

# The mystery magnolia

On the trail of *Magnolia tamaulipana* in Mexico

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The art of searching for plants in the mysterious and magical mountains of the Sierra Madre Oriental of Mexico is an arduous and challenging experience, but it is also exhilarating and exciting. It is a layering of time—past, present, and future. The patchwork of people, places, plants and events form an integral composition that has become a way of life.

The mountains of northeast Mexico are rich in natural beauty—spaces that are awesome and breathtaking—and the dramatic environmental changes which occur on the eastern side of this range have produced a variety of amazingly diverse habitats that are rich in numbers of plant species. It is not unusual to find dogwoods growing in a moist canyon on the northeast side of the mountain and walk only a few feet to see agaves and yuccas thriving on a hot and dry western slope. These phenomenal changes also occur when climbing in altitude. The myriad forms, colors, and textures of this exotic array of plants unfold into an unbelievably beautiful landscape that is indeed an intense experience.

Being at the right place at the right time is an important factor in searching for plants. We have rarely returned from one of our numerous expeditions (See Chronological Synopsis following.) without being able to report the discovery of a new plant with potential use. Frequently it was found in an area that we had explored time and time again, but it was another season and a different time of day. Natural light effects our lives in a multitude of wonderful ways.

In January of 1990, on the recommendation of Mark Kane (at that time associate editor of *Fine Gardening*), a research team sponsored by the Arnold Arboretum of Harvard University contacted us regarding a proposed expedition to the Sierra Madre Oriental. The purpose of this expedition was to



*Eduardo Estrada-C with Beschorneria septemprionalis  
at the northern exploration site.*

collect samples of *Taxus globosa* to be used in a cancer research project sponsored by the National Cancer Institute. Their previous venture into the area to locate taxus had ended in failure; therefore, to insure that this expedition would be a success, during the summer of 1990, we purchased maps that had been compiled and printed by the Mexican government during the 1970's. Several of these maps proved most informative because they recorded vegetation with reference to specific areas. By plant family name association, we were able to locate several new colonies of *Taxus globosa*. To our surprise we noted that *Magnolia grandiflora* is listed in this plant inventory. Could this information possibly be correct, or is it just another botanical error? This mystery magnolia stimulated much excitement and haunted our thoughts, but many months and events passed before there was time to look further into this intriguing information.

The College of Forestry Science at the State University of Nuevo Leon, in Linares, arranged for Eduardo Estrada-C., a biology student, to accompany us on this expedition to collect *Taxus globosa*. In mid-October, 1990, we were joined by Lalo, as Eduardo is called by his friends, and headed off on this

memorable quest. We had spent long hours studying maps and untold days in late summer locating and maneuvering through uncharted networks of narrow, rocky roads and paths that lead to higher elevations where taxus grow. As a result, we were able to quickly lead the research team to large stands of healthy trees. We located five colonies of this potentially important small tree and the researchers collected foliage and branch samples from over fifty trees for testing. We have never been privy to the information concerning exact figures on the taxol content of these samples, whatever happened to the rooted cuttings made from some of these collections, or just who is to benefit from this project. Hopefully, in the future, it will be Mexico.

### **The search**

At 8:45 a.m. on a balmy day in mid-December, 1990, accompanied again by Lalo, we leave the town of Linares and head south to search for a road that will lead us into a rugged mountain range where *Magnolia grandiflora* is reported to grow.

These high altitude mountains that we are so eager to investigate are approximately 75 miles northwest of Ciudad Victoria, Tamaulipas. If indeed there are magnolias here, this location would be approximately 125 miles north of the evergreen magnolias found at Rancho del Cielo Biosphere Reserve at Gómez Farías, Tamaulipas. This mountain range is positioned so that the peaks and valleys form windows and doors with direct access to the Gulf of Mexico. The coastal breezes sweep into these areas and produce heavy fog during the dry months and an abundance of rain in late summer and early fall. On numerous occasions we have observed these distant mountains shrouded in clouds. The question is, how does one get into these remote areas which are possibly supporting cloud forest with great potential for new species? Our antiquated maps show what could be a small road or a trail in the lowlands, but at higher elevations it is impossible to separate road and trail from contours. One way or another, we are determined to explore the mystery of this magnolia.

Around 10:00 a.m. we turn off one of the major highways leading south and slowly make our way over a one lane, dirt road that leads to a small village at the edge of a river. Here

our map indicates that this road will cross the river and begin climbing into the mountains.

