Pond & Garden

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Features

Readers' Service

Cover: N. 'Emily Grant Hutchings', a George Pring night-blooming hybrid introduced in 1922. See article on page 44. *Photo by H. Nash.*

Departments/Columns/Short

Toasty Warm Inside

Snow transforms the world beyond our windows, yet this issue brings the warmth of summer dreams. We've tried to make our first annual Buyer's Guide easy to use. There's fodder for pond and garden planning in those pages! Diverting from our regular short features, you'll also find a wealth of info on plants for your water garden. The highlight of this issue is the tribute to George H. Pring, the father of tropical water lilies. All of these lilies are still available today; why not plant a Pring in your pond this year?

You'll also meet the newest member of our *P&G* family, Josh Spece, who shares tips for ponding for the physically challenged. Linda Siler takes us on an after-dark (*rainy*) pond tour, and Paula Biles shares a daytime Florida (*rainy*) pond tour. For Koi lovers, Carolyn Weise shares the true tale of the Brooklyn Botanic Garden's renovation, a must-see for vacationers in the NYC area. Hopefully, all of this will warm your heart and fire up your imagination. Spring is coming!

Helen

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PLANT SELECTION:
Nymphoides sup. Water Snowflakes

Water snowflakes are much like miniature water lilies with floating lilypad-like leaves. Instead of large floating flowers, however, they bear delicate, papery, short-lived flowers held above the leaves. So long as you live in zone 7 or warmer, you can treat the plants as perennial aquatics. Those of us in zones 6 and colder are resigned to treating them as annuals, discarding them at season's end or wintering them indoors.

White-fringe snowflake blooms above variegated foliage that lends color and texture to your pond.

Nymphoides cristatum is the variegated water snowflake, with red-edged, round leaves sprawling across the water's surface dotted with hundreds of small white papery flowers. It is especially useful for small pond and container planting.

Nymphoides geminata is the yellow fringe plant with reddish brown and green variegated leaves. The small yellow blossoms are fully fringed. *Nymphoides hydrocharioides,* the orange snowflake, was introduced into the U.S. by Walter Pagels from its native Australia several years ago. Its wavy margined leaves spread across the water's surface in a sprawling and rangy habit, with numerous orange fringed flowers. The giant water snowflake, *Nymphoides indica* 'Gigantea', is slightly less hardy than its other *Nymphoides* cousins, hardy in zones 8-10. Originating in the East Indies, the tropical plant produces round, emerald-green, lilylike leaves and more-than-an-inch-wide, white fringed flowers.

Like its other snowflake cousins, yellow-fringe snowflake blooms last only a day, but are borne is such profusion that you won't notice their short lives.

All of the snowflake plants are prolifically viviparous, producing plantlets at most stem junctions. While facilitating propagation, this trait makes the family quickly invasive, needful of diligent thinning and control.

Usually potted in one-gallon pots and submerged in one to two feet of water, the vigorous growth and plantlets soon engulf the pond's surface, taking up residence in any available pot.

To winter the plant over in zones outside its native climate range, snip several plantlets or rooted stem cuttings to maintain under grow lights in a heated aquarium.

PLANT SELECTION: Anacharis and Elodea canadensis

These two plants are often sold interchangeably. Both are submersed, multibranched plants with curving whorls of pointed leaves. Anacharis, however, has longer and softer leaves, while *Elodea* produces more brittle leaves half as long. Either plant is highly efficient at removing nutrients that might feed algae blooms from the water. The primary difference in the two is their origin – anacharis being a native of South America and *Elodea* being a native of colder northern climes. This difference determines which plant is best for ponds in particular climates. Anacharis, for example, is not hardy enough for Zone 4 ponds. You might have to winter a sample over in a lighted, indoor aquarium. *Elodea*, on the other hand, is quite at home in the colder zoned pond. It even breaks dormancy sooner than its cousin. By the same token, in waters warmer than seventy degrees, *Elodea* becomes rank in growth while anacharis flourishes. Hence, in zones 6 and colder, *Elodea* is the plant of choice. Warm climate ponds are best served by anacharis.

Elodea, on the left, is smaller leaved than the commonly sold anacharis, on the right.

Both plants are propagated by stem cuttings. With one bunch per square foot of water's surface being the recommended stocking level for maximum water clarifying, these rapid growers need not be purchased in such initial quantity. Simply pinch off several inches of the long-growing stems and tuck the starts into gravel or soil. Before the season is over, you will probably be giving the plants ample 'haircuts' and tossing the excess onto the compost pile. This thinning becomes necessary to prevent the plants from choking other desirable aquatic plants such as water lilies, as well as depriving your fish of swimming area.

Often these plants are sold in nurseries in bound and/or weighted bunches floating in display tubs. Salespeople may even suggest you do the same with them in your pond. This may work, but the plants should be monitored. Being submersed plants, surface sunlight may be too strong for them. Exposure to the air at the pond's surface will also dry out the leaves and cause them to die. When this happens, the plants turn to mush and only add algae-feeding nutrients to the water. Because the plants take most of their nutrients directly from the water into their leaves, they need not be potted in soil. Weighting the bunches to stay on the pond bottom or potting them in gravel allows them ideal growing conditions. What roots you see produced serve to anchor the plants to the pond bottom where they are happiest.

Browsing theWeb…

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PLANT SELECTION:

Saururus cernuus, Lizard's Tail

A native plant that has found a special place in water gardens, *Saururus cernuus* is commonly known as lizard's tail for its gently arched spikes of fragrant white flowers that extend 4 to 6 inches long in summer. Preferring sunny to lightly shaded conditions, it is one of the few plants that will still bloom in dense shade.

