

Water Gardening in Australia

by Sheila Tierney

Water gardening in Australia is only now becoming popular — probably because our seasonal weather patterns seem to be changing and it rains more, and also because more housing estates have piped water instead of people having to rely on rain-water tanks.

Learning water gardening in Australia is hampered by the fact that most books are written in countries where the seasons are alternate and imperial measurements and Fahrenheit temperatures are used. Here we use metric and Celcius, and so have to convert everything. The worst part is that you fall in love with a photo of a plant you must have, spend six months writing letters to all the water garden nurseries, and then find it isn't in the country.

Gardening Australia (who have a weekly TV gardening programme and issue a monthly magazine) did a feature on how easy it is to build a pond and issued a Collectors issue No. 13 'Watergardening'. This was the only book with articles written by Australian water gardeners, with photos of plants we can readily buy and seasons and temperatures we could understand without brainstrain. Unfortunately, it is no longer available.

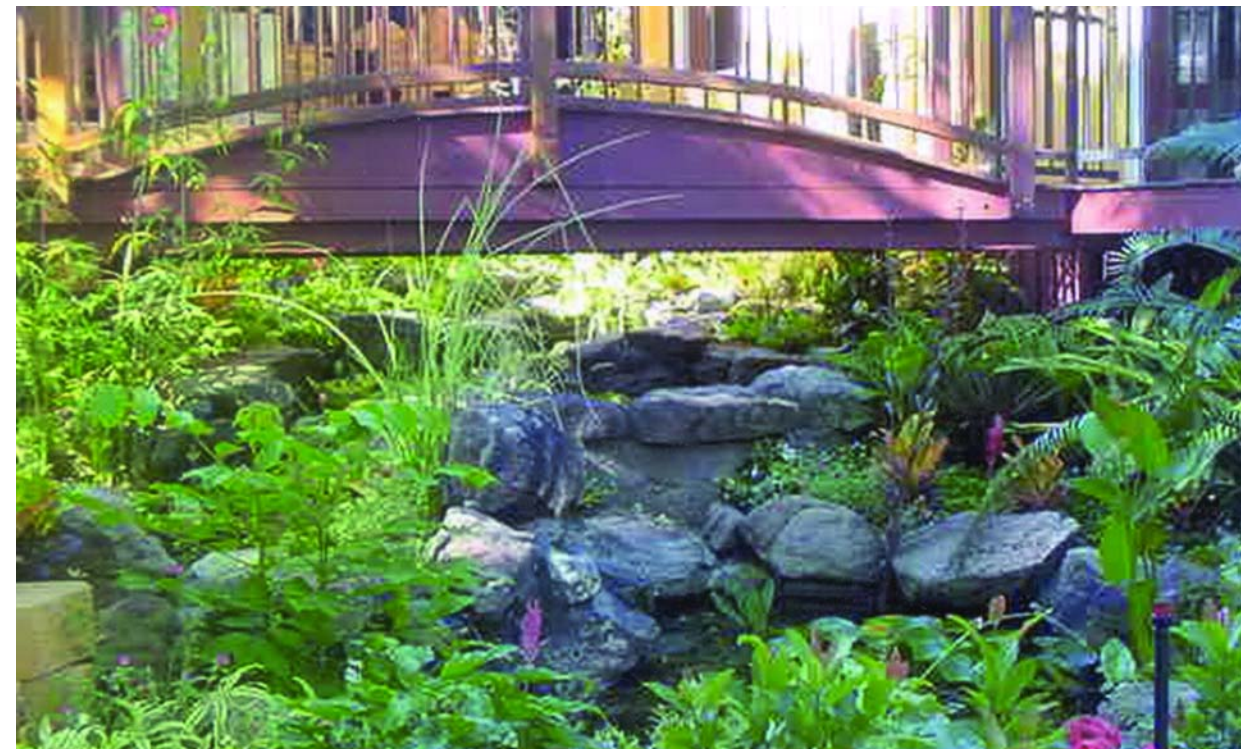
Australia is so large that winters in Tasmania are very cold (snow in parts) and dry; in Victoria it is cold, windy and wet; in New South Wales, it is cold and dry; in Queensland, South Australia,

West Australia and Northern Territory, it is cooler and dry.

In Northern Territory and Queensland, down the coast as far as Townsville, the winter temperatures are so warm that tropical lilies flower all year. However, it is difficult to grow tropical lilies in outside ponds further south than Canberra. Hardy lilies do not perform well further north



Think water gardening in Australia and the Aussie native, *N. gigantea* comes to mind. The bluish-white *N. gigantea* 'Albert de Lestang', the largest of the *gigantea* variants, was introduced by George Pring in 1946 and named to honor the noted Australian plant collector.



A bridge allows pond visitors to view the life in the middle of the pond.

than Townsville. Even in South East Queensland (in the hills behind the Gold Coast), I find the darker colours flower best in warm water, but once the temperature is over 30 Celcius, the flowers burn, curl up, and die.

Bugs are a problem; the warmer the temperature, the worse they become. It is illegal to have a body of water without fish in it in Queensland in case the Ross River mosquito breed and cause a debilitating disease which affects the brain like meningitis. The disease is also thought to be distributed by ducks who have visited the Ross River area during summer.

