



the abc's of aquatic plants



Most of us learn from our mistakes. I'd like to tell you about a mistake that I made when I planted my first pond.

Simply put, I planted a phragmites in my own pond. Sounds simple and harmless, right? I mean candy stripe reed ... how bad can that be?

The Green Pond Monster

Let me tell you, by the end of the season, this stuff had multiplied like you would not believe. It "set up house" all the way around the pond, up the stream as well as under it, and even into the waterfall. Prolific propagation would be the understatement of the year. Everywhere and anywhere this thing could go ... it went! At one point, I thought it was going to take over my pond, landscape, and house.

This little green monster got so bad that I began physically pulling it out every time I walked out to visit the pond, and I didn't know if I was ever going to catch up. The roots of this

thing were growing in between, and under, every rock in the pond. Wherever I tugged at the plants, boulders would roll into the middle of my pond as they were shifted out of place by the roots. In the end, I rebuilt the entire pond just to get rid of this aquatic plant pest. Sad, but true.

Do Your Homework

What lesson did I learn? Know your plants before adding them to your pond! phragmites is not the only green monster in the plant catalog. There are many others. Before you start planting, do a little research, ask questions, and learn about what you're about to plant. It could save you from learning the same costly lesson.

Tamara Hughes
Consumer
Publications
Editor

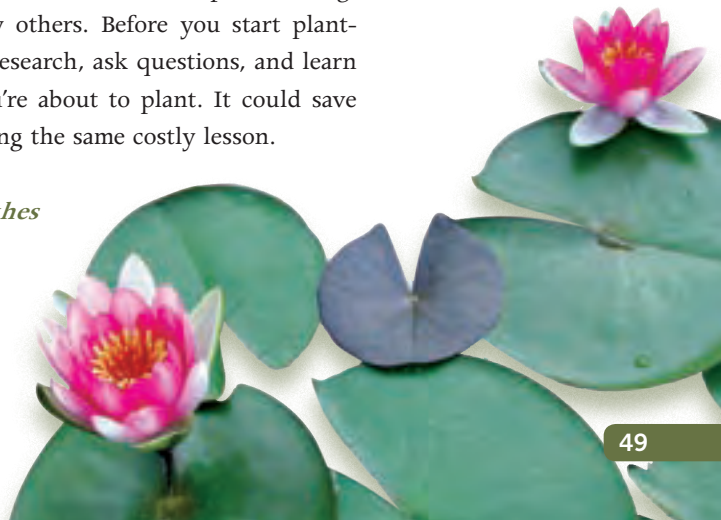




Photo by Heiko Spatnik



Photo by Heiko Spatnik

Water Lilies

A garden really isn't a "garden" without a plethora of plants. In the case of a water garden, the plants had better be...aquatic plants. The very appearance of the words "water garden" should conjure up a colorful picture of a lushly planted aquatic landscape that's home to fish, frogs, and an abundance of other aquatic life. It's probably safe to say that one of the main reasons people enjoy water gar-

ally carried above the water surface on strong stems, come in brilliant whites, yellows, pinks, reds, and lilacs. Their leaves also come in an abundance of sizes, shapes, and colors. Tropical water lilies, only hardy to Zones 10 and 11, can be planted in colder zones when the water temperature is consistently above 70° F. Most tropicals are treated as annuals each year in colder climates. However, they can be brought inside and overwintered if given proper care.

Tropical water lilies come in two categories, day bloomers and night bloomers. Day blooming tropical water lilies bloom in the early morning and close in the afternoon. Night bloomers, however begin to open in the late afternoon/early evening and continue to stay open until early the next morning. Night bloomers are very appealing to pond owners who work by day and enjoy their pond by night.

Hardy Water Lilies

Hardy water lilies come in a wide array of colors, shapes, and sizes. They are reliably perennial from the northern reaches of Zone 3 to the subtropical areas of Zone 11 of the extreme southern United States. Refer to the hardiness zone map to find out which zone you live in before purchasing plants. Each spring, their stems will begin to push the curled-up leaves to the surface of the pond.

Each floating leaf is cut into two lobes. Lily leaves provide a great deal of shade from the heat of the summer sun, making algae control easier, as well as allowing fish to retreat underneath their shelter. The white, pink, red, or yellow flowers, are often fragrant and known as the jewels of the water garden as they float on the surface. Hardy water lilies typically bloom from May through September.

Water lily flowers usually open in the early morning, and close by mid to late afternoon. When cold weather comes, the foliage dies and sinks to the bottom. New leaves will begin to arise from the submerged rhizomes the following spring.

Tropical Water Lilies

Tropical water lilies produce vibrant colorful blooms. The flowers, usu-

dens is the beauty and unique characteristics of the aquatic plants that are a part of them.

Now we could start in a variety of places, but the crown jewel of water gardens across the country is the lily, so that's where we'll start.

Water lilies are the most popular of all aquatic plants. Their ability to spread a multitude of leaves across the surface of the water and flower throughout the season, make them a sought after addition to the pond. Lily pads also provide a great deal of shade from the heat of the summer sun, allowing fish to retreat underneath the shelter of their leaves. And they come in a variety of forms.

Contrary to many "experts" water lilies can be planted near waterfalls, not just beneath them.

Photo by Becky Langley



Tropical water lilies usually carry their flowers above the water surface.

Water Lilies

Nymphaea 'Luciana'



This is one of the most popular pink hardy water lilies in the United States. Very free flowering, this water lily is good for any size pool. Flower size 6 to 7"; leaf size 8 to 9"; leaf spread 3 to 4'.

Nymphaea 'Atropupurea'



This free-flowering water lily bears deep red flowers that deepen in color each day. Recommended for medium to large size ponds. Flower size 7 to 8"; leaf size 9 to 10"; leaf spread 4'.

Nymphaea 'Virginalis'



'Virginalis' is a free flowering, fragrant white, always dependable, and one of the best all-around hardy water lilies. Good for any size pool. Flower size 4 to 6"; leaf size 9"; leaf spread 4 to 6'.

Nymphaea 'Pink Sensation'



This is probably the best hardy pink lily of all, with smooth, rich pink 5 to 6" blooms that stay open later than any other pink. It is a very free-flowering lily. Flower size, 5 to 6"; leaf size, 10"; leaf spread, 4'.

Nymphaea 'laydekeri Fulgens'



This is a top choice plant. Its huge, burgundy flowers appear in spring and last well into fall. Highly recommended for any size pool. Flower size 6 to 8"; leaf size 7 to 8"; leaf spread 4 to 5'.