Heart-shaped, bright green foliage is attractive all season long. Because the plant forms a good-sized clump, the standard one-gallon pot really cramps its style. Plant it in a 2- to a 5-gallon pot for best results.

Since it is quite hardy, wintering is a simple matter of leaving it in place in the pond during dormancy. In spring, the pot may be lifted when growth begins anew and the clump divided. You can also take stem cuttings in spring to summer for propagation.

Saururus cernuus is a children's favorite with its wandlike flower and captivating common name – lizard's tail.

WATER HYACINTH
A Bizarre Saga of the Aquatic Dr. Jekyll and Mr. Hyde

by Paula Biles

Is water hyacinth the perfect pond plant, able to filter huge amounts of pollutants from the water, while also providing shade and beautiful blossoms? Or is it the epitome of the plant pest, running amok and reeking havoc wherever it goes?

Dr. Jekyll up close and personal. The water hyacinth bloom is very attractive, even though it only lasts a single day. The glossy green leaves stand above the water's surface.

The botanical name, *Eichhornia crassipes*, doesn't give a clue and even sounds rather schizophrenic. So the answer depends upon whom you ask. If you talk to people in the tropical and semi-tropical regions, they'll tell you it is the plague of freshwater bodies, considered by some to be the world's biggest aquatic weed, raging beyond control in many areas of the world. If you ask temperate and Northern gardeners, they'll tell you how wonderful it is and describe in detail their elaborate arrangements to keep it alive during the winter, with the faint hope it will survive until spring. They'll tell you exactly how many plants they have, whereas tropical folk would never think of counting them, some actually being fined for harboring it in their ponds.

So where does the plant come from, and how did it get to be such a worldwide problem? It is native to the upper Amazon, where it lives in comfortable balance with insects, animals, and other plants. In 1884 it was taken to a cotton exhibition in New Orleans and given away as a souvenir; its unusual growth and beautiful lavender blossom delighted show visitors. From there, it spread throughout the tropical and subtropical United States. An excellent example of its rapid growth rate occurred in Florida. It is believed to have been placed in a reflecting pool somewhere along the St. Johns and subsequently washed into the river. Just ten years later, it had multiplied to such nuisance proportions that it hindered steamboat travel, and it's been spreading ever since. Over the last century, millions of dollars have been spent to eradicate, or at the very least, to control it. Some counties in Florida now have a water hyacinth control agency.

It also invaded southern Asia, Australia, Indonesia, the Philippines, India, and most recently, Africa. Just 10 years ago, it was introduced into Lake Victoria, where it has no natural enemies. Because of the lake's increased levels of excessive nutrients from raw sewage, paper mills, and sugar factories, there has been overwhelming growth of the weeds. The result has altered the lives of tens of thousands of fishermen and their families. It is such a problem that in 1998 the medical journal *Lancet* reported on the water hyacinth's impact and resultant disease concerns.

The water hyacinth's physical structure is quite unique. It is a floating plant with bulbous leaf stalks and long, dangling, fibrous roots. The showy flower spike is made up of several lavender blossoms, each with a yellow center. The balloon-like leaf stalks are built-in buoys, very spongy and filled with air sacs. Depending upon the plant's health, it may grow to 3 inches or to 3 feet tall. Its extensive root system often extends down several feet and efficiently absorbs everything the hyacinth needs from the water. Since it doesn't grow in dirt, this floating aquatic marvel is the ultimate hydroponic plant, efficiently getting nutrients through its feathery roots and converting them into more water hyacinths.

A look at the hyacinth's growing habits and methods of reproduction gives greater understanding of its split personality. The seeds formed from the blossoms are numerous and can even sprout after remaining dormant for long periods of time, making eradication in the wild more difficult. Individual plants can reproduce asexually, without flowering. Each sends out several stolons (offshoots), which form new plants, which send out several stolons which form new plants, which send out… The water hyacinth can increase its biomass by up to 12% per day. Luckily, like other things from the Amazon, water hyacinth doesn't take kindly to freezing weather, which explains why it's not a problem in Northern climates. Also, it doesn't survive in salty water, and it is carried away in flowing water.

Eichhornia crassipes' functions in a pond are diverse, if you take advantage of Dr. Jekyll's unique characteristics. Besides providing an ample food supply for your pet manatee, water

The root structure can extend several feet underwater and absorbs all the nutrients for growth. The spongy leaf stalks are filled with air to keep the plant afloat. Hyacinths can reproduce by offshoots, able to increase their mass by 12% each day.

Mr. Hyde rapidly takes over in slow-moving bodies of water with high nutrient levels. Mats of water hyacinth clog waterways, causing problems with transportation, fishing, and lake ecology. In some cases, they can even damage bridges.

hyacinth serves as a water filter – nature's aquatic kidney. The water hyacinth takes nutrients and chemicals from our ponds and transforms them into lush green leaves and beautiful purple blooms. Meanwhile, it also provides shade, beauty, and terrific spawning material for amorous fish.

However, in the warmer parts of the world, where there are no natural restrictions to its growth and when the water contains high levels of nutrients, water hyacinth is a serious weed problem. Because it reproduces at such a phenomenal rate, it quickly changes into Mr. Hyde, forming humongous, impenetrable mats. The results are water hyacinth jams, which clog waterways and crowd out native vegetation. These infestations disrupt fishing, impede water transportation, block irrigation channels, sewage outlets and hydro-electric plants, degrade water quality, and provide breeding ground for snakes and crocodiles. In some cases, the mats become so massive and so strong that their pressure destroys bridges. Trees can even grow on the dense mats.

