i>Iris</i>)	3-9	Water Lily - Tropical (<i>Nymphaea</i>)	10-11
Parrotfeather (<i>Myriophyllum</i>)	5-11	Water lotus - Hardy (<i>Nelumbo</i>)	4-11
Rush (<i>Juncus</i>)	4-9	Water Pennywort (<i>Hydrocotyle</i>)	7-11
Rush (<i>Scirpus</i>)	3-9		

Overwintering Plants

Plants such as hardy water lilies (*Nuphar*), cattails (*Typha*), sedges (*Carex*), and rushes (*Juncus* or *Scirpus*) can be put in the bottom of the pond with a water depth of 20 inches or more. The deep water insulates the plants from the cold temperatures, and the following spring these plants can be returned to the shallow water. Cold-sensitive plants such as taro (*Colocasia*) and tropical water lilies (*Nymphaea*) must be placed in a pond or tub of water in a location where the temperature stays above 50°F. Submerged oxygenators such as anacharis (*Elodea*) or parrot feather (*Myriophyllum*), and floating plants such as fairy moss (*Azolla*) can be maintained in an aquarium for the winter. When overwintering cold-sensitive plants, change the water frequently to avoid plant rot and to discourage insect pests.

Clean the Pond

Ponds need a balanced ecosystem prior to winter. The best maintenance scenario involves prompt removal of dead plant material and adequate netting placed over the pond each autumn to catch falling leaves. If debris has entered the pond, drain the pond and remove all dead and decaying plant material, soil, and other debris that has collected in the pond. First, take the water pH and temperature in the pond. Next, plants and any wildlife such as fish should be removed, if possible, and placed in adequate holding containers to avoid harming them. Then, drain the pond, clean, and inspect it for damage. Damaged areas must be repaired before fresh water can be added. To avoid plant or animal shock and possible death, make sure the pH and temperature of the replacement water is similar to what it was in the pond prior to cleaning. When replacing the pond water with chlorinated water or water from a new source, add a water treatment compound with a dechlorinator according to the label directions. Place the plants in the deeper locations of the pond for winter and engage the pump system to circulate the water. The last step is to slowly re-introduce the fish. This process is best handled within the timeframe of a day. Once this process is complete, take steps to prevent debris from entering the pond as much as possible.

Winter Water Management

In areas with particularly cold winter temperatures, snow or ice in the pond should be kept from freezing solid. Most water plants go dormant during the winter and the fish in the pond slow down, but both still need the oxygen provided by unfrozen sections in the pond to survive. Several methods to prevent ponds from freezing solid include: continually running the water pump, using pond heaters, floating de-icers, bubble balls, air-bubblers, passive

solar heating options, or hand removal. Some ice in the pond is okay, but thick ice should not be allowed to develop and seal off the pond. Water levels should not be allowed to drop significantly over the winter months in order to maintain a healthy habitat for the plants and wildlife living in the pond. Monitoring the pond regularly throughout the winter will help ensure a healthy pond for the following spring.

References

Nash, H., and S. Stroupe. 1998. *Plants for Water Gardens The Complete Guide to Aquatic Plants*. Sterling Publishing Company, Inc., New York, N.Y.

Speichert, Greg and Sue. 2004. *Encyclopedia of Water Garden Plants*. Timber Press, Inc., Portland, Ore.

Van der Verld, Simon (ed.). 1999. *The Book of Water Plants*. Jungle Laboratories Corporation, Cibolob, Texas.

North Carolina State University Aquatic Plants Information Online:

Aquatic Plant Information: <http://www.weedscience.ncsu.edu/aquaticweeds/>

Water Gardening Information: http://www.ces.ncsu.edu/depts/hort/consumer/hortinternet/water_gardens.html

USDA Plant Hardiness map: <http://www.usna.usda.gov/Hardzone/ushzmap.html>

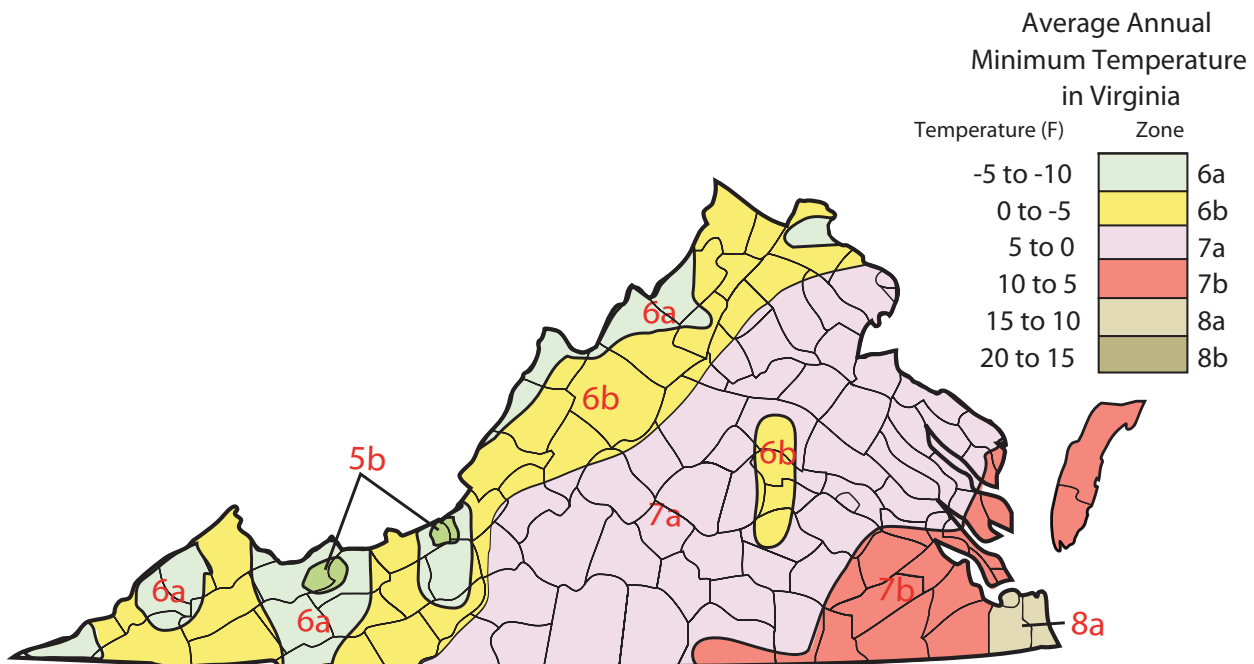
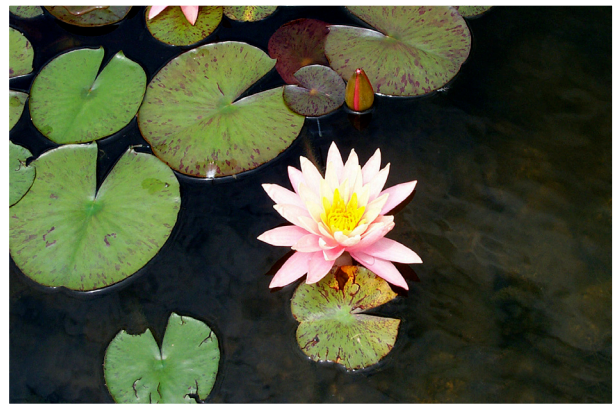
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Climate Zones in Virginia