

FIELD COLLECTING

Australian Water Lilies

by Andre Leu

One of my greatest joys in life is field collecting plants. My collecting trips have taken me to many interesting places on this planet, such as along the Mekong in China, Laos and Cambodia, up the Mahakham River in Borneo, and the upper parts of the Amazon basin in Ecuador. My specialty is collecting rare, exotic tropical fruits and introducing them into horticulture. However, water lilies are plants that I have always loved. I grow them for the intense enjoyment of the daily parade of new flowers.

Recently I have been very fortunate to go on collecting trips with two of the most knowledgeable world experts in water plants, Walter Pagels and Barre Hellquist.

The first time I met Walter, when he visited my farm, he inspired me by telling me about a white *Nymphaea gigantea* that flowered 24 hours a day. In 1946 Albert de Lestang, a plant collector who lived in northern Australia, sent waterlily seeds via Kew Gardens, London, to George Pring at Missouri Botanical Gardens. Pring sent half of his seeds to Arthur Proebstle in Texas because the warmer climate would be better for growing

these tropical lilies. Arthur Proebstle noticed that one of these white lilies, after closing for the first night, stayed open 24 hours a day for four to five days. Pring was so skeptical that he made a special trip to Texas to see it.

This plant was propagated and cultivated in the USA for many years. However, because it was hard to grow outside of a greenhouse, it proved to be unreliable in cultivation. Eventually, it was grown only in a few botanical gardens until it was lost to cultivation. Nobody knew where it grew in the wild.

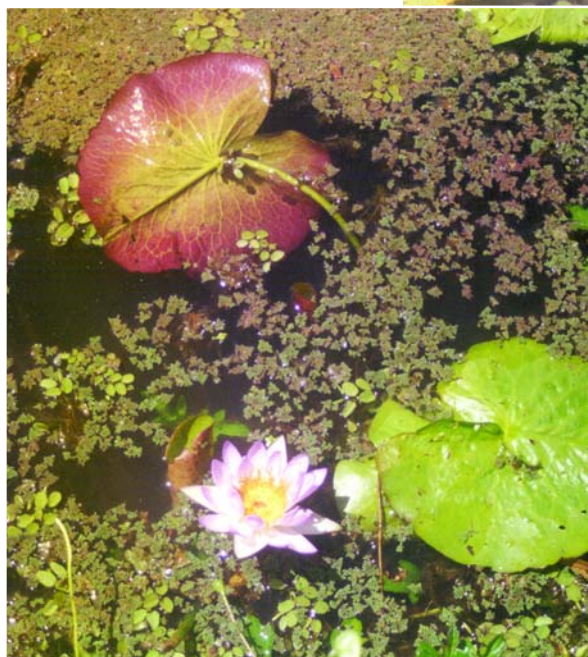
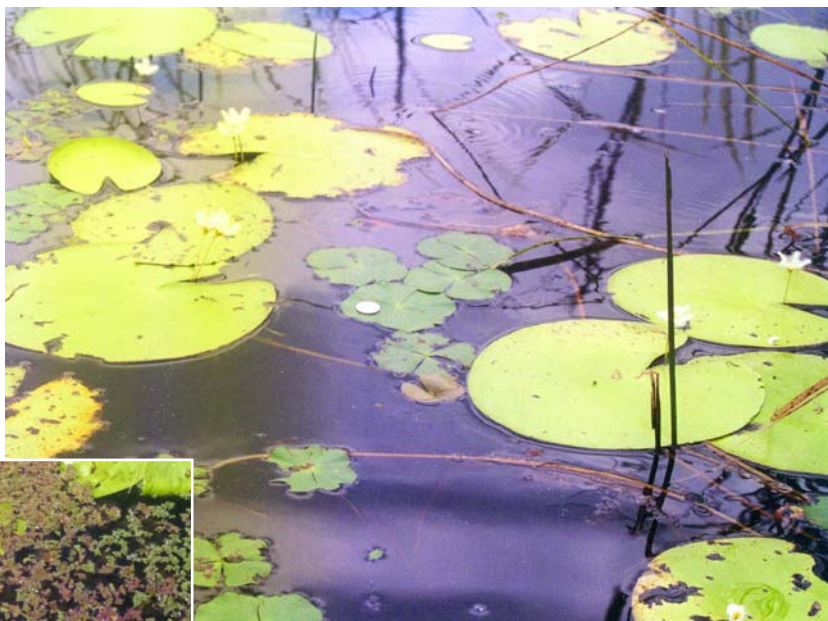
I was determined to go to Albert de Lestang's property near Lawn Hill Gorge to try and discover this white *Nymphaea gigantea* that flowered 24 hours a day. In February of 2000, I mentioned to Walter in correspondence that I intended to go to Lawn Hill in mid-April. I felt that was