There are three methods of control: chemical, physical, and biological. While herbicides have been used in the past, there is a growing reluctance to harm the environment with chemicals, especially when the water is a source of food and drinking water. Physical removal of the hyacinth is often impractical since its surface area doubles every 6-15 days, and it weighs about 200 tons per acre. The biological control method utilizes hyacinth-eating weevils and moths. While much slower to implement, it is environmentally friendly and is the only method that offers economical, sustainable control, especially when combined with a reduction of nutrients entering the water bodies.

So what can be done with billions of tons of "extra" water hyacinths? Some people are actually harnessing their ability to absorb nutrients and toxic chemicals by using them for wastewater treatment. Others are using the dried remains as fuel. The most artistic applications are in Thailand where decorative items and furniture are made from the dried stems. The chairs have been so successful that big-name manufacturers like Ralph Lauren, Donghia, and Lane have gotten on the bandwagon. Just imagine… you sit by the pond and watch your Koi spawn in the water hyacinth, while you sit in a water hyacinth chair and enjoy the purple blooms.

When creating our own aquatic ecosystems, we learn about the inter-relationship of things in our pond – light, nitrate, algae, Koi, ammonia, etc. We continually study how things influence each other, for good and for bad. Now it's important to expand our thinking to see the potential impact our ecosystem may have on others. Grow water hyacinth wisely. Treat this split personality with respect. Remember that in nature everything is connected to everything else. Don't be the one who makes the good Dr. Jekyll mutate into the evil Mr. Hyde.

Growing techniques for Dr. Jekyll

If you've tried to grow water hyacinth unsuccessfully several times, there may not be enough nutrients in your pond. Since the plant gets all its sustenance directly from the water, highly filtered ponds and hyacinths can't coexist. One solution is to keep a well-fertilized bucket of water in a sunny spot. Float some hyacinths in it and exchange them with those from your pond when they weaken and yellow. Another option is to float some in your filter; you'll be amazed how quickly they change personalities.

To encourage blooms, keep the plants as crowded as possible.

Use the water hyacinth with its long roots as premium spawning material for your Koi.

When keeping hyacinths indoors during the winter months, provide as much light as possible. Occasionally add a dash of fertilizer to the water so they don't starve to death. Some success has been reported by people who anchor the root tips in soil.

Control techniques for Mr. Hyde

Like with many other aquatic plants and animals in our ponds, it is our obligation to dispose of them in a responsible manner. The albino alligators in the sewers of New York may be apocryphal, but the uncontrolled growth of water hyacinth is a real and very serious problem throughout the world. It is a perfect example of what happens when something from one ecosystem is introduced into another, without regard for the consequences. As responsible pond owners, we should never release non-native living things, either plants or fish, from our ponds into the wild. The best way to keep the *Eichhornia* monster in check is to turn extra water hyacinths into compost.

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In Thailand, hyacinths are used to make furniture, which is both beautiful and strong. It has become popular around the world, sold by many name-brand companies.

PLANT SELECTION: Sagittaria spp

That Wonderful Arrowhead Family!

Hardy or tropical, narrow leaved, broad leaved, plain green or variegated – the arrowhead family offers something for every pond. All of these arrowheads grow with 1 to 6" of water over their crowns. Blooming in mid-summer, they prefer 2-gallon containers and can be propagated by stolon division, spring planting of turions, or by sowing ripe seed in mud flats.

Sagittaria montevidensis, giant arrowhead or Aztec arrowhead: Hardy zones 8-11; grows to 2 ft, will go dormant even when wintered indoors/greenhouse.

Sagittaria australis 'Benni': Introduced by Aquascapes Unlimited in Pennsylvania, new leaves bear very red striations among the distinct veins. Older leaves maintain a reddish flush and the distinct vein pattern. Named after Randy's son, it was voted Pondkeepers' Plant of the Year in 2000.

Sagittaria gramina 'Crushed Ice,' variegated arrowhead: Variegated form of narrow-leaf arrowhead, introduced in 1997 by Springdale Water Gardens, hardy zones 4-11. Photo courtesy of Springdale Water Gardens

Sagittaria latifolia, duck potato: Hardy zones 3-11; tubers attract wildfowl; grows to 3 ft; 3-petaled white flower in summer; can be invasive.

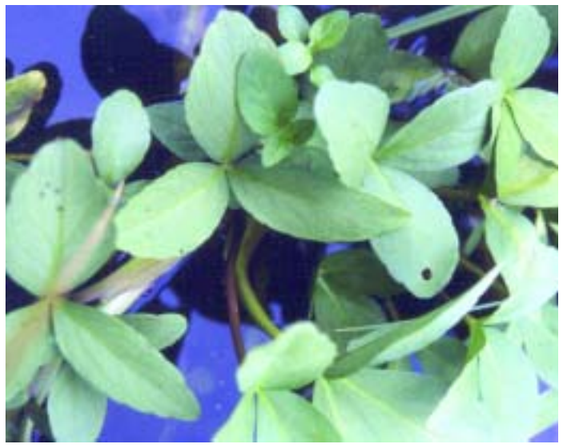
Sagittaria japonica 'Flore Pleno', double-flowering arrowhead: Hardy zones 3-11, double flowers held above delicately arrow-shaped leaves.