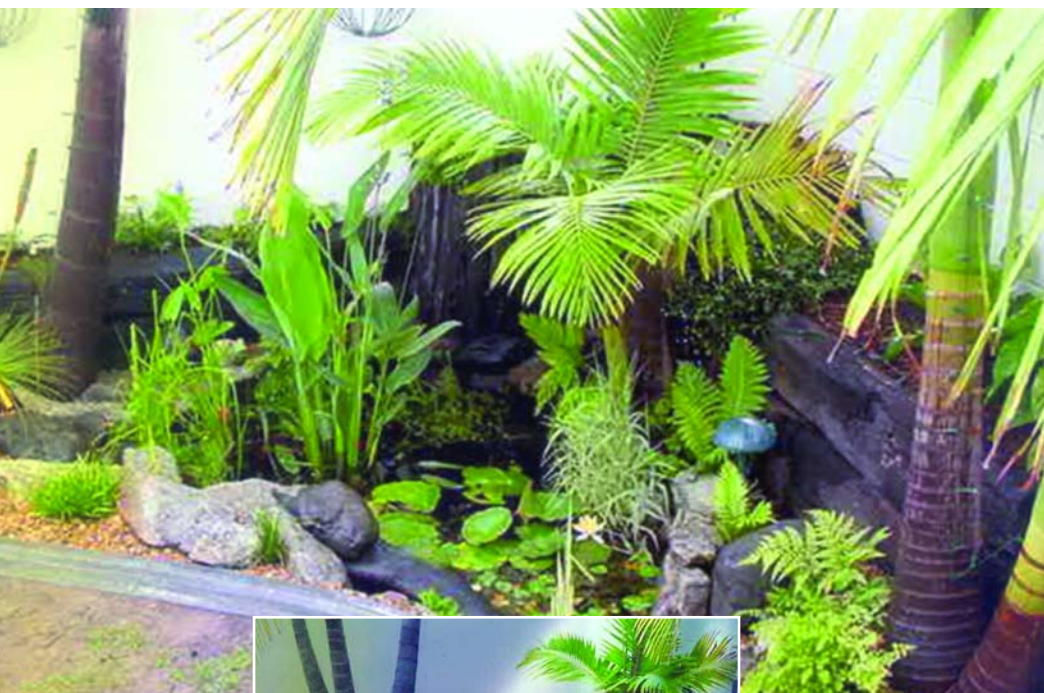
I live in a valley in a gap between two mountains, which are national parks. The national parks draw many visitors to walk in the rainforest, sit and sip coffee on a suspended deck over the tree tops, and generally soak up the peace and tranquility of the area which is only half an hour from

the busy Gold Coast area and its miles of golden beaches, bronzed lifeguards, and topless, sun-bathing tourists.

In our valley, the wind can whistle down and, during winter, we often get frosts. Last winter we had several nights of -2 celcius and the larger fish in my above ground ponds started to die (sword-tails, mollies, etc.). I had to bring them into the indoor aquariums.



Lush landscaping around the pond enhances the tropical ambiance.



A semi-shady narrow bed next to a wall becomes special with the addition of a pond and its landscaping.

I use above-ground ponds as they are easier on my back to manage, and they keep the

poisonous cane toads out. Unfortunately, they appear to lose heat from the sides, and it takes plants longer to bloom in them than the same plant in the in-ground dams and ponds.

To control the cane toads we don heavy shoes and go out at night with old supermarket bags and a torchlight. You can see the white throats of the toads in the starlight; when you shine the torch onto them, they crouch. You need to pick them up before they adjust to the light and hop away. My husband grabs the back leg, and I put my foot on the toad's back and *then* grab a back leg; our daughter puts her hand inside the bag, picks them up, and drop them into a plastic bag. When we first moved to this property, our record was 157 in one night! After seven years here, we hardly get 20 a night. Unfortunately, this has made us lazy and now we hardly go out at night at all, so the populations are building again. During winter

they hibernate, so one way of easily removing them in bulk is to deliberately leave piles of prunings, sheets of

old steel, piles of timber, etc. around the garden. During winter, clean them up and you will find a dozen or more toads sleeping beneath them. Once you have the toads in the bag, it is kindest to put them in the freezer. Be careful to dedicate a shelf to the toads or mark the bags. It is a rude shock to open the freezer and find a frozen toad staring at you when it has escaped the bag. When the household rubbish is being collected, don't forget to take the frozen toads, too.

Despite the drawbacks, water gardening is becoming more popular. I have yet to find anything to beat the tranquility found of sitting beside a pond, dappled with light and shade, and watching the fish nibble at the biscuit crumbs I have sprinkled on the water's surface. ♡

Sheila Tierney and her husband have a pond-building business in Australia.