Nymphaea 'Chromatella'



For beauty and performance this lily rates among the best. It is good for any size pool or tub garden. Flower size 4 to 6"; leaf size 8 to 9"; leaf spread 6 to 12'.

Nymphaea 'Colorado'

©2001 Doug Gilman

Incredible bloomer bears multiple, gorgeous, peach-salmon flowers. Although this is a hardy lily, some added winter protection might be necessary in zone 5 and colder. Flower size, 3 to 4"; leaf size, 5 to 7"; leaf spread, 4 to 6'.

Nymphaea 'Green Smoke'

A tropical day bloomer. Flower is an interesting mix of yellows, greens, and blues. Leaves are blotched with purple marks and speckles. Flower size, 5 to 6"; leaf size, 10 to 12"; leaf spread, 5 to 6'.

Nymphaea 'St. Louis Gold'

A large tropical day bloomer. Fantastic bloomer. Lemon-yellow flowers along with large purple-blotched leaves. Great tropical for bigger ponds. Flower size 5 to 6", leaf size 8 to 10", leaf spread 4 to 6'.

Nymphaea 'Red Flare'

A great tropical night bloomer! Deep red flowers poised above its large dark bronze leaves. Flower size 6 to 10", leaf size 10 to 12", leaf spread 5 to 6'.

Lotus

Lotus have circular leaves that are held high above the water and flowers that rise above the leaves with fragrant, beautiful blooms of yellow, pink, rose, red, or white. Even their seedpods are interesting, and are commonly used in dried flower arrangements. This is one plant you'll want to keep in a pot, as it is highly aggressive.

Nelumbo 'Mrs. Perry D. Slocum'

Photo by Steve Stoupe

This free-flowering changeable lotus has flowers that are pink, flushed with yellow the first day, pink and yellow the second day, and changing to cream with pink the third day. Recommended for medium to large ponds, it will also grow and bloom in container gardens.

Hardy Marginal Plants

Marginal plants are typically found along the perimeter of ponds, lakes, wetlands, and streams. These plants are used to soften the boulder edges and help create a smooth transition from the water in the pond to the terrestrial planting area surrounding the pond.

Most marginal plants like to grow in 1 to 8" of water, making the first shelf in the pond, as well as edges of streams and upper pools, ideal planting areas. Any reputable aquatic plant dealer will have many varieties of marginal plants to choose from.



This pond is adorned with beautiful canna and taro plants, helping to soften the edges between the rough boulders and the water.

Hardy Marginal Plants

Acorus calamus



Photo by Scott Higgins

Sweet flag grows 8 to 30" with stiff, shiny green, strap-like leaves resembling iris. The flower has an interesting spike-like structure that appears in midsummer. Water depth 0 to 3". Requires full sun to partial shade. Grows at pond edge.

Equisetum scirpoides



Photo by Jim Mulschleger

Dwarf horsetail grows up to 8" tall in attractive clumps of thinner dark green, segmented stems. Not as invasive as native horsetail. Grows at pond's edge. Water depth maximum 2". Requires full sun to partial shade.

Juncus effusus 'Spiralis'



Great in dried floral arrangements!

The striking corkscrew rush grows 12 to 18" tall, with spiraling, twisted, dark green wiry stems. Small brown-green inconspicuous flower clusters appear in summer. Requires full sun. Water depth—maximum 2".

Eleocharis montevidensis



©2001 Doug Chiberg

Spike rush grows up to 12" tall, forming clumps of grassy quills sporting button-like blooms May to October. Requires full sun to partial shade. Grows at pond edge. Water depth 4".

Iris virginica



Photo by Steve Stroupe

Northern blue flag grows to 3' in height with varying blue flowers. Mid-season bloomer. Full sun. Water depth—moist to maximum 6".

Pontederia cordata



Great in cut flower arrangements!

Photo by Steve Stroupe

Pickerel weed grows in sun to partial shade from 2 to 3' tall with heart or lance shaped, glossy green leaves. Violet-blue bloom spikes appear from spring through early fall. Thrives in dense colonies along pond edges and bogs. Water depth—maximum 8".

Hardy Marginal Plants

Sagittaria latifolia



Otherwise known as duck potato, it grows to a height of 15 to 20" tall. Its arrow shaped leaves can be quite showy reaching lengths of 20" or more. Bears the characteristic white flowers. *Latifolia*, due to its short height, is a good aquatic plant for the foreground margins of the pond and streams.

Typha minima



Miniature cattail grows in full sun with very slender, stiff leaves reaching 18" tall. Rising above the foliage in late summer are decorative miniature brown cylindrical seed heads on 20 to 30" stalks. Water depth—moist to maximum 4".

Thalia dealbata



Powdery thalia, or hardy canna, grows to 6' tall with ovate to lanceolate, blue leaf blades edged in purple that can reach 20" long and 10" wide. Foliage appears to be dusted with white powder. This plant has unusual, small violet flowers on panicles about 8" long, carried high above the leaves. Water depth—12 to 18".

Scirpus sylvaticus



Forest rush is a hardy marginal and bog plant, a thick-bladed grassy reed. Grows in clumps like an ornamental grass in partial sun to shade. Best grown in containers. Water depth—maximum 6".

Typha latifolia



Common cattails grow 4 to 7' tall in full sun. The cattail blooms appear in late spring, turning brown in summer. Water depth—12".



Iris virginica

Plants for Naturalizing Edges

Hydrocotyle spp.



Pennywort, also known as “poor man’s lotus” grows 2 to 5” tall, forming an evergreen mat of circular, crinkle-edged waxy leaves with white tufts of flowers from July through August. Water depth—maximum 2”. Requires full sun to partial shade.

Lysimachia nummularia



Creeping Jenny, or moneywort grows in mats 3” tall, with round green leaves and vibrant yellow cup-shaped flowers in summer. Water depth—maximum 1”. Requires full sun to partial shade.

Myosotis palustris



Water forget-me-not has fragrant, dense clusters of small, bright blue flowers with yellow eyes appearing in early spring. The green foliage grows in sun to shade 2 to 6” above the water. Water depth—maximum 2”.

Myriophyllum aquaticum



Parrot's feather is a good oxygenator and creates fish spawning habitat in ponds, as well as being a useful bog plant. Fast growing with lush, lacy, lime-green foliage, it thrives in sun or shade. Water depth—maximum 3”.