Sagittaria lancifolia, lance-leaved arrowhead: Hardy zones 6-11; grows 12-20" tall; tolerates brackish water; *S.l* var. *rubrum* (zones 8-11) has red stems.

PLANT SELECTION:
Menyanthes trifoliata, Bog Bean

Bog bean, *Menyanthes trifoliata,* is a true bog native, fully hardy in zones 5-11, requiring an acid addition to its soil for its best display. Even without the acid, the plant is likely to grow, however, requiring two or three years to acclimate to the non-acidic conditions before assuming satisfactory growth.

A scrambling plant with a thick, spongy, creeping rootstock, the plant soon leaves its pot to grow along the water's surface, sending out long roots that quickly anchor in other plant pots. You might say, bog bean is a most sociable plant.



Runners can stretch a foot or two from the main plant, with long petioles growing from rooting nodes along their lengths to rise above the water in triple leaflet displays.

The primary charm of the plant lies with its olive-greenish three leaflets borne on long petioles that stretch up out of the water. Wonderful form and texture in the pond! A brief delight is afforded in late spring when very short-lived, white-fringed flowers appear. Their display rarely extends beyond a week or so, but so exquisite! In zones 8-11, the plant rarely flowers, but you still have that incredible foliage.

Opening from rose-flushed buds, delicate white-fringed flowers grace the bog bean plant for a glorious week or two in late spring.

When ordered by mail, bog bean frequently arrives as a rooted piece of stem. Bury the roots in rich, acid-enhanced topsoil and leave the stem free across the soil in the pot. Set the pot in very shallow water of 1-3 inches in sun or part shade. Because roots are produced at submerged leaf nodes, the plant is easily propagated from stem cuttings in spring and throughout the summer. The plant is usually dormant by October, fully dying back until new growth returns in early spring.

PLANT SELECTION: Scirpus spp. White Rush and Zebra Rush

Most of us have seen clumps of the common bulrush growing in wet roadside ditches. Especially when in bloom in late summer with dainty florets set below the tips of each stem, this *Scirpus* makes a fine addition to the pond collection. Two other members of the *Scirpus* family, however, add both light and life to the water garden.

Scirpus lacustris subsp. *tabernaemontani*, also known as *Scirpus* 'Zebrinus,' sports the common name of zebra rush with good reason: many of its 3- to 6-feet tall stems bear horizontal stripes of creamy white.

Yet another lively variant is *Scirpus* 'Albescens' which also bears white stripes, only vertically. Sometimes the white bands are so wide that they make the stems appear fully white, hence the common name, white rush.

While the vertical white stripes on each stem are usually quite fine, some stems produce very wide white stripes to make white rush, *Scirpus* 'Albescens', appear ghostly white.

Both rushes grow in dense clumps, their roots matted so tightly that bi-annual division is undertaken with a knife to cut the clump into desired-size squares. This clump-growing habit means, too, that the plants can be planted directly in the center of their pots, preferably 2- to 5-gallon sized, although a one-gallon pot will usually suffice for one season.

Scirpus lacustris subsp. *tabernaemontani*, commonly known as zebra rush, is characterized by creamy horizontal bands on each porcupine stem.

Propagation is most often undertaken by clump division, although stratified seed can be germinated, as well. While generally a low-maintenance plant, you want to cut back any stems that emerge without the white stripes, lest the plant eventually revert back to its fully green form. This is best done throughout the season when you notice the green stems so that you avoid an annual thinning that leaves the plant looking sparse and rank. Regular thinning only promotes subsequent growth, much like does the pruning of terrestrial plants.

PLANT SELECTION: Thalia

Thalia, whether the hardy or the tropical form, provides drama to your pondscaping with its growth from five to six feet tall…or more! Although the flowers of the tropical form are considerably showier, the arching stems high above the foliage of the hardy form culminate in appreciated, delicate lavender flowers.

True, the flower of hardy thalia is not especially showy, but the overall form of the plant is luxurious.

Thalia dealbata, hardy in zones 5-11, appears tropical with its striking ovate to lanceolate, glaucus, blue-green leaves edged in purple growing to 20 inches long and 10 inches wide. The glaucus description refers to the white powder dusting on the leaves, earning the plant the common name of 'powdery thalia.' It is also commonly known as hardy canna. Charming, small violet flowers bloom on arching stems above the plant's foliage. Even though you might buy the plant in a small container, it should be grown in no smaller than a 5-gallon pot. Once established, it can be grown is as much as 12 inches of water over the plant's crown. Propagate by division or by cold, moist stratification of ripe seeds.

The most commonly available tropical form of Thalia is *T. geniculata* form *ruminoides*, or red-stemmed thalia. Quite similar in appearance to the hardy form, red-stemmed thalia bears more upright-growing foliage with attractive red stems. Soft lavender flowers stand well above the foliage in summer. Like its cousin, it should be grown in no smaller than a 5-gallon pot in sun to part shade. As with any tall-growing plant, protect it from strong winds, or at least ensure the plant's stability with a very wide-mouthed pot. Divide the plant in spring or summer. If starting from seed, less than 40% of the seedlings will display red-stemmed coloring. Winter this tropical plant beyond its range as an indoor, tropical houseplant.

Red-stemmed thalia is grown at Davis Creek Nursery in individual pots due to its size and tropical requirements that mandate wintering in the greenhouse.