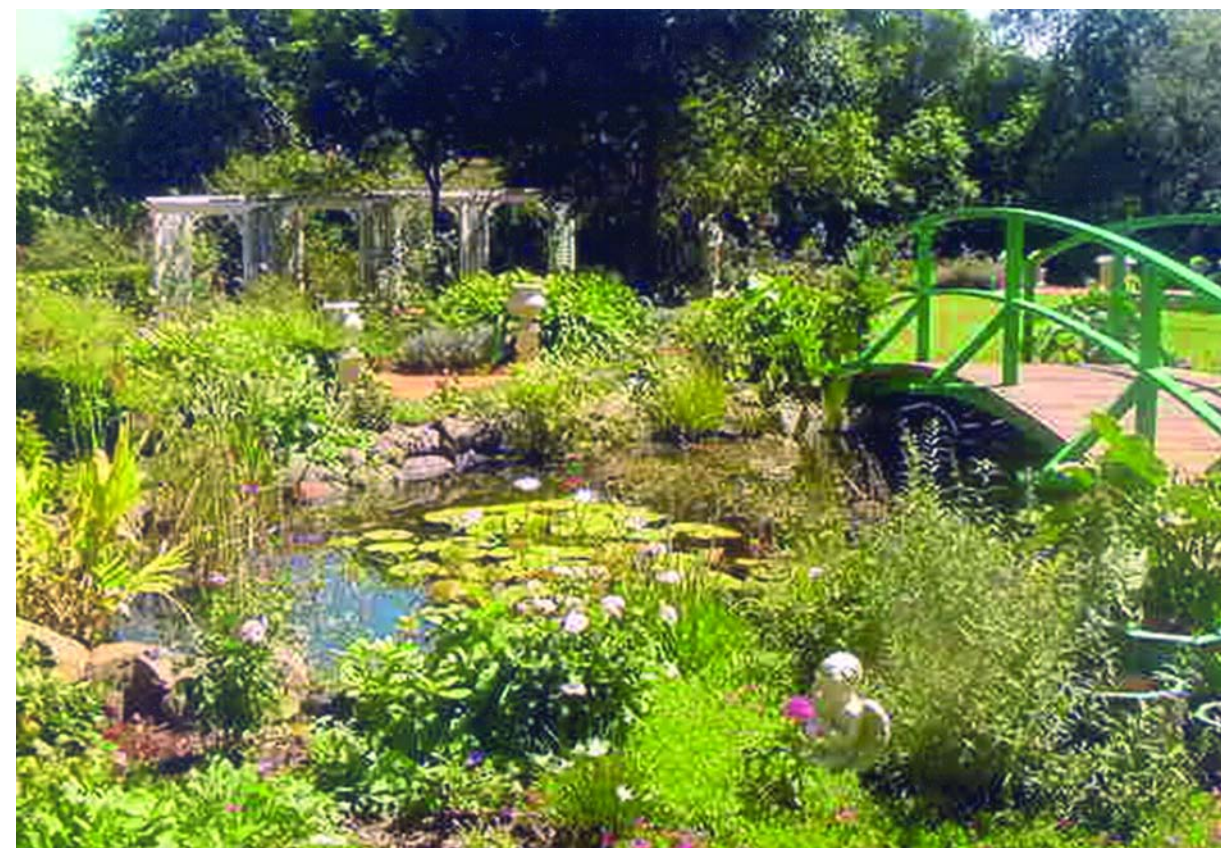
Australian Pond Tour

by Sheila Tierney

Mount Tamorine, within one hour's drive inland from the Gold Coast and 1 ½ hour's drive south from Brisbane, is a tourist mecca with spectacular views from the fringes of the plateau out over the rainforest and palms and green farmland rolling out to the Pacific Ocean. The plus of cool, fragrant air makes it an ideal honeymoon destination.

Several wedding chapels offer garden beds of successive blooms, along with stone pillars, arches, seats, bird fountains, ponds and water-

falls in the landscaping. Avalon Wedding Chapel offers 10 acres of gardens, a white stone Grecian-style chapel, orchards, and a pond complete with an arched bridge. Day-blooming and night flowering tropicals and hardy lilies are planted in 50 cm plastic (terracotta look-alike) bowls to provide lush color around the clock ten months of the year. Water is run out through a hollow log down the face of sandstone rocks to entice the goldfish to play.