TIP from **TEAM AQUASCAPE**

Tropical marginal plants can be treated as annuals or brought indoors during cold periods. Some will survive cold spells if kept below the water’s surface. We recommend planting tropical marginal plants in their pots. This will allow you to remove the tropical aquatics from the pond before winter approaches.

Tropical Marginal Plants

The tropical marginal aquatic plants are those that originally grew in subtropical to tropical regions, and therefore are not perennial in cooler climates where frost and freezing are common during winter months. Stacking small cobblestones around the outside helps disguise the black pot.



Tropical Marginal Plants

Bacopa monniera



Water hyssop has tiny oval leaves, which form a busy clump growing 6" tall in full sun. Delicate blue blossoms persist all summer. Water depth—maximum 2".

Cyperus alternifolius



The umbrella plant is stunning in containers or at pond's edge. It is one of our most sought after plants. It has whorls of green foliage on tall stalks. Grows to 5' in sun or shade. Water depth—maximum 6".

Colocasia esulenta 'Antiquorum'



Taro grows 2 to 6' tall with heart-shaped leaves that can reach 3 to 10" across and up to 3' in length. This tropical plant has insignificant spathe-like flowers. Water depth—up to 6".

Marsilea quadrifolia



Four-leaf water clover forms a lacy green mat of four-leaf clovers ideal for shading fish. It reaches a height of 8" and is very easy to grow. Plant in full sun to shade with a maximum depth of 6".



TIP from **TEAM AQUASCAPE**

The open top of the BIOFALLS® filter and upper pools of streams are ideal areas to place floating plants. If the waterfall carries them over the face of the BIOFALLS® filter try holding them back by placing a stick across the face or using monofilament or fishing line tied across the front.

Floating Plants

The floating aquatic plants are just that, they float on the water's surface while their roots hang down into the water below, trapping sediment and utilizing many excess nutrients. Floating plants can be placed in the pond, but need to be situated out of the reach of the skimmer. Tucking floaters into the edges of the pond, or in and around lily pads can also help prevent the skimmer from drawing them in.

These plants also provide shade for the pond water, making summer algae control easier. Most are tropical, but a few are hardy perennials in climates with hard winter freezes. In more northern climates, the tropical floating aquatic plants should be treated as annuals, replanting them each year or taking them into a warmer place for the winter.

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Floating Plants

Eichornia crassipes



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Tropical water hyacinth is one of the most beautiful floating water plants. It quickly fills a pond with purple blossoms borne above the water. They stay afloat with air-filled chambers bulging within the stem of their waxy green, scoop-ended leaves. Valuable in water purification and reducing algae.

Pistia stratoides



©2011 Doug Gilbert

Water lettuce is an attractive tropical floater with velvety, blue-green ribbed leaves that form a rosette. Its roots provide shelter for fish and absorb excess nutrients.



Floating plants roots hang down into the water below trapping sediment and utilizing excess nutrients.

Hardy Oxygenating Plants

Oxygenators are often the most overlooked plants in the water garden. They are typically submersed and don't grab the onlooker's attention like the water lilies and marginal plants do. These submersed plants are important allies in creating a well-balanced water feature. Oxygenators help reduce algae by directly competing for the same food source. Think of them as nutrient sponges. They also provide protection and coverage for small fish and fry. They can be planted by simply pushing a bundle right into the gravel or sticking them around the edges of a lily pocket.

Hardy Oxygenating Plants

Ceratophyllum demersum



©2011 Doug Gilbert

Good for spawning fish, hornwort has branching stems with spiny foliage. This hardy plant resembles a green spruce tree.

Egeria densa



©2011 Doug Gilbert

The long branching stems of Anacharis grows up to 10' long and do well in sun or shade. White flowers bloom on the water's surface.

Designing the Pond for Effective Planting

Most aquatic plants are fairly easy to grow, so be aware. It doesn't take more than a year or two before even a few plants can crowd a small pond. These are good design points to bring up to potential customers who think they want a small pond.

The first stage of planting, or "Aquascaping," a pond should be taken into consideration well before water is added to the pond. A little planning during the excavation will help provide plenty of planting areas for aquatic plants.



TIP from TEAM AQUASCAPE

Shelves that are too big in proportion to the size of the pond will create problems when placing boulders along the edge of the vertical walls. The pond will literally look like a pit of rocks rather than a water garden.

Too Small

The ability to vary the widths of the shelves will ultimately depend on the overall size of the water garden. Keep in mind that your creativity and your ability to provide planting areas will be limited by the width of the shelves when building a small 4' x 6' pond.

esp Demasiado Chico

La habilidad de variar la anchura de los escalones dependerá del tamaño total del jardín acuático. Tenga en mente que su creatividad será limitada por la anchura de estos escalones, y su habilidad de poder ofrecer áreas para plantar, cuando está construyendo un estanque pequeño de 4 pies por 6 pies.

So What Is a Good Size?

The size of our most popular pond, the 11' x 16', doesn't allow you to get too crazy with the widths of the shelves. However, it does provide enough space for some interesting designs.

esp Entonces, ¿Qué Es Un Buen Tamaño?

El tamaño de nuestro estanque más popular que mide 11 pies por 16 pies. Está área permite que Ud. tenga no mucho espacio para poder variar la anchura de los escalones. Pero sí da suficiente espacio para diseños interesantes.

Large Scale Ponds

In contrast to smaller ponds, large scale or commercial size ponds provide extremely large areas along the first few shelves for aquatic plants. For example, a half acre pond provides enough square footage to create wide shelves and large plant pockets. Shelves for marginal plants may be as wide as 15' or more, giving the plants plenty of room to stretch out. Plant pockets may be as big or bigger than an 11' x 16' pond and contain a hundred water lilies.



esp *Los escalones que son demasiadas grandes en proporción al tamaño del estanque pueden crear problemas cuando Ud. esté colocando las piedras a lo largo de la orilla de las paredes verticales.*

esp Estanques a Escala Grande

En contraste a los estanques pequeños, estanques grandes ó comerciales ofrecen áreas extremadamente grandes a lo largo de las primeras escalones para poder plantar las plantas acuáticas. Por ejemplo, un estanque de ½ hectárea nos ofrece suficiente espacio (en pies cuadrados) para poder crear escalones anchos y sitios grandes para las plantas. Los escalones para plantas marginales pueden llegar hasta 15 pies de largo ó más, dándole a las plantas mucho espacio para poder estirarse. Sitios de las azucenas pueden ser más grandes que un estanque que mide 11 pies por 16 pies y pueden contener cien azucenas.