A bed of powdery thalia grown at Davis Creek Nursery in Alabama, displays lush, tropical foliage and highly arched floral stems.

PLANT SELECTION: Lobelia

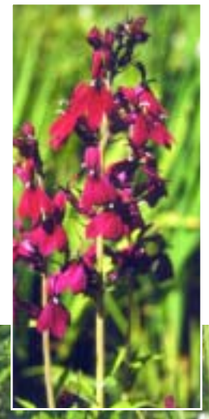
Think lobelia in ponds and most folk think of cardinal flower, *Lobelia cardinalis*. Hardy in zones 5-11, cardinal flower grows from 2 to 4 feet tall with long, alternate, lanceolate and toothed leaves produced up its stems. Tubular flowers, a real hummingbird-draw, are produced at the ends of erect stalks. The 5-petaled flowers bloom from July into September.

However, most perennial forms of *Lobelia* do best in consistently damp, rich soil. Blue lobelia, *Lobelia syphilitica*, is one that enjoys a summer in the pond, as does its white form *albiflora*. Growing to 3 feet tall, it is hardy in zones 5-9. Two-lipped blue flowers appear in late summer and autumn above narrowly oval, green leaves. It thrives in damp, heavy soil. It is certainly worth trying any of the moisture-loving Lobelia perennial species and cultivars in the summer pond.

The key to growing perennial lobelias in your pond is to provide slightly acidic soil, keep the water shallow (only one or two inches) over the plant's crown, and remove the plant from the pond in the fall. Non-aquatic forms of *Lobelia*, while appreciating the moist pond conditions in summer, do not like to winter in saturated winter soil. They display their displeasure by rotting away. Place these plants in a mulched cold-frame for the winter. In colder exposures of zone 5, even *Lobelia cardinalis* appreciates such TLC.

If propagating perennials by seed, sow the seed as soon as it is ripe. Otherwise, divide the plants in early summer. Preferring deep, rich soil, *Lobelia* should be planted in traditionally deep perennial pots. They appreciate a touch of acid to their soil, too.

Available through native plant sources, you might find *Lobelia paludosa*, swamp lobelia.



This wet-soil lover produces tubular, 2-lipped, pale blue flowers in racemes up to 12 inches long. The plant grows from 12 to 48 inches tall and is hardy in zones 4-9, with the "swamp" indicating a preference for acidic soil.

(top) Blue lobelia, particularly *L. syphilitica*, flourish in the summer pond. (inset) The classic *Lobelia cardinalis* gives the summer pond a vibrant splash as color, even as it attracts jewel-like hummingbirds to your yard.

Victoria Update

by Kit Knotts

Countdown!

For those who grow *Victoria* (or want to!), now is the time to be planning, ordering seeds, and breaking out the start-up stuff! Clean the aquarium, check the little heater, gather a supply of plastic bags and cups, and agonize waiting for the first sprout!

As a rule of thumb, it has long been suggested that it takes about 90 days from sprouting to setting out, so when you start depends on where you live. Since rules are made to be broken, we are beginning to think that earlier starts may make stronger plants.

For those of us obsessed with *Victoria* and willing to give time and space as needed (Nancy Styler and Matt Johnson, for two more), early starts are good. If the plants want to grow, we'll find a way to accommodate them. This may not be practical for everyone, but, if you can manage it, it may be worth the effort.

What it seems is that plants that grow through the colder, lower light months develop somewhat slowly as compared with spring starts but have the maturity to withstand varying weather conditions better than later starters. We need others' experience to support or debunk this, so join in!

Otherwise, try to plan backwards from your setting out date. We germinate and do all the early growing at 85F. Many seeds that have been "nicked" (i.e., with the operculum carefully removed) sprout in 3 to 7 days. From germination, most develop the second hastate leaf and roots in 7 to 10 days. This is when we plant them. In another 7 to 109 days, their first floating leaf reaches the surface.

For us, the seedlings make round leaves (rather than pointed) and can be boosted from 2-ounce cups to 4" pots in 4 to 6 weeks. Once the plants adjust to their new pots, they can be held for quite a while at much cooler temperatures or encouraged to grow faster at 85F or higher. Much more detailed information is available in *Pond & Garden* Issue I-4 or at http://www.iwgs.org/nymphaea/victoria/victoria.html

Seed production for the coming year has been dismal, especially for the primary hybrids 'Adventure' and 'Longwood Hybrid.' Each breeder had a different kind of problem, but the result is that most of the few seeds are reserved for botanical gardens. The good news is that the bumper crop of last year has been well stored by the Victoria Conservancy and fall germination studies show them highly viable. They will be made available to all who want to grow them.

Seeds can be order from:
The Victoria Conservancy, 6583 East Ida Ave.
Greenwood Village, CO 80111; phone: 303-850-7150;
fax: 202-741-1028; email: Victoria@iwgs.org.