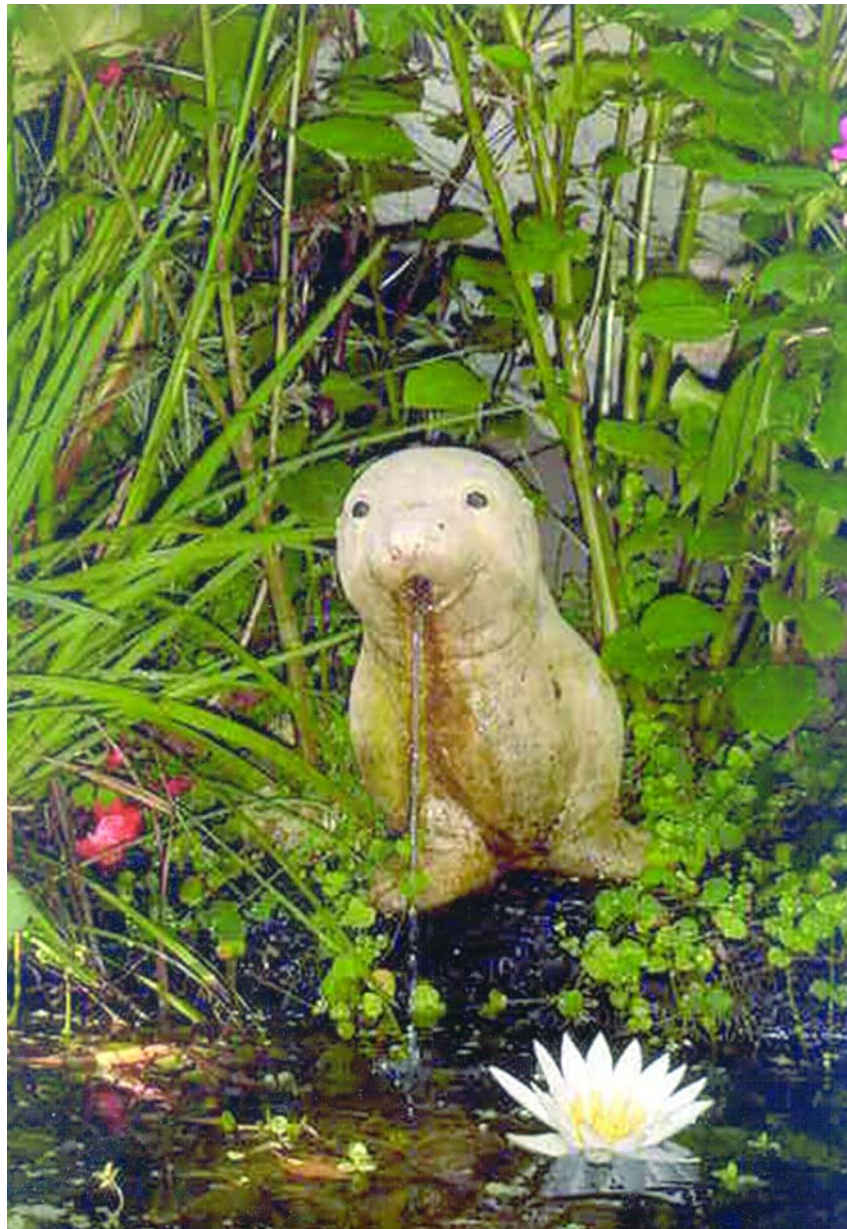
The lovely water garden at Avalon Wedding Chapel at Mount Tamorine is but one of the reasons the Chapel is one of the most popular in the area.

Pond in the Shade

When you buy a house with a brick BBQ standing out in the middle of a lawn, how do you incorporate it into your overall plan of a comfortable place to live in all weather? Boxing in the carport with a timber wall produced an entertainment area between the carport, the BBQ, and the house. For comfort it was covered with 80% shade-cloth sewn onto a steel pipe framework. Finding plants to grow in such a shady area was a challenge but rewarding.

The owners went to the landscape yard to buy a wall fountain, but instead they fell in love with the engaging smile on a seal cub fountain. A concrete bowl was used as the backdrop. A Hozelock 1000 pump with a variety of fountain heads allows the water to flow in accord with the prevailing wind conditions.

The teardrop-shaped pond is 2.5m x 1.2m and 60cm deep over two-thirds of its length with a shallow shelf for growing marginals at the narrowest point. Lined with pond vinyl and with river sand in the bottom, it is planted with submerged grasses, marginals and lilies to create a haven



Who could resist a seal cub fountain?

for frogs, tadpoles, and goldfish. Stagorns, elkhorns, orchids, and old man's beard grow on the back wall.



Using shade-cloth to make the entertainment area comfortable in the summer heat creates landscaping challenges. Impatiens provide lush color in the shade.

Tranquil Formality

A retired businessman fell in love with an original Queensland homestead, even though it needed lots of TLC. Many happy hours of tinkering and painting later, the house was restored and they turned to the garden. Deciding the home needed a focal point in the back garden, the man and his son moved the old

fountain they had discovered out front to be the center of a new stonework pond. Future plans include adding lights to the feature.



An old fountain discovered at the front of the Queensland homestead appeared to have been used as a birdbath. Now it is the focal point of an elegant stone pond in the backyard.

Washington's Place

A Brisbane businessman, always keen for a bargain, had been offered all of the large fantail goldfish from a friend's leaking pond if he had somewhere to put them. Undaunted, he had the ponds built, and then called us in to turn the stone structures into ponds. Unfortunately, the stonemason had built the 5m-long, curving sandstone pond to also act as a retaining wall for the garden behind, with water cascading down the rear wall. Although a most impressive design, the sandstone trough was too deep and too narrow for growing waterlilies, so marginals became the main feature. Even so, the plants had to be set to the sides of the water jets to prevent bruising and being knocked over.



Cascading ponds define the property boundary.

Soil excavated from other projects had been placed along the property boundary at the side of the house. A series of ponds, overflowing one into the other, was built along the top of the bank. The cascading ponds are visible from the L-shaped home and form a screen to the neighboring property.



What had been a muddy mess of a yard has become an oasis of tranquil water-front living.

Every Cloud Has a Silver Lining

When the road in front of your property is being widened, truck-loads of road base have been dumped there, and heavy rain washes most of it into your front yard, what do you do? Turn it into a clay-lined pond!