Shelf Design on an 11' x 16' Pond

The shelves on 11' x 16' ponds are usually allowed to meander in and out, leaving wider sections dedicated for the placement of the marginal plants.

esp Diseñando los escalones para un estanque de 11 x 16 pies.

Los escalones en un estanque que mide 11 x 16 pies pueden variar en tamaños, dejando que las secciones más anchas puedan ser usadas para situar las plantas marginales.

Plant Pocket

Plant Pockets on an 11' x 16' Pond

The typical 11' x 16' pond may have two or three plant pockets dug into the second shelf. A plant pocket is simply a hole dug into the excava-



tion that serves as a "pot" for the water lilies and marginals. The plant pockets are approximately 18" wide and 6 to 8" deep. Two or three pockets in an 11' x 16' pond will provide a healthy coverage of lily pads on the surface of the water. (For more detailed instructions on plant pockets and planting water lilies see page 67.)

Plant Pockets in Other Areas

Don't feel limited to installing plant pockets on the second shelf only. Water lilies have been known to grow in depths up to 4' deep. We take advantage of this by installing plant pockets in deeper portions of the pond. You can even dedicate entire shelves for plant pockets.

esp Sitios de Azucenas

Sitios de Azucenas en un estanque de 11 por 16 pies.

Un estanque típico que mide 11 por 16 pies puede tener dos ó tres sitios excavados dentro de la segunda estantería. Los sitios de las azucenas miden aproximadamente 18 pulgadas de anchura y entre 6 a 8 pulgadas de profundidad. Dos ó tres sitios en un estanque que mide 11 por 16 pies, le proporcionará una capa sobre la superficie del agua.

Sitios de Azucenas en otras áreas

No se limite al instalar sitios de azucenas excavadas en la segunda estantería del estanque. Las azucenas pueden crecer a profundidades hasta 15 pulgadas. Aprovechamos las azucenas instalándolas en los lugares más profundos del estanque. Ud. puede dedicar escalones enteros para los sitios de azucenas.

esp Y ¿que tal si se le olvidó instalar sitios de azucenas?

What If You Failed to Install Plant Pockets?

If you've already constructed the pond and left out the plant pockets, it's not too late. And, no... we don't suggest you remove all of the rocks, gravel, and liner to install the pockets!

- Instead, use raised plant pockets inside the existing pond. These can be installed very easily while completing the annual pond clean out.
- Create the raised plant pocket using a ring of boulders.
- You will want to take measures to keep the planting soil from finding its way through the spaces in between the boulders. This can be accomplished either by using waterfall rock sealant (a.k.a. foam) or laying a small blanket of underlayment in the pocket to keep the soil contained.

esp Si Ud. ya construyó el estanque y se le olvidaron los sitios para las azucenas, todavía no es demasiado tarde. No le sugerimos que remueva todas las piedras, la grava, y la capa protectora para instalar los sitios!

- Mejor, haga sitios levantados dentro del estanque que ya existe. Estos pueden ser instalarse fácilmente mientras Ud. hace la limpieza anual del estanque.
- Construya el sitio levantado usando un círculo de piedras.
- Ud. querrá tomar medidas para evitar que la tierra encuentre salida por los espacios entre las piedras. Esto se puede lograr usando sellante para la piedra de las cascadas (también conocido como espuma), ó tendiendo una capa pequeña de por debajo en el sitio para evitar que la tierra sea contenida.



esp *Excavación Adecuada para las Plantas*

Proper Excavation for Plants

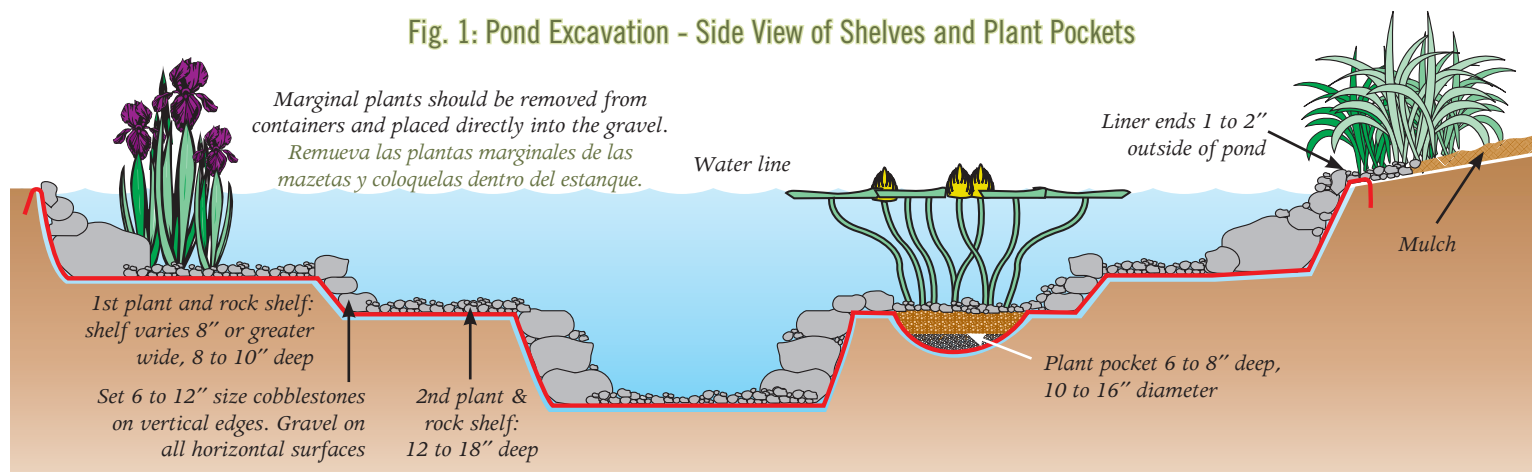
Height of the Shelves

FIG. 1: The first and most important step is digging the pond with a series of shelves. In most Aquascape ponds, the first shelf is excavated at a depth of 8 to 10" for marginal plants, and the second shelf from 12 to 18" for water lilies and lily-like plants. Fairly simple...right?