PLANT SELECTION: Floating Charmers, Frog-bit and Water Fern

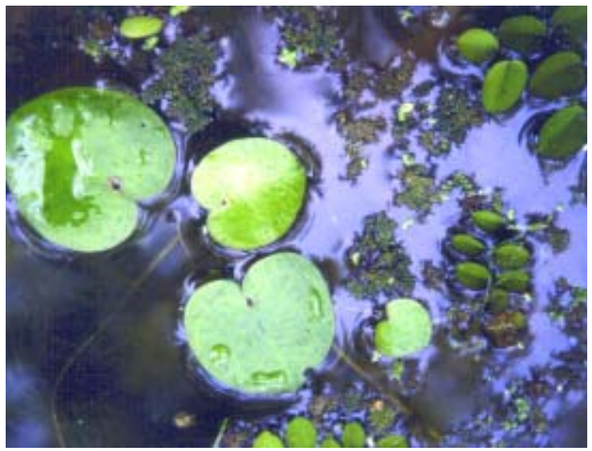
As with many aquatic plants, even the most charming are prone to invasive proportions. Both frogbit, *Hydrocharis morsus-ranae*, and water fern, various members of the *Salvinia* family, are true to character. However, it is an easy matter to net off excess plants and toss them on the compost pile. Unfortunately, both plants could end up victims of the "white list" policy and, already are listed on some state lists as "invasive". You may wish to acquire samples of both plants before they become unavailable.

Frogbit is a western Asian and European native that is supposedly hardy through overwintering buds that sleep on the pond bottom. In practice, this does not often happen since we water gardeners often clean our ponds of debris that might rot over the winter and foul the water for our fish… and out go the frogbit buds. Wintering a sample in an indoor aquarium is more reliable.

Resembling a miniature water lily plant, frogbit consists of long petioles graced with kidney-shaped, bright green, shiny leaves about an inch across that grow in rosettes on the water's surface. An inconspicuous white flower with a yellow center may be tucked among the leaves, but many water gardeners report never having seen it. The underside of each leaf is puffed with spongy, air-holding tissue.

Salvinia offers several species, native to Central and South America, Africa, India, and even northern temperate Europe. A most charming plant, it floats freely with soft, silky-haired leaves formed in irregular branches of whorls of three leaves, two floating and one submerged. Sporocarps develop among the submerged leaves and sink to the pond bottom in autumn as the mother plant dies. As with frogbit, our pond hygiene often prevents future reappearance of the charming plant. The indoor aquarium may be your only recourse.

In spite of these warnings of proclivity of these two plants, many ponders have not encountered such problems. The reason may be that, as with other colonizing type plants, such as azolla, duckweed, water hyacinth, and water lettuce, the plants need to be crowded to multiply quickly. If that seems to be the case in your pond, try enclosing them together within a floating plastic ring. This might also help you control their stampede across the pond's surface.



Frogbit resembles a miniature water lily that sends out runners to form colonies across the water's surface.

Salvinia, commonly known as water fern, bears soft, silky-haired leaves that must be monitored to control their surface coverage.

(The smallest plant in the picture is Azolla.)

SPIN DOCTORS AND YOUR POND

by Helen Nash

Did you know that your water garden may be the home of a plant or an animal that could harm your local environment? This is an emotionally loaded question that, like many other truths in life, is founded on basic facts that can be used, by interpretation, for many positions.

Fact: Non-native species, such as milfoil or Koi, when released into the wild outside their natural ranges, can disrupt the native environment by suppressing native species or by depriving native species of conditions essential for survival.

Fact: Vigorous horticultural cultivars can bear the same impact when released into the wild.

Both of these facts mandate responsible husbandry. Non-native species and cultivars compete with native species for habitat and food, transmit parasites or diseases, and they have been known to adapt by hybridizing with native species. Perhaps the most extreme example of the harm inflicted by non-native species is the infamous kudzu introduced into the South as roadside erosion control and as low-maintenance landscaping. Residents of the area are too familiar with the virtually impossible task of controlling the rampant plant. Visitors to the area are dumbfounded by the fully blanketing nature of the vine that totally engulfs ground, shrubs, and trees. Nothing beneath such cover can survive. Unfortunately, eradication is so costly that few municipalities can afford it. Releasing a lotus can create as total an oblivion to a natural pond or lake, too, as can the irresponsible release of many other aquatic plants, such as water hyacinth, parrot's feather, and water lilies. What can you do with extra plants and animals from your garden and pond?

Alternatives to Release

Take the animals to a local water garden shop or pet store for resale or trade.

Give the plants and animals to another water garden hobbyist.

Donate the animals and plants to a larger water garden which can be found in public parks, hotel lobbies, mall courtyards, restaurants, professional offices, museums, schools, nursing homes, and hospitals.

If these options are not available for disposing of an unwanted water garden animal or plant, consider ending its life humanely.

A veterinarian or fishery biologist can euthanize it (put it to sleep) with anesthesia. You can also do this at home by placing the animal (fish, amphibian, or reptile) in a container of water and putting it into the freezer. Because cold is a natural anesthetic, this is a humane method of euthanasia.

Dispose of water garden plants by leaving them in the sun to dry; use them in the garden as mulch or compost.

Enter the Spin Doctor….

If anything, our era will be noted in future history books as the Spin Era. Politicians seem to have perfected the art, but it permeates our society. Witness the initial question: Did you know that your water garden may be the home of a plant or an animal that could harm your local environment? Drag out the old spinning wheel and you have laws against taking water hyacinth across state borders….and it is illegal to buy, sell, or possess *Lythrum* in most states in the union, disregarding the development of sterile cultivars and studies completed as recently as 1999 with results contrary to the law's premise.