A backhoe and bulldozer were brought in by local contractors. The level of the land was taken and formwork was put up outside the work area to determine the eventual height of wall on the downside. The road base (clay with some small stones) was pushed to one side, the hole was dug, and the soil compressed around the downside edge. The excess road base was put to good use within the hole, being well compressed. With the backhoe in the middle of the hole, a spirit level on top of the bucket was swung around in circles to cut the wall level.

To accommodate a fountain, a 2' square con-

crete slab was poured and leveled, and a milk crate with one side cut away was set on top. A 2000 GPH pump would cycle the water through the boy and girl under an umbrella fountain. Another fountain, set on the pond's edge, was piped into the underwater irrigation system to be controlled through a stopcock.

After planting submerged grasses and marginal aquatics, the pond was filled with water from the creek. At the point of a 2cm difference in water level, a trench was dug and 2" polythene pipe placed there for overflow. The pipe was adjusted to allow the water to flow easily through the pipe and exit at the top of a bank where a stone waterfall had been built to aesthetically channel the water away. With the overflow pipe concealed by soil, grass was sown and waterlilies planted in large bowls for placement inside the pond.



Impressive stone walls create a series of narrow ponds that are planted with marginal aquatics.

A NEW SCOURGE IN SOUTHWESTERN WATER GARDENS

The China Mark Moth

by David Curtright

In the happy days of yore, those of us in the Southwest who kept water plants could look to our counterparts on the East Coast and in the Southeast with a smug satisfaction. Not only was our climate better, but we didn't have to put up with as many insect pests. Aphids and the occasional white fly were all we had.

In recent years, however, we, too, have to watch for insects that we have seen previously only in books. Chief among these are the group of moths collectively known as China Mark Moths, aka, lily leaf caterpillar, waterlily leaf cutters, bagman, and sandwich man.

In the old days, with few permanent bodies of water in Southern California, water lilies and other floating-leaved plants did not exist here in any number. With the increased popularity of water gardening, however, more and more new ponds are being added to our area, some of them quite large, and more and more plants are coming into the state from nurseries in the East. Of course, the fellow that just sold the plant for \$35.00 doesn't want to strip a lot of leaves off, so he sends the plant with its leaves. The fellow who just paid the \$35.00 for the plant doesn't want to strip any leaves off when he gets the plant, so he puts it into the pond as received. If the plant has moth eggs on it, trouble ensues. Each year a new infusion further entrenches the moths, encouraged by our new permanent water supplies and mild climate that allows many lilies to maintain foliage throughout the winter.



Moth larvae protect themselves by sewing together pieces of leaves or debris to make a watertight casing.

The Pest

Taxonomically, the moths belong to the Order *Lepidoptera*, Family *Pyalidae*, and are present in at least four genera, *Nymphula* (Syn. *Synclita*), *Parponyx*, *Cataclysta*, and *Bellura*. They are collectively known as China Mark Moths owing to the odd little markings on their wings, which resemble markings on china. The adults have light brown forewings and buff-colored hind wings, or they are nearly black with yellow and white markings. Whatever the reason for the name, the markings are subtle and rarely noticed by pondkeepers since the moths are nocturnal. Each species has its own variation of the name, such as Ringed China Mark

Moth and Beautiful China Mark Moth. Other members of the family have common names that are derived from their primary host species, such as Rice Caseworm. All are small with the largest measuring no more than an inch wide at the wingtips. Likewise, the larvae are small (1/4"-1/2") and maggot-like. The eggs are very small and a dull white in color.

The Problem

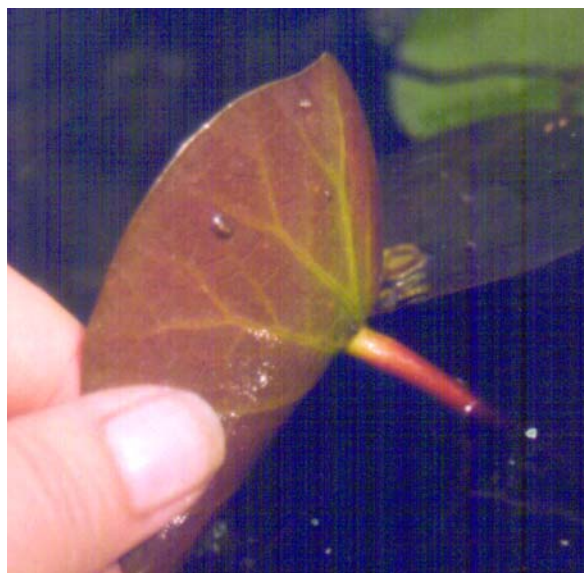
In very short order, an invasion of the moths can reduce a healthy and wondrous water plant to confetti. The female deposits eggs in clusters of 10-50 on the undersides and near the edge of a floating leaf. Within days, the eggs hatch tiny larvae that meander over the leaves, eating as they go. In their chewing, pieces of leaf are set free. Serendipity! Knitting the leaf portions together over their backs, the larvae are camouflaged and protected within a watertight, portable chamber. While some of the species create free-floating arks, others use only one piece held flat over them and affixed to the leaf below. Frequently, a larva protrudes from the edge of its construction, nibbling away on surrounding greens. When disturbed, however, they quickly retreat inside for safety. During their growth, of course, increasingly larger sections of leaf are cut away, both in feeding and for shelter. Consider the damage from the lucky larva that constructs its shelter with upstanding, sail-like leaf

pieces and moves from leaf to leaf, courtesy of your pond's sea breezes.