Andre and Julia need not venture outside to enjoy their waterlily blooms. Andre notes that the larger pink *violacea* and the smaller *immutabilis* in this vase remained in bloom for several days indoors. Photo by Andre Leu

the best time as the monsoon season would be finished and the lagoons would still be full of water. Walter replied asking if I would like a passenger, so we started planning the trip.

I live in tropical north



The rare pink *N. violacea* in the wild; note the red underside of its leaf. Photo by Andre Leu

Queensland, 60 miles north of the city of Cairns, near a small village called Daintree. Although Australia is regarded as one of the driest continents, the far northern part of Queensland is a very wet area.

The monsoon season had been unusually heavy and prolonged and was still very active in late April. Starting in November 1999, we averaged 36 inches of rain a month for five months, for a total of over 180 inches of rain during that period. Some towns had over 250 inches of rain that year.

In crossing the Great Dividing Range, Andre and Barre discovered a catchment where the rivers flow into the Coral Sea and the Great Barrier Reef. Among the *immutabilis*, they found very large *Nymphaoides indica* and water clover, *Marsilea drumundii*. (An American quarter rests on one of the leaves for size comparison.) Photo by Andre Leu

The day Walter flew out of Los Angeles, a cyclone (hurricane) was forecast to hit us. Fortunately, by the time Walter arrived, after spending a few days in Sydney, it had passed over and our local airport was open again.

We started our journey by crossing the Atherton Tablelands to Ravenshoe. This is Queensland's highest town, set at over 3000 feet. Although sited in the tropics, Ravenshoe gets winter frosts. On previous visits I had seen blue-flowering *Nymphaea immutabilis* here, and I felt these plants would have more cold tolerance and should be a better variety for introducing into cultivation. Unfortunately, due to the unusually heavy monsoon season, the constant flooding of the river systems meant that there were no lilies to be found.

From here the journey took us down towards the Gulf of Carpentaria, which is 400 miles westward. The Gulf region is much drier with a 3-4 month wet season and virtually no rain for the rest of the year. It is a savannah climate (tropical



Protected from crocodiles by the fence in Keatings Lagoon, Barre collects a specimen. *Photo by Andre Leu*

grasslands with few trees) like much of Africa or the Yucatan peninsula of Mexico. The area is mostly grassy woodlands with open, small to medium sized (20-30ft) eucalyptus and acacia trees. It is rich in kangaroos, wallabies, parrots, lizards, snakes, crocodiles and other wildlife.

We had to spend the night at Mt. Surprise because storms resulting from the cyclone had flooded the rivers and cut the road. The next morning the rivers were low enough for us to carefully cross the flooded bridges. We continued across the base of Cape York Peninsular to Normanton, examining every pool and watercourse for aquatic plants. That afternoon we reached Normanton where we found our first pure white waterlilies. We found several pools covered in flowering lilies in shades of white, blue, and light pink. They were a spectacular sight.

The next day we traveled several hundred miles to Gregory Downs. This area is very sparsely populated, and it is not uncommon to

travel over 100 miles without seeing another car or person. There are great expanses of savanahs and woodlands. Due to the heavy monsoon rainfall, they were full of rich, tall grasses and fat cattle. The rainfall also meant that the countryside was alive with native animals such as black cockatoos, sulfur crested cockatoos, galahs (pink cockatoos), and other multi-colored parrots, along with lots of kangaroos and wallabies.