esp *Altura de los Escalones*

FIG. 1: *El paso más importante en esta fase es excavando el estanque con una serie de escalones. Casi todos los estanques hechos por Aquascape consisten en que la primera estantería sea excavada a una profundidad de 8 a 10 pulgadas para plantas marginales, y la segunda estantería de 12 a 16 pulgadas para azucenas y plantas parecidas a las azucenas. Muy simple... ¿verdad?*

Fig. 1: Pond Excavation - Side View of Shelves and Plant Pockets



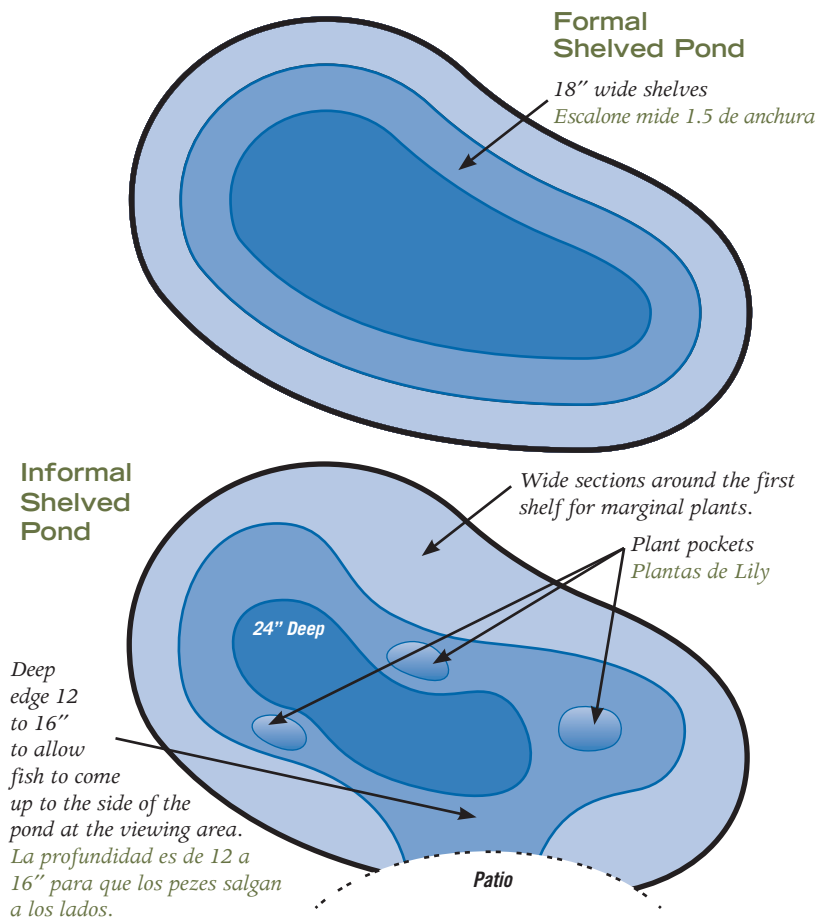
Width of the Shelves

FIG. 2: The key to excavating the pond for future planting, as well as adding a little personality to the pond, lies in the widths of the shelves. Let us explain. Most literature written about pond construction demonstrates the kidney bean or figure-eight pond with a series of shelves. Each shelf is excavated approximately 18" wide throughout the pond. In our eyes, kind of dull, sort of boring. These uniform shelves not only look too formal, but do not allow for proper planting space.

esp Anchura de los Escalones

FIG. 2: Excavando el estanque para plantar en el futuro está en la anchura de los escalones. Casi toda la literatura escrita sobre la construcción de los estanques demuestra una figura ocho y con una serie de escalones. Cada estantería es excavada a una anchura de aproximadamente 1.5 pies por todo el estanque. Nosotros consideramos esto como un poco aburrido. Estás escalones uniformes no solo parecen muy formales, sino que también no dejan mucho espacio para poder plantar.

Fig. 2: Pond Excavation - Top View



Vary the Width

Instead of only using 18" wide shelves, try varying the shelf width. Increase the shelf width to 3' along portions at the far side of the pond. This will provide space for a variety of marginal plants.

esp Várea la Anchura

En ves de solo usar escalones que miden 1.5 pies, trate de variar la anchura de cada uno. Aumente la anchura de la estantería a 3 pies. Esto dejará mucho espacio para plantar varias plantas marginales.

Eliminate Specific Areas of Shelves

We will often completely eliminate a portion of the first shelf where the border of the pond meets up with a hardscape or viewing area. Providing a deeper section along this edge will allow fish to come to the side of the pond and greet the homeowner for feeding.

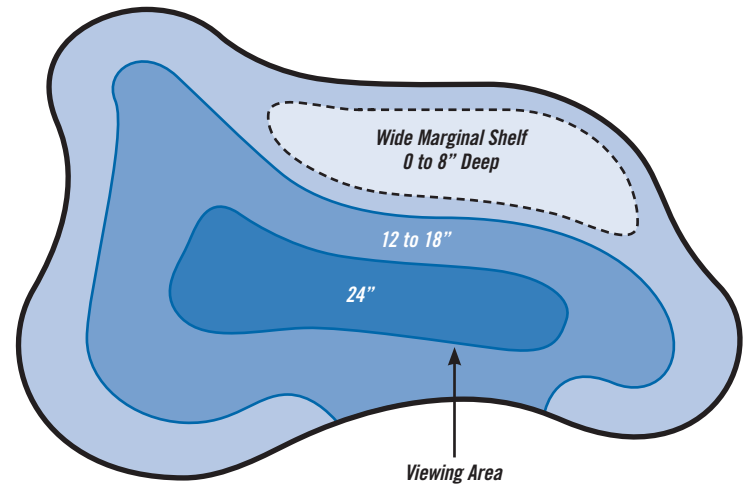
esp Elimine Áreas Específicas de los Escalones

Frecuentemente eliminamos parte de la primera estantería donde el borde del estanque se reúne con una área de vista. Dejando una sección abierta a lo largo de esta orilla permitirá que los peces vengan al lado del estanque para ser alimentados.



A vertical, taller shelf over a small area allows for a natural place for fish to congregate and be fed.