As time approaches for pupation and the eventual metamorphosis into the adult, winged form, the safely ensconced larva finds its way to the apex of the leaf sinus or to some other vein of sufficient diameter to fit its body. The species that cuts only one leaf segment, appearing often as a small bit of leaf stuck to a larger leaf, bores down into the chosen vein. A favorite destination is where the leaf joins the stem. The larva may burrow into the leaf's stem as much as 4 inches or more, where they pupate, protected from the elements among the aerenchymal (air-filled) cells within the stem. The species that uses two flakes for cover crawl down the length of the petiole about the same distance and bore into the petiole from the side, tapping into the same aerenchymal cells. Depending on the species, the leaf segments may be abandoned or used as a holdfast and perhaps a snorkel. In either case, they pupate



A piece of leaf stuck to another leaf probably conceals a moth larva. The 'messy' excrement is another clue.



If the larva seems to have disappeared, check the leaf's stem for the tell-tale bulge where the larva is burrowing inside.

safely within the vein or stem for only several days in the warmth of summer or for several months during winter, whereupon they emerge from their cocoon, float to the surface, dry their new wings, and fly away to repeat the life cycle. Again, depending upon species, the adult lives from 24 hours to two weeks.

Unfortunately, host plants are not limited to water lilies. I have observed them using bits of *Azolla*, *Lemna* (duckweed), and *Salvinia* (water fern) and have seen them living on Water Hawthorn (*Aponogeton distachyos*), Water Snowflakes (*Nymphoides* spp), water poppies (*Hydrocleis nymphaeoides*), water clovers (*Marsilea* spp), and on floating leaves of creeping water primrose (*Ludwigia repens*), marble sword (*Echinodorus* spp) and Lotus (*Nelumbo*).

Evidence of their presence is the sudden appearance of damaged leaves and pieces of leaves either lying on leaf surfaces or floating in the water. Overlapping leaves easily conceal the sewn-together shelters. If you notice leaves that do not separate when the water moves, look for the sandwich man. Also, watch for the tell-tale piles of excrement around the middle of leaves.

The Solution

In any search for pest controls, first know the critter. Where does it live? What are its habits? How does it reproduce? What are its vulnerabilities? In this case, we know that the eggs laid on the under side of leaves are small and neutrally colored, making them difficult to see. We know that the larvae walk on the leaves for awhile, which is a vulnerable time, but they soon protect themselves within tightly sealed bits of leaves, eventually boring into the leaf stem to pupate. While within their casings or leaf stems, they are protected from most sprayed agents. Toxic chemicals, of course, are not advised anyway for ponds with fish. *Bt*, *Bacillus thuringiensis*, which parasitizes and kills larvae, is safe for pond use, yet ineffective against the protected larvae. Even so, it is more likely that water will wash away sprayed agents before the larvae's consumption. Hand-picking the larvae is effective but tedious, especially in larger ponds. Obviously, the larval and pupal stages are not easily eradicated.

Looking, then, to the adult stage, we know that as nocturnal insects, moths are attracted to light (positive photo-tropism). Adult moths could be trapped by setting a light and a sticky agent near the pond at night. Of course, you would also attract and trap other nocturnal moths that you might not wish to destroy.

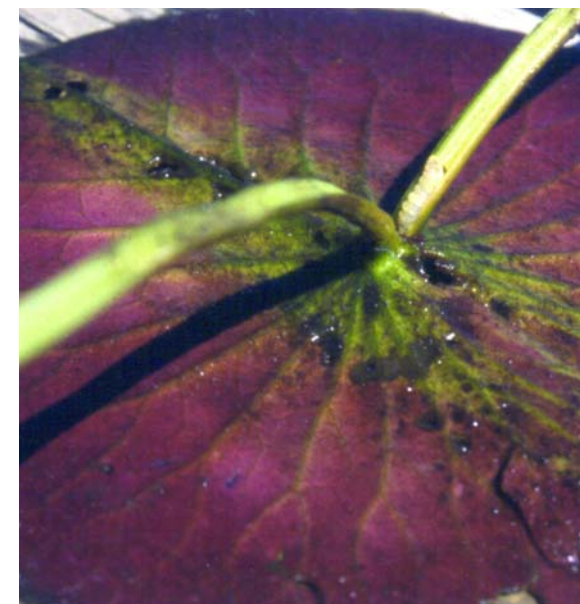
There are, however, other ways to free your pond of this blight. First of all, remove all affected leaves. I remove all leaves that show any sign of the larvae's presence. As I collect affected leaves, I check leaf undersides for eggs. Either dislodge the eggs for fish food, wipe them into paper towel, or crush them. As you move about within the pond, watch for and capture any

emerging moths that may flee with the water disturbance. After removing all affected leaves, I often spray *Bt* or a mix of paraffin oil and the systemic Orthene, just for backup. While I have never killed a fish with Orthene, I use it in a slightly reduced concentration than that recommended by the manufacturer. Paraffin oil can be used at the manufacturer's recommended dosage. Because *Bt* washes off readily, I prefer the Orthene-oil mix that remains in place longer. Keeping leaves dry for treatments is easy in a small pond, since you can stand on the pond edge, aim, and shoot. For larger ponds, however, that may require boat assistance, finesse is the name of the game.