We arrived just at sunset and headed for the local hotel. Although the lights were on, all the doors and windows were locked. Walter and I called out and searched around. Eventually, Walter found one of the employees who refused to give us a room because the owner wanted an early night's sleep and didn't want to be disturbed. She told us to sleep by the riverbank.

The general store had a sign advertising rooms; however, it was closed and nobody was around. We went on a wild goose chase around this small town, trying to find the owner. Everybody was very helpful telling us where they

thought she was, but she was not found in any of the recommended locations. She had disappeared in a town of less than ten houses. We had no option but to wait in front of the shop until she returned. Eventually, after some hours, we managed to get rooms.

The next morning, despite being warned that the road was impassable due to wet weather, we drove towards Lawn Hill and on to Adels Grove, Albert de Lestang's old property. This area is close to the Queensland-Northern Territory border. Adels Grove is run as shop/camping area. They had a scrapbook with copies of correspondence and biographies of Albert which Walter and I read, taking notes. We learned that the name of his property, Adel, came from the initials of his name.

According to de Lestang's notes, the seeds of the white flowered *gigantea* did not come from that area, but they were collected by aboriginal people for him. Albert was very friendly with the local aboriginal people, who, in those days, had a permanent camp on the opposite bank of the large lagoon that bordered his property.

I walked through the forest to the lagoon. It is a very attractive location, fringed with large eucalyptus, paperbark, pandanus, and palm trees. I spotted flowering lilies near the opposite bank. Excitedly, I returned to the shop and hired a canoe. After paddling for hundreds of yards and examining every lily, we found only the common light blue *Nymphaea violacea*. This is a very beautiful flower; however, it

was not what we were seeking. We did not find any white *Nymphaea gigantea* plants. We were not surprised as Albert de Lestang's correspondence stated that no white lilies, only blue forms, were found in his area.

We drove around and spoke with local people about possible locations of white-flowered lilies. No one had ever seen them. When we explained that the seeds were collected by aboriginal people, we were told that they might have come from Domadgee, a large aboriginal community over 100 miles north and near the Gulf of Carpentaria. Because of the recent rains, the roads in that area were impassable.

We were warned, also, that storms would soon make the road back to Gregory Downs impassable. In this very isolated part of Australia, it is not uncommon for roads to remain isolated for weeks — and sometimes for up to 5 months. We



N. immutabilis. Photo by Andre Leu



A white *N.gigantea*. Photo by Kit Knotts

decided to return to Normanton, as that was the only place in over 700 miles of traveling that we had found white waterlilies.

On the return trip we found waterlilies at a place called Sandy Creek, between Gregory Downs and Burke and Wills Road House. This site had many colors, from dark blue to almost white and a very pale light pink. The flowers of this group faded as they aged.

We finally arrived back at Normanton at about 8 p.m., and after booking into a motel and having a meal, we went down to the spot on the Norman River where we had found the white lilies. To our surprise, there were flowers that were still open—about 10% of the flowers were open. We had found a source of the 24-hour-flowering plants, which was the main purpose of this trip.

The next day and night we searched for more areas with lilies. We discovered quite a few inter-

esting things, including many types of *Nymphoides* and new locations for *Nymphaea hastifolia*, which had previously been known only in the top end of the Northern Territory.

It was in the afternoon of that day that I discovered the deep pink lily that William Phillips named after me. After I spotted it, I showed it to Walter, who watched out for crocodiles while I waded in to collect it. I am very cautious when it comes to crocodiles as they are almost impossible to spot when they are in the water. These animals are the masters of stealth and surprise attacks. Over the years I have decided not to enter deep pools to collect interesting lilies as the dangers outweighed any benefits. However, having never seen a native Australian lily with such dark pink flowers, I just had to take the risk.

Throughout this collecting trip, we looked out for each other when one of us entered the water to collect. However, in reality, if a crocodile were hiding close by, not much could be done to stop an attack. Probably all the survivor could do is tell the story of how the other person was taken.

This particular trip was very rewarding. We set out with the difficult task of finding a very rare plant and managed to achieve it. Field collecting is always an interesting exercise. Often the original purpose is not achieved, however, other discoveries more than make up for this.