Fig. 3: Pond Excavation - Marginal Shelf



Proper Spacing

The width of the shelves is crucial in determining how much space you will have for the plants. Try to think of the pond's shelves as being similar to a planting bed around the front of a house. If you only come two feet away from the house with the planting bed, the selection of perennials, annuals, and shrubs is limited by the space requirements they consume as they grow. Take that same planting bed, and add some bends and curves, allowing the bed to come out a few more feet in certain areas, and you have opened up a whole new selection of plants with enough space for a tree. The same principles hold true when designing and planting a water garden.

esp Ofreciendo Suficiente Espacio

La anchura de los escalones es crucial en determinar cuanto espacio Ud. tendrá para las plantas. Trate de pensar que los escalones son similares a una cama de planta situada alrededor de la parte de enfrente de una casa. Si la cama de plantas está situada a solo dos pies de distancia de la casa, la selección de plantas pereniales, anuales, y arbustos son limitados por el espacio que requieren durante su crecimiento. Tome esa cama de planta y sujétale a más curvas, dejando que la cama sea estirada varios pies en ciertas áreas. Haciendo esto le dejará espacio para plantar un árbol. Se usa los mismos principios cuando se diseña y se construye un jardín acuático.

Fig. 4: Pond Excavation - Plant Pockets

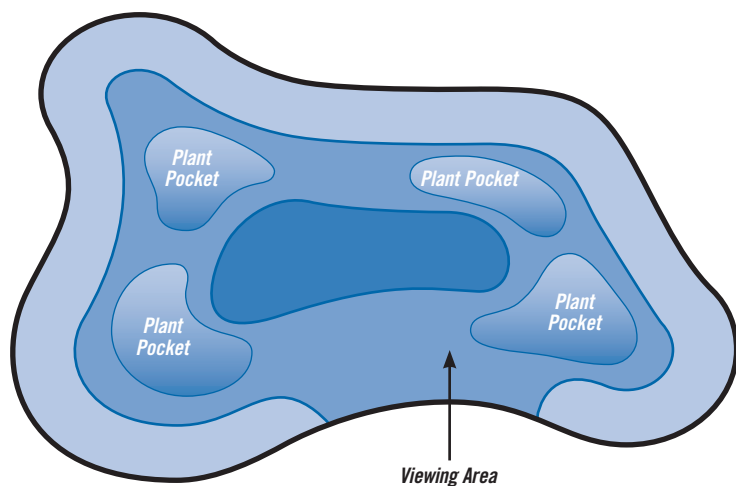


FIG. 3: If your goal is to recreate the look of a wetland edge found in nature, you will need more than 18" of space on the first shelf. Keep in mind the primary viewing location when designing the size of the excavation for the marginal shelf. Excavating a wide marginal shelf along the backside of the pond will allow you to plant a dense selection of tall aquatic plants, creating a natural looking background. Choose shorter marginal plants along the front of the pond in order to keep the viewing area open.

esp FIG. 3: Si su meta es recrear una orilla con apariencia de tierra mojada, necesitará más de 1.5 pies de espacio en la primera estantería. Tenga en mente el área de vista principal cuando Ud. esté diseñando el tamaño de la excavación para la estantería marginal. Excavando una estantería ancha marginal a lo largo de la parte trasera del estanque le permitirá plantar una selección densa de plantas acuáticas altas, ayudándole a crear una apariencia natural. Escoja plantas marginales cortas para la parte delantera del estanque para dejar abierto el área de vista.

FIG. 4: A customer who says that their interest in water gardening was sparked after viewing all of the gorgeous water lilies at the local botanical garden will need larger second shelves (12 to 18" depth) with plenty of lily pockets.

esp FIG. 4: Un cliente que diga que su interés en jardinería acuática fue provocado después de ver todas las azucenas magnificas en el jardín botánico de su ciudad necesitará escalones secundarios (de 12 a 18 pulgadas de profundidad) con suficientes sitios de azucenas.

Time and Material... Some Things to Consider

The cost of plant material, and the amount of labor required to install them, can become a big factor to consider when bidding larger scale ponds. Wetland restoration companies, specializing in large-scale plantings, can supply a wide selection of native aquatic plants. Time-saving products, such as bog mats, can make planting a marginal shelf go very quickly. A bog mat is a woven blanket of coconut fibers that are pre-seeded with a variety of marginal plants such as arrowhead, cattails, rushes, and pickerel weed. The mat is simply rolled across the first shelf and back-filled with a layer of pea gravel to hold it in place.

Whether you are constructing a small residential pond, or a larger commercial pond, the key to designing a natural-looking, easy-to-plant pond lies in the design of the excavation. Try experimenting with different shelving techniques on your next pond.



CONSTRUCTION GUIDELINES

How to Plant Aquatics

With just a few exceptions, we like to lose the pots to make the pond look natural. Aquatic plants will help filter the water and reduce algae. However, they will be far more successful at doing so if they are taken out of their pots and planted directly into the gravel substrate. Once planted, the roots will make their way through the gravel substrate, sometimes as far as two to three feet away from the base of the plant. The roots then become one giant filter that takes nutrients directly from the substrate of the pond, where fish waste and other organic debris settle and begin to decompose.