In small containers, such as barrels and tub gardens, the entire container can be covered with plastic but without the plastic resting directly on the plants. (Remember, plants breathe, too!) This kills several pests in addition to the moth larvae, such as caddisfly larvae and mosquitoes, by heating the water and air above the water without harming the plants.

Yet another preventive measure is to inspect and possibly treat emergent aquatics and plants around the pond where the moths may be hiding until dusk. Whichever method is used, the key to success is persistence and thoroughness. When infected leaves are collected, for example, do not toss them immediately on the compost pile. The larvae can still live in the damp pile and emerge right on schedule. Better yet, store the infested leaves in a black plastic bag that is left in the sun for a week or so to cook eggs, larvae, and pupae before adding them to the compost pile.

Don't forget to tend to the general cleanliness of the pond, too, especially the floating plants and plant fragments on the surface. Keep any



By splitting the stem, you are likely to find the burrowing larva where the stem bulges.

Azolla or duckweed away from the water lilies and other possible host plants. Remove all dead foliage from marginal plantings as well as from the lilies. Because adult moths blend easily with browning, dying foliage, these are perfect daytime hiding places.

The Future

Our mild winters and myriad micro-climates almost guarantee that some moths will survive Southwestern winters to harass us in the spring. It will take a collective effort by growers, retailers, pondkeepers, and even the Department of Agriculture to control this pest. If allowed to increase unchecked, there is no reason to believe that the China Mark Moth will not become a permanent feature throughout most of the Southwest. Insects are nothing if not adaptable.☛

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Contest Entries
From Suburban Water Gardens, Dix Hills, New York



Gary DeLorenzo,
South Huntington, NY

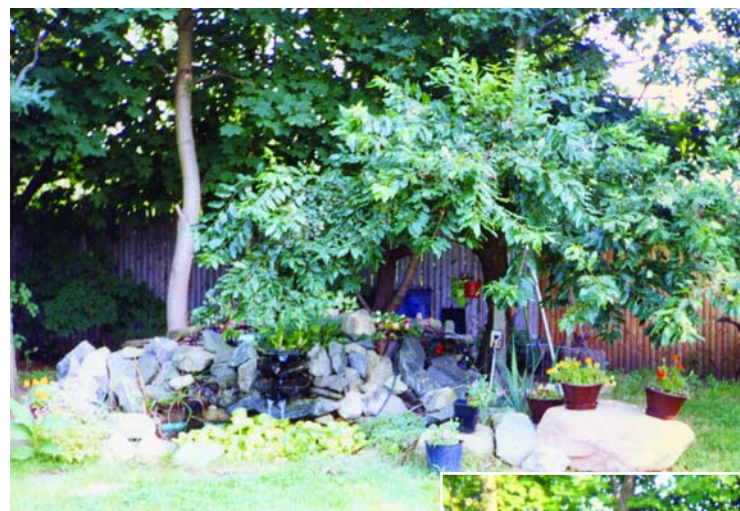
Although Gary designed his pond to edge his deck and nestle into the yard's slope, he enlisted the aid of Designs by Dan for its construction. The main 13' diameter pond is 4 feet deep and holds 2200 gallons to keep both koi and aquatic plants happy. A 2800 GPH pump cycles water from the main pond below to a smaller header pond at the top, through a stream, and down the triple stepped waterfall. The pond can be enjoyed from the entertainment deck or from another seating area near the top. *Photo by Gary DeLorenzo*



Louis Dionisio,
Iceland Park, NY



For many of us, keeping fish, especially koi, is the main attraction of a garden pond. With the help of Jeff K, Louis Dionisio built his koi pond indoors. The indoor "pond" measures 5' x 4' and 5.5' deep, holding over a thousand gallons for the six Japanese koi. A gravity-fed filter feeds into a bog area which contains lava rock, bog wood, sticks, etc. for more biological filtration. Louis changes 25% of the water every two weeks, rinsing out the filter pads at that time. *Photo by Louis Dionisio*

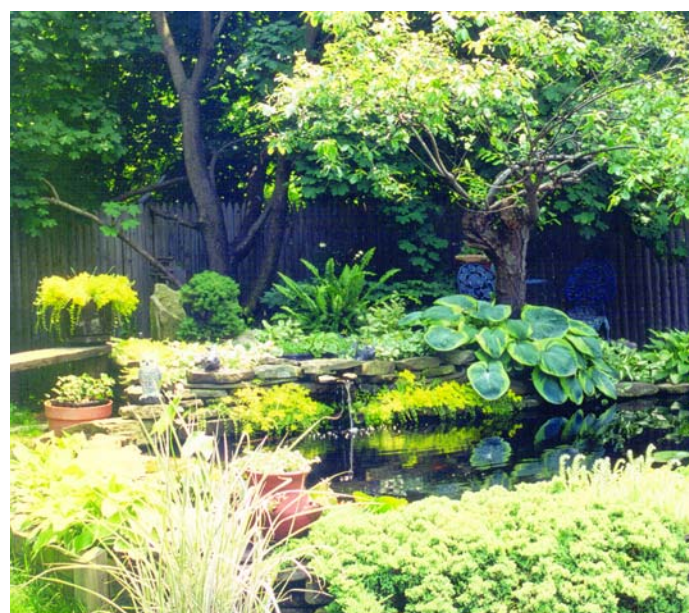


(above) As the trees grew, so did the pond – to 12' x 16' with a raised stone edging complete with narrow planting beds. A hammock and two chairs hint at the role the pond was beginning to play in the Santoriellos' life.