One of the aims of the most recent trip in March of this year with Barre Hellquist was to establish if the Keatings Lagoon at Cooktown was the most southerly point for *Nymphaea atrans*. This is a species that occurs in Cape York Peninsular with changeable flowers that open with blue outer petals and white inner petals. Over the course of four days, the outer petals change to deep pink.

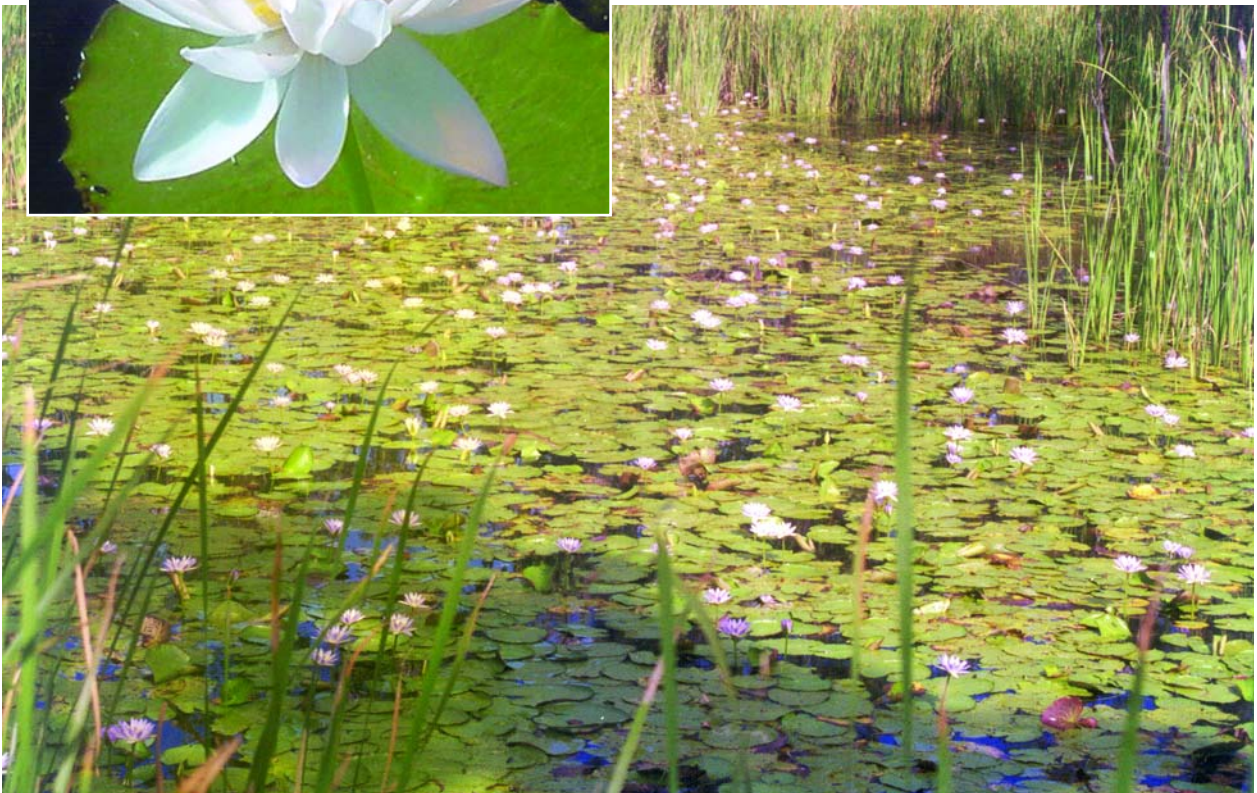
I met Barre, his wife Marian, and one of his students in the town of Mossman. We proceeded up the rainforest-covered mountain range to Mt Molloy and turned north towards Cooktown. This area is the inland route and is drier than the coastal range with the countryside covered in savannah woodland.