Fig. 5: Hardiness Zone Map

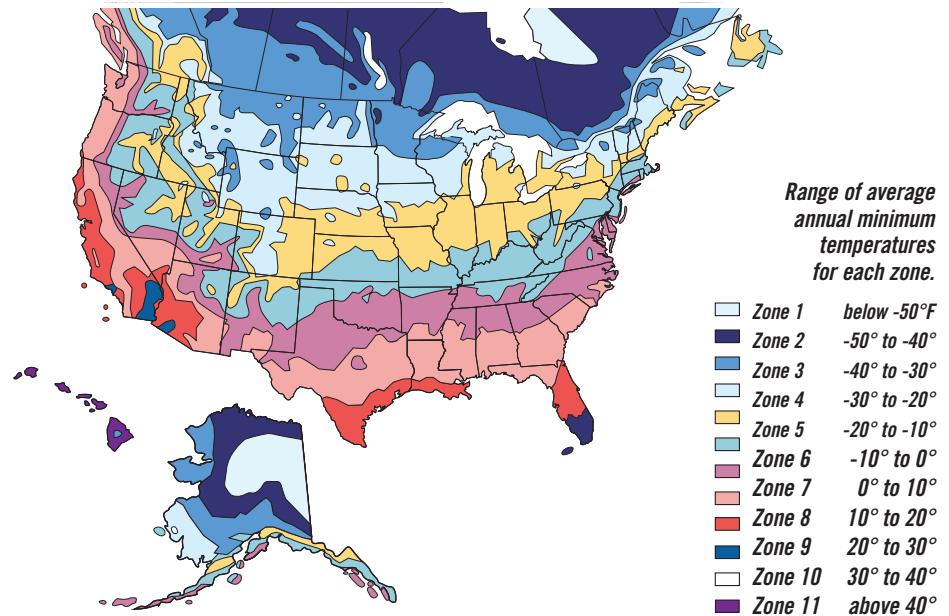
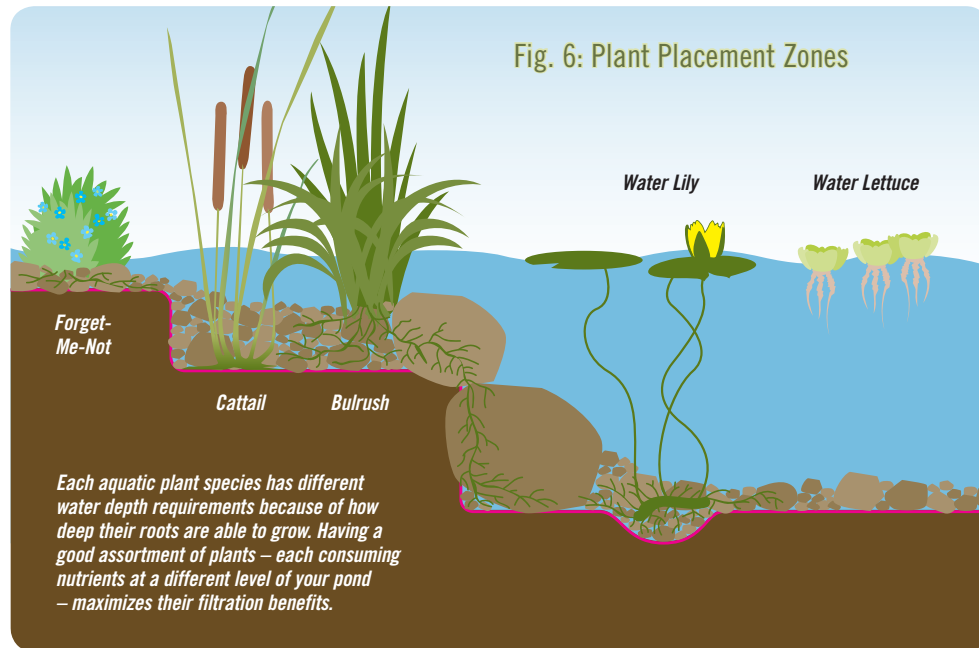


Fig. 6: Plant Placement Zones



How natural looking is a plant in a pot? It's not good for the plants or the eyes!



How to Plant Hardy Water Lilies

Plant pockets should be dug during the excavation of the pond. The easiest time to plant water lilies is when the pond is empty.

esp Como Plantar Azucenas Resistentes

Sitios de azucenas deberían ser cavadas durante la excavación del estanque. El mejor tiempo para plantar las azucenas es cuando el estanque está vacío.

Planting Potted Water Lilies Into “Soil-less” Plant Pockets

If your aquatic plant supplier provides the water lilies already potted, then you will not want to add soil to the plant pockets. In this case, simply use the soil that the lily comes planted in.

esp Plantando Azucenas (Tipo Bare-Root/Con Raíces Reveladas)

Si su vendedor de plantas acuáticas les ofrece azucenas que ya están en maceta, entonces Ud. no querrá añadirle más tierra a los sitios de las azucenas. En este caso, simplemente use la tierra en la cual la azucena ya viene plantada.

esp Plantando Azucenas (tipo Bare-Root)

Planting Potted Water Lilies Into “Soil-less” Plant Pockets



1 Remove the water lily from the pot.
esp *Remueva la azucena de su maceta.*



2 Place the water lily into the plant pocket.
esp *Posicione la azucena en el sitio.*

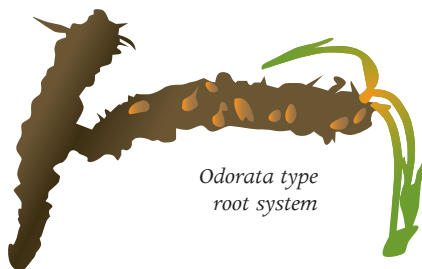


3 Loose gravel should be spread around the base of the water lily to prevent the soil from being stirred up in the pond.
esp *Grava suelto debería extenderse alrededor de la base de la azucena para evitar que la tierra se mueva en el agua del estanque.*



4 Ready for water!
esp *Listo para agua!*

CONSTRUCTION GUIDELINES



*Odorata type
root system*

Planting Bare-Root Water Lilies Into “Soil-Filled” Plant Pockets

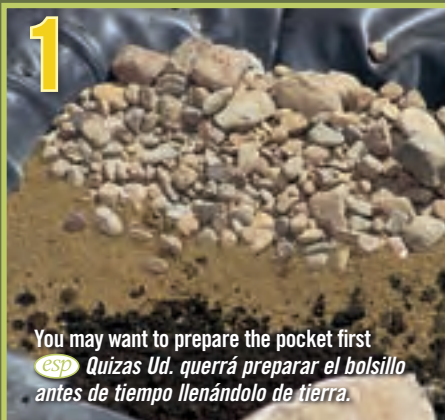
You may want to prepare the plant pocket ahead of time by filling it with soil. This is especially efficient if your aquatic plant supplier sells water lilies bare root or you're not able to plant the water lilies at the time of construction.

esp Plantando Azucenas (Bare-Root) en sitios Llenos de Tierra

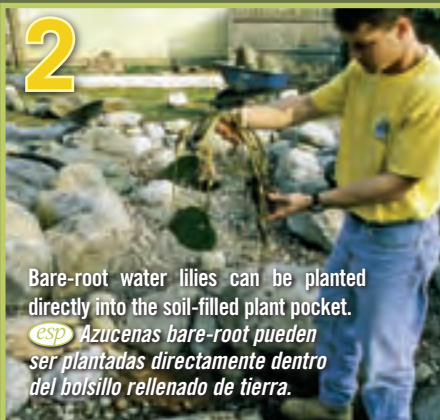
A lo mejor Ud. querrá preparar el sitio de antemano llenándolo de tierra. Esto es especialmente eficiente si su suministrador de plantas acuáticas vende azucenas bare-root, ó si Ud. no puede plantar las azucenas al tiempo de construcción.

esp Azucenas bare-root pueden ser plantadas directamente dentro del sitio relleno de tierra.