Possibly the most dangerous use of spinning plant facts is embodied in the "white list." The "white list" is a proposed government policy which will ban the possession, import, movement and cultivation of an estimated 99.75% of the Earth's species of plants, animals, fungi, and microorganisms. It sounds incredible, but it was created by the Invasive Species Council, itself created by President Clinton's Executive Order 13112 in 1999. At the inaugural meeting of the ISC, co-chair Bruce Babbitt (Clinton's Secretary of the Interior) called for the use of a "white list," where exotic species are presumed guilty until proven innocent (see the Natural Areas Association newsletter, *Natural Areas*

News, Vol. 3, No. 4, Autumn 1999). A list of approved, tested "non-invasive" species would be established, and importation, cultivation and movement of all species not on the approved list would be prohibited. Native species and common garden plants, such as the native black locust, red cedar, baby's breath, English ivy, foxglove, oleander, and edible fig, are also targeted.

Already the U.S. Department of Agriculture (USDA) has listed as *prohibited noxious aquatic plants* (illegal to import into the U.S. or to transport them across state lines): *Azolla*, *Eichhornea azure* (anchored water hyacinth), *Ipomoea aquatica* (Chinese water spinach), *Lagarosiphon major* (African elodea), *Lythrum salicaria* (purple loosestrife), *Marsilea quadrifolia* (European water clover), *Sagittaria sagittifolia* (Japanese arrowhead), *Salvinia* (all species), and *Sparganium erectum* (exotic burreed).

Other aquatic plants designated as "Invasive Species of the United States and Canada" are *Alternanthera* (alligator weed), *Arundo donax*, *Butomus umbellatus*, *Cabomba*, *Egeria densa* (Elodea), *Eichhornia crassipes*, *Hydrocharis morsus-ranae* (frogbit), *Iris pseudacorus* (yellow flag iris), *Lysimachia nummularia*, parrot's feather, some water mints, water cress, *Nymphaea mexicana* (yellow native water lily), *Nymphaea odorata* (white native water lily), *Phalaris arundinacea* (ribbon grass), *Phragmites australis*, *Pistia stratiotes* (water lettuce), *Pontederia rotundifolia* (pickeral), *Potomogeton crispus* (curly pond weed), *Trapa natans* (water chestnut), and *Typha angustifolia* (narrow-leaf cattail).

Texas, Louisiana, Florida, North Carolina, South Carolina, Arizona, California, Washington, Oklahoma, and Vermont have gone further with their own state lists of prohibited aquatic plant species. Oklahoma, for example, includes wild taro (*Colocasia esculenta*, the common green taro in our ponds), water poppy, *Nelumbo nucifera* (lotus), yellow floating heart (*Nymphoides peltata*), among others. Ironically, when the State of Oklahoma's Department of Wildlife Conservation was queried if such extensive regulation will mean an end to water gardening or planted aquariums, the reply was "No. Many suitable non-invasive species of aquatic plants will still be available for the hobbyist to use in aquariums, water gardens, and landscaping."

Sometimes the 'spin' put onto real facts begins as eddies, in this case, with discrete financial backing of some purported environmental groups by large herbicide manufacturers. (*How do we eradicate large stands of 'invasives'*?) Unfortunately, citizens will probably not get a chance to vote on the issue. Such extensive regulation will probably be determined by "administrative policy." A draft of the proposed administrative policy is available on-line at www.invasivespecies.gov/council/nisc/actionb.html. If this administrative policy is allowed to be, we won't have to worry about responsible husbandry of our ponds and gardens; the government will tell us which plants we can grow….and much of what we now grow in our ponds will end up on the compost pile.❧

PLANT SELECTION: Acorus sp. Sweet Flag

Back in the pioneer days when covered wagons and horses were the primary mode of transport, log and mud-insulated homes were sweetened with the fragrance of sweet flag. Hardy from zones 4 through 11, this common native plant was cut from marshy land and placed upon the floor where, being stepped upon, it supplied a delicate fragrance to the air - sort of like our modern-day, plug-in air fresheners! Today, common sweet flag, *Acorus calamus*, is not so easily located in the wild. But an hour north of our home, a 100-foot-long, low-lying swathe of the plant disappeared last year beneath tons of fill-dirt and a fresh planting of manicured grass.

Acorus calamus 'Variegatus' makes up for its lack of showy flowers with sparkling cream and green variegation in the pondscape. Note the running growth habit.
Photo by Ron Everhart

However, you can find members of this aquatic plant family at your local nursery or through mail-order catalogs.

Acorus calamus. Sweet flag

Hardiness zones: 4 – 11

Description & Habit: Growing 2 to 3 feet tall, long, glossy, swordlike leaves display distinct midribs and crinklings along part of one edge. An unusual flower is the conical spadix resembling a small horn that emerges laterally and inconspicuously just below the tip of a leaf. The rhizomatous root grows shallowly across the soil and produces twin offshoots from each side along the length of the rhizome. These offshoots can extend in growth to develop their own twin offshoots, as well.

Potting & Growing: Because of its surface-running habit, the plant requires a wide-mouthed pot for maximum growing surface and to prevent the plant from leaving its home. This habit makes for more work if the plant anchors itself in nearby pots. A one-gallon 'mum pot' can be used, but you will be faced with control before the season is over. A five-gallon squat pot is more likely to contain the season's growth. The plant may be grown in full sun to part shade.

Acorus calamus, sweet flag, is one native plant that used to be commonly found throughout the United States. Note the conical flower spadix.
Photo by Ron Everhart

Propagation: Cut rooted plantlets from the main rhizome in spring or summer. If plantlets have not developed enough roots to properly anchor them and support independent growth, expose them to water and pot up when sufficient roots grow.

Comments: The plant goes fully dormant in the winter. It usually requires an annual divison and repotting.