As always on these trips, we slowed down and checked every watercourse for lilies. The first site was about 1 mile north of Mount Carbine. There we found a lagoon system filled with

Nymphaea violacea and bird life. The flowers of this group were smallish and emerging on the first day as medium blue and fading to a very light blue by day 3.

We continued for many miles and spotted lilies in a dam. These turned out to be some of the largest *Nymphaea violacea* plants we have ever seen with very pale blue, almost white flowers, more than 8 inches in diameter. These flowers did not fade.

Further along we came to a shallow pool where we found a miniature *Nymphoides*, possibly *Nymphoides minima*, and *Monochoria cyanea*. *Monochorias* are closely related to water hyacinths, however, instead of floating, they grow in the margins or in shallow pools. They are very attractive plants that flower every day



(inset) The classic gigantea, *N. 'Albert de Lesting.'*

(above) A pool near Mt. Carbine is filled with *N. violacea*. Photo by Andre Leu



Andre in one of his ponds, full of nightblooming tropical lilies. Photo by Julia Leu

in the summer.

The fourth site was at the Palmer River Road House, where we found another type of *Nymphaea violacea*. The leaves of this type had a reddish brown underside, as compared to the violet undersides found in the other locations. The flower was a medium blue and faded only slightly with age.

We crossed over the Great Dividing Range and were then in a catchment where the rivers flow into the Coral Sea and the Great Barrier Reef. After many miles we spotted a pond with white lilies. On entering the water, we identified these as a mix of *N. immutabilis* with pure white flowers or white with very light blue outer petals. This pond also contained a form of *Marsilea drummondii* with very large leaves.

Further on at Kings Plains we found *Monochoria australis*. This is the largest and

most spectacular of the *Monochoria* species. The plants were in full bloom with sprays of rich deep blue flowers. I think this is one species that should be brought into cultivation. We reached Keatings Lagoon around 3 p.m. A magnificent site, the natural pond is shaped like a bow, about 100 yards wide and 700 yards long, surrounded by tropical monsoon forest. The lagoon was covered in flowering lilies.

Fortunately for us, the National Parks and Wildlife service has constructed a crocodile fence at the water line to ensure that visitors walking on the well-constructed perimeter track through the forest

do not get eaten. (Cooktown is trying to develop a tourist industry; regularly losing tourists to crocodile attacks would tend to retard things a bit.)

Crocodiles are some of the most efficient and ferocious predators on the planet. They can spend days waiting under water at the same spot with just their nostrils coming out of the water periodically. They are so well camouflaged that they are practically invisible. When a suitable prey comes into their range, they move with lightning speed, grab the prey, and do a “death roll” as they pull it under water. A few months ago one of the neighbors was fishing at her usual spot on the banks of the Daintree River with her dog at her side. Without warning, a 15’ crocodile jumped out of the water, grabbed her dog, and disappeared. It all happened in seconds. She was lucky that she had a dog by her side; otherwise, it could have been her.

Barre and I checked the lilies by the fence and found that they were *Nymnphaea imutabilis*, not *N. atrans* as we had been hoping. Some of the forms of this lily had characteristics of *N. atrans*, in that the day-one flowers start with blue outer petals and white inner petals. Although the outer petals gradually change to a light pink by day four, this pink is not as deep as the color of *N. atrans*.

Most of the lilies were typical of the more common form of *N. immutabilis*, with various shades of blue, from dark to light outer petals, and with white inner petals. These colored outer petals usually fade very slightly over the life of the flower and were the reason the for name *immutabilis*. This species is very similar to *N. gigantea*. However, the seeds are smaller and usually the flowers do not fade. I personally find this to be more reliable in cultivation than *N. gigantea*.

The following day Barre came to my house where we toured my own ponds and then a series nearby that had been constructed for aquaculture and growing Barramundi, a popular food fish. Since native water birds have seeded these ponds with *N. violacea* and *N. nouchali*, we hoped to collect a rare pink form of *N. violacea*, which I have found only in the Daintree River Valley and one other place near Mt Molloy on



Monochoria australis, a plant similar to water hyacinth, grows in shallow water as a marginal plant in Australia. Photo by Andre Leu

the Atherton Tablelands.