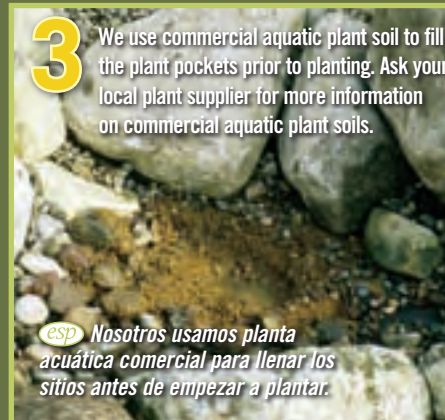
Planting Bare-Root Lilies Into “Soil-filled” Plant Pockets



1 You may want to prepare the pocket first
esp Quizás Ud. querrá preparar el bolsillo antes de tiempo llenándolo de tierra.



2 Bare-root water lilies can be planted directly into the soil-filled plant pocket.
esp Azucenas bare-root pueden ser plantadas directamente dentro del bolsillo relleno de tierra.



3 We use commercial aquatic plant soil to fill the plant pockets prior to planting. Ask your local plant supplier for more information on commercial aquatic plant soils.
esp Nosotros usamos planta acuática comercial para llenar los sitios antes de empezar a plantar.



4 Place the water lily tuber into the soil.
esp Acomode el tubo de azucena en la tierra.



5 Loose gravel should be spread around the base of the water lily to prevent the soil from being stirred up in the pond.
esp Grava suelto debería extenderse alrededor de la base de la azucena para evitar que la tierra se mueva en el agua del estanque.



6

How to Plant Marginal Plants

Marginal plants can be placed anywhere along the first shelf of the pond (0 to 8" deep areas), and also along the stream edges and upper pools.

esp Como Plantar Plantas Marginales

Plantas marginales pueden ser plantadas en cualquier parte del primer estante del estanque (áreas de 0 pulgadas a 8 pulgadas de profundidad), y también por las orillas y manantiales del estanque.

Planting

The best way to plant water lilies in your pond is to place the pot into a plant pocket that you created when you built the pond. Fill around the pot and cover the pot's edges with the same gravel that is at the bottom of your pond. If you have large koi in your pond, make sure the gravel is larger than what they can move. This will prevent them from rooting around the plant. If you didn't install pockets when you built your pond, no problem. You can build one out of rocks.



esp Como Plantar Plantas Marginales Planting Marginal Plants



- 1** Simply create pockets and crevices in between the boulders for easy marginal plantings.
 esp En cuanto Ud. esté listo para colocar las plantas marginales, simplemente escoja el área y mueve hacia un lado la grava con su mano. Remueva la planta marginal de su pote.



- 2** When ready to place marginal plants, simply choose the area and move the gravel aside with your hands. Remove the marginal plant from the pot.
 esp Piedras más chicas y grava pueden ser usadas alrededor del base de la planta para soportar la planta hasta que sus raíces agarren mejor.



- 3** Place the plant into the desired planting area.
 esp Colóque la planta en el área deseado.



- 4** Spread the gravel around the base of the plants.
 esp Devuelve la grava alrededor del base de las plantas.



The layout for marginal plants can be put into place while setting rocks and boulders. You can even use plant pockets and create specific areas on your first shelf that contain soil. (See picture to the left.) Smaller boulders and additional gravel can be used around the base of the plant to support it until the plant roots take hold.

esp Se puede colocar las plantas marginales según la disposición mientras que Ud. esté acomodando las piedras. Simplemente crea cavidades y hendeduras en medio de las piedras grandes para facilidad en plantar las plantas marginales. Ud. también puede hacer las cavidades desde las azucenas y crear áreas específicas en su primer estante para contener tierra de la misma manera.

CONSTRUCTION GUIDELINES

How to Plant Tropical Plants

You may want to keep tropical plants in containers if you plan on bringing them indoors over the winter. It's also a good idea to keep overly aggressive plants, such as lotus, in their containers to keep them from uncontrollably spreading through the pond.

esp Como Plantar Plantas Tropicales

Quizas Ud. quiere que sus plantas tropicales sean guardadas en su envase si Ud. planea llevarlas dentro de la casa durante el invierno. También es buena idea guardar sus plantas agresivas, como el Lotus, en sus envases para detener que se extiendan por el estanque.

esp Como Plantar Plantas Tropicales

Planting Potted Tropical Plants

1

Prepare a pocket for the pot with ring of rock.

esp Prepare el hoyo para la maceta con un círculo de piedras.



2

Lower plant and pot into rock pocket.

esp Coloque la planta y su maceta adentro del hoyo.



3

Adjust rocks around pot as necessary to hold it in place.

esp Ajuste las piedras alrededor de la maceta para acomodarla bien y mantenerla en su lugar.



4

Pot, plant and rocks are ready for water.

esp La maceta, la planta y las piedras están listas para el agua.



How to Plant Floaters

Larger floaters, such as water hyacinth and water lettuce, do a great job of disguising the open top of the BIOFALLS® filter, as well as providing excellent filtration.

esp Como Plantar Plantas Flotantes

Plantas flotantes que son más grandes, como el Water Hyacinth y Water Lettuce, esconden bien la parte arriba del BIOFALLS®, igual que ofrecer filtración excelente.



Photo by Mandie Langman

esp Como Plantar Plantas Flotantes

Planting Floating Plants

- 1** Place floating plants inside the BIOFALLS® filter. This keeps plants from spreading and hides the BIOFALLS® filter.

esp Coloque las plantas flotantes adentro del BIOFALLS®. Esto mantiene las plantas en su lugar y no deja que se extiendan más, y también ayuda en esconder el BIOFALLS®.



- 2** Set a green bamboo planting stick, or tie a monofilament fishing line, across the face of the BIOFALLS® filter to prevent the flow of water from carrying them over the front of the BIOFALLS® filter.

esp Coloque un palo verde de bambú para plantar o amarre una línea de pescar hecha de un solo hilo enfrente de la boca del BIOFALLS® para evitar que las plantas se caen por la fuerza de la corriente.



- 3** Large floating plants can also be placed out of reach of the skimmer by tucking them behind the lily pads, such as these water hyacinths.

esp Grandes plantas flotantes también pueden ser situadas fuera de alcance del skimmer metiéndolas detrás de las hojas de las azucenas, como estos WATER HYACINTHS.



Photo by Helio Spiller