Varieties to look for: *Acorus calamus* 'Variegatus'. Variegated sweet flag

Hardy in zones 4-11, this cultivar presents vertical cream stripes on its 2- to 3-foot-long, swordlike leaves. Initially, it does not seem to grow as rapidly, or as rampantly, as its green counterpart, but, once established, you will find the plant requiring the wide-mouthed pot and annual division/repotting.

Acorus gramineus. Japanese rush or dwarf sweet flag

Although a member of the sweet flag family, this dwarf form offers a slightly different growth habit. Instead of producing long runners that quickly reach across a pot, the plant grows more fanlike. Its 8- to 12-inch high leaves resemble more of a wide-bladed grass than the swordlike form of its larger relative. It is usually found in variegated forms, both white or yellow striped. The yellow-striped 'Ogon' is a most popular cultivar. You will often find dwarf sweet flag in the perennial or ornamental grass section of nurseries and catalogs, even if aquatic plant departments are available. Although it is commonly planted in moisture-loving beds, many nursery folk are surprised to learn it is considered an aquatic plant by water gardeners! Grow it with no more than 1-2 inches of water over its crown.

A truly lovely small plant, it is especially suited to the smaller water garden or container garden. Because it is not reliably hardy in zones 5 and colder, special care must be taken in colder climates to winter it in safe, non-freezing conditions. It can be held indoors as a houseplant while being supplied with adequate moisture and light.

Acorus gramineus 'Ogon' is a most popular variegated dwarf sweet flag. Photo by Bob Romar, courtesy of Maryland Aquatic Nurseries

PLANT SELECTION: Hydrocleys nymphoides, Water Poppy

The water poppy, *Hydrocleys nymphoides*, is a tropical aquatic plant that comes by its common name honestly – its bloom really looks like a poppy. Four paper thin, cheery yellow petals and a brown center form the flower that rises above the pond's surface for a day or two. Each bloom is quickly replaced by another.

Thick, shiny, deep green and broadly heart-shaped oval leaves measure only 2-4 inches across with their stems extending up to three feet long. Planted in rich topsoil in a 1- to 2-gallon pot, the plant grows happily with 12 to 15 inches of water over its crown, although it seems happiest in shallow water of only 6 inches.

It's easy to see how the water poppy got its name! Like terrestrial poppies, Hydrocleys flowers are short-lived, but profusely produced throughout the season.

Like members of the snowflake or *Nymphoides* family, water poppy is viviparous, producing plantlets at its leaf nodes. This allows non-tropical water gardeners to winter plantlets in well-lighted aquariums or to winter them in very wet hanging baskets as do many professional growers. Northern gardeners should offer supplemental grow lights to equate day length for these tropical day-dependent plants.

Although the water poppy leaves normally float upon the water's surface, plant growers have discovered that the tropical plant can be wintered in a very wet hanging basket.

Pond Splash

by Steve Katona

Cold Season Ideas

For most of us, winter is here. You look out the window to where your pond once flourished in the warm season, and the waterscape does not look the same. It has bleakly lost its lush appeal. What can you do? Well, if you're as enthusiastic about the hobby as I am, you play.

Think about decorating your landscape or waterscape for the winter season. Picture blue chase lights running down your winterized waterfall… red and green underwater lights…or twinkly white mini-lights creating a winter wonderland. Check your local hardware/home center for those plastic-encased neon-type lights; they can be shaped into any design you like. Remember, however, to consider safety issues when working with electricity around water and outdoors.

Another idea — bring your hobby indoors. I just purchase a fire-belly toad named Mr. Pinkerton. Mr. Pinky, for short, lives in a small terrarium set up in my living room. It's like having my private, live Discovery Channel in the corner of my living room. You can also bring in pond fish for an aquarium display. Observing goldfish and small Koi around-the-clock gives fascinating insight to the behavior habits of our pond friends, besides providing pleasant relaxation. Be sure to properly set up your habitat. I recommend talking to a local aquarium professional for information, especially regarding filtration.

The greatest way to bring the hobby indoors is to actually construct an indoor water garden for year-round, or temporary, enjoyment. Wood or concrete block frames can be built and rubber-lined to create flowing waterfalls, streams and ponds. Install grow lights for live plants. Your fish will appreciate daylight periods, too. These fish do not have to be goldfish or Koi; tropical fish, such as fancy guppies, black mollies, and swordfish, do well in room-temperature tanks. Then again, an indoor pond or aquarium offers the chance to keep some of the fancy goldfish that are not really suited to outdoor ponds. Don't forget, too, that indoor ponds make great humidifiers in a dry house during winter months. Let your imagination flow like the water did last summer.

Missouri water color artist, Pinky Marx, enjoyed her white mini-lights so much in the winter that she leaves them up year-round!

If none of these ideas are for you, start planning now for spring additions to your water garden and landscape…another pond just for the plants those mischievous Koi seem bent to uproot, a small, flowing water feature near the bedroom window for soothing nighttime sound, a stream garden meandering through your favorite flower bed, a 'bog garden' devoted to special moisture-loving plants – the list is endless.

Someone once told me that I am as excited about my own yard as I am of others', because I am always planning the next step or enhancement. Even a small yard is never complete…it's a work in progress, and winter is the perfect planning time.

Steve Katona is an owner of North Hills Water Gardens at 1615 Babcock Blvd. in Pittsburgh, Pennsylvania. He can be reached at 412-821-6525.

Retired college professor, John Haylek. collects circus and carnival memorabilia. His neon frog light is especially appropriate above a small pond and provides special charm to snowy nights.