I like collecting in these ponds as they are usually free of crocodiles. There are crocodiles in the creek running beside the ponds, and occasionally small crocs get in these ponds. Several years ago another neighbor was hunting pigs with his dogs. They were following a wounded boar when they came to the creek next to these ponds. The dogs stopped for a drink. Instantly, a crocodile lunged from the water and snatched a dog, only inches from the hunter's feet. Even so, it is one of the safest places in the district to collect lilies.

In the main pond we found *N. violacea* in colors ranging from the palest blue through rich medi-



Grown by William Phillips from seeds collected from the "24-hour-blooming" white *gigantea*, Andre now thinks this seedling may represent a new species. Photo by Andre Leu

um blues, lavenders, and pinks. We spent quite a while in the water of this pond looking at the variations of the colors and collecting plants and tubers of the pink lilies.

From there, we drove back up the mountain range to Mt Molloy where we headed slightly south to examine some seasonal ponds where I

had collected a rare *N. immutabilis* with pink outer and white inner petals. Neither Barre nor I had seen one before. Searching extensively, we found only the normal blue *immutabilis* and yet another blue form of *violacea*. We found no pink flowered forms.

From there, we traveled to another pond Barre had visited on an earlier collecting trip. Two years ago, we located pink flowering *N. violacea* and an orange-flowered *Nymphoides* (now

available in the U.S.). This time the pond had only *N. violacea*, including pink and lavender forms and the *Nymphoides*. The *N. immutabilis* were still in first floating leaf stages.

When Barre first saw the pond several years ago, it had only *N. immutabilis* and no *N. violacea*. When he showed it to me two years ago, it was mostly *N. violacea* with some *immutabilis* in flower. This is now my third year of studying this seasonal pond. When it fills with water at the start of the monsoon, *Nymphaea violacea* is the first lily to germinate and flower. As the weather grows cooler and sunnier, the *N. immutabilis* plants increase in size and begin to flower. This pond is set at about 1000 feet above sea level and winter night temperatures can drop to the low 30's F. This is too cold for the *N. violacea* plants,



(inset) *N. immutabilis*. Photo by Andre Leu

(above) *N. immutabilis* in Keatings Lagoon at Cooktown. Photo by Andre Leu



Giganteas can be grown in our garden ponds. Here a blue *gigantea* and the white *gigantea* 'Albert de Lestang' bloom in the Knotts' Florida garden.

Photo by Kit Knotts

and they go dormant. By mid-winter the pool is dominated by *N. immutabilis* plants. They continue to flower prolifically until the pool dries up in September.

The ability of *N. immutabilis* to continue to flower in the cooler tropical winter months and tolerate near frost conditions is the reason why I think it is the Australian species that should be introduced into horticulture. I have now cultivated all Australian species except for *N. atrans* and *N. elleniea*. I find that *N. immutabilis* is the easiest and most reliable to grow out of the *Anecphyia* sub group of waterlilies.



Andre and Julia Leu live in tropical north Queensland near the small village of Daintree in Australia.

Photo by Kit Knotts

One of the things that I find most interesting in field collecting Australian waterlilies is the great variations at most locations. *Nymphaea violacea* is a very variable species, and it is possible to find slightly different characteristics at most locations. I believe that more taxonomic work is needed on this species.

The lilies from the Norman River (the 24-hour, white and pink) also need more work. For the sake of this article I called them *Nymphaea gigantea*. However, they have some significant differences in that the petals are wider and straighter, the seeds are much smaller, and the new leaves are red. Walter and I found that they did not correspond with the descriptions of the three *gigantea*-related species, *N. gigantea*, *N. immutabilis*, and *N. macrosperma*. They could be

a new species or a sub type of one of the species.

The Australian lilies have proved difficult to cultivate because they tend to go dormant and form tubers for the slightest of reasons.

I believe that this is a response to vagaries of the climate

in many parts of this continent. They have to cope with drought, floods, and cold spells. However, in the last few years, we have collected and introduced many new species and color forms into cultivation in Australia and the USA. I look forward to seeing more of these spectacular flowering waterlilies in garden ponds around the world.☺