(right) Installing a pond in your yard tends to become a work in progress. In 1990, Mike Santoriello & Sons began what would become a ten-year project. The original pond and waterfall was set amongst three trees in the backyard.



Michael Santoriello,
Bethpage, NY
Photos by Michael Santoriello III



Mature plantings now frame the pond, and pond enjoyment is enhanced with a new garden structure. What's next?

WILSON'S Pond Critter Photo Contest

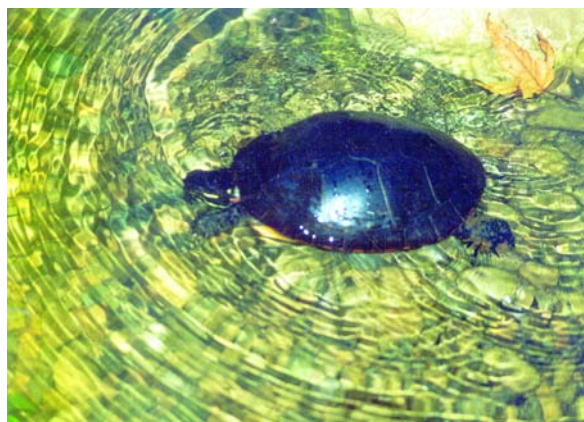
by Nancy Allee

When most people ask me about putting a water garden in their yard, they are thinking of the beauty that the pond will add to their home. After the pond is installed, it doesn't take too long before they want fish and frogs in their pond. Wilson's Garden Center of Newark, Ohio, has featured a photo contest for five years. After the first year, we added the "pond critter" category because the critters are a favorite of our gardeners.

We pondkeepers know that not only frogs and fish enjoy our ponds, but also do dragon-



Bobbi Meldahl's pond was installed only last year by Brian Wollenburg, but Bobbi has become a true pond aficionado! Camera in hand, Bobbi captured this dragonfly to win first place in the Pond Critter Photo Contest.



Becky Hunter of Pataskala, Ohio, and husband, David, actually have two ponds, one 8' x 10', and the other 18' x 16', that are connected by a 90'-stream. While one pond serves as a home for koi and goldfish, their second pond is a home of bluegill and bass. Is it any wonder a turtle found a welcome environment?

flies, butterflies, deer, songbirds...and, yes, herons, along with turtles and a host of other wildlife, some desirable and some not so, but all equally entertaining and educational.

This year, as always, the judges had a difficult time selecting the winners for the "Critters of the Year." We hope you enjoy the photos that were chosen from the many great shots we received this year!

First place winner, Bobbi Meldahl, loves to take pictures of different wildlife and insects. She captured a dragonfly on film while she was looking for a princely frog to pose for her camera. Second-place winner, Becky Hunter, found her critter in the 90-foot-stream that connects her two ponds. Third-place winners, Kandra Klein and Jon Bullman, found their young bullfrog subject enjoying a little sun near their filter. "I had a very cooperative subject," Kandra

explained. Honorable Mention winner, Stephanie Smith, adopted her pond when she bought her house this year. She has become a true pond lover and enjoys watching and feeding her fish. Honorable Mention winners, Stu and Gail Bragg, have two pug dogs, Pugsley (shown in photo) and Ming, that enjoy watching the fish and drinking out of the old-fashioned pump that flows into their pond.



Kandra Klein and Jon Bullman built their 25' x 15' pond in 1999 and combined koi, goldfish, and shubunkins with native fish and wildlife. The young bullfrog that won Kandra her third-place in the photo contest was probably bred the year they installed the pond!

Stu and Gail Bragg installed their pond only last year, to the delight of their two pugs. While the pond they designed and built measures 13' x 15' and is enjoyed by fish and aquatic wildlife, the pugs have claimed the flowing pump as their personal watering hole.

- Cloudy days usually produce "white water"; you may find a filter over your lens helps with reflections on the water's surface.
- Remember your background; after framing your shot, do a quick check for distracting

Critter Photo Tips

- 400-speed film works best to capture critters.
- To hold your camera steady, prop it on a rock...and be patient.
- Plan your shoot when the lighting is least harsh; slightly overcast days, mid-morning, or late afternoon may be best.
- If you're shooting in the presence of light and shadows, try to frame your picture in either sun or shade to avoid sharp contrasts.

- elements! Plan ahead and clear the water of any floating debris or yellowing or tattered leaves.
- Feeding your fish may bring them to the surface, but wait until the frenzy abates to avoid pictures of churning water, floating pellets, and mere flashes of fish. Try a little patience and but a pellet or two to entice your finned pets near the surface.
- Need we add, be patient? Critters tend to be quick little fellas!☺