The previous summer had been unusually dry; therefore, the endless scrub and thorny brush that surround and arch over both sides of the road are heavy with gray-brown dust. The surface of the road is very bumpy, and often we are forced to drive so slowly that the wind carries the dust made by our tires ahead of the vehicle. Like the trees and shrubs, every inch of the truck, its contents, and we ourselves are quickly covered in talcum-like dust. There are few incentives to linger in the parched lowlands because we are excited by the prospect of making our way into the cool and green mountains.

The road enters the village where we slow to a crawl to get our bearings and to admire the beautifully crafted dwellings. There are ten or so families living in this communal *ejido* which is perched high on a mesa overlooking a clear, swift-flowing river and the distant mountains. When we reach the far end of the village, it quickly becomes apparent that there is no river crossing here. The remains of what had been a road are visible on both sides of the river, but floods have eroded the banks and cut deep holes in the river bed. There is an abrupt ten foot drop between the old road and the river's edge. Not even our four wheel drive vehicle with its heavy duty tires could maneuver this. Everyone in the village comes out to greet us, question our needs, and assist with information on where and how to get to the other side of the river. Needless to say, Lalo receives numerous conflicting directions.

Lalo does a great job of interpreting the bits and pieces of information and, after several wrong turns, we reach another nearby village. Here we ask directions from only one person, and within minutes we drive down to the edge of the cold, crystal clear river. Ancient Mexican cypresses (*Taxodium mucronatum*) with massive trunks and far spreading branches line the river bank. We safely ford the river with water lapping at our car doors, foolishly thinking that the worst is behind us and that it will soon be possible to begin our ascent to higher elevations. As soon as we leave the river bed and its far bank, we encounter three forks in the road, each well worn to the same degree. We choose the one to the right, because it seems to head toward the mountains. It is the wrong choice, and as the day progresses, we make many other wrong decisions. We

give a man who has been milking his herd of goats a short ride. Oh, how good that still warm milk smelled to us all, and for a short time he had us headed in the right direction. For miles the narrow road leads through a dense and impenetrable jungle of small trees, shrubs, and vines that obscure the mountains and make it visually impossible to determine our orientation.

Occasionally we see small trees that have pushed their branches above the thicket, and these umbrella-like canopies are laden with winged seed pods that are brilliant wine-red. Contrasted with the glossy dark green foliage they make a dazzling show in the morning light. We recognize these trees as *Wimmeria concolor* and note the approximate location in our journal.

All are about ready to give up, when suddenly the road surface changes from powdery dry dust to bouncy pebbles. Abruptly we begin our climb and there is a dramatic change in vegetation. The trees are taller and there are spaces between them. Mighty stone formations rise into view. Someone notes a *Quercus polymorpha*, the handsome and tenacious oak which has blue green foliage and grows from Guatemala to Texas. It is well past noon, we have traveled approximately 11 miles beyond the river and have reached 1,400 feet altitude. At long last, the air is fresher and cooler, and there are views into distant canyons and mountains. On the high ridges above, growing from within crevices in the stone, there are hundreds of palms (*Brahea edulis*) piercing the skyline.

We stop briefly to examine the glossy, dark green leaves of an orchid tree (*Bauhinia* sp.). Legumes are one of Lalo's major interests and this small tree is of special concern because he thinks that it could be a new species. He took a herbarium pressing of the leaves, but, at last report, this plant is still unnamed. At this location we see *Clethra pringlei*, a small evergreen tree that in mid-summer flowers spectacular racemes of white, urn-shaped flowers with fragrance reminiscent of cinnamon and honey followed by deep pink fruit that slowly turns brown with maturity. The tree is familiar because we have seen it at Rancho del Cielo Biosphere Reserve. We had no idea that this outstanding ornamental is found this far north, and this information alone would have made the expedition worthwhile.

We climb to 2,000 feet and enter a dense forest of Loquat Leaf Oaks (*Quercus rysophylla*). Growing in the deep shade of these giant, old evergreens are thousands of palms (*Sabal mexican*) which vary in size from grass-like seedlings to stately specimens up to 30 feet tall. Every once in a while, this lower canopy of dark, blue green foliage is punctuated by the bright, acid green leaves of a lone *Brahea edulis* palm that has made its way down from its usual habitat on the high ridges above.

We slowly creep higher and higher—sometimes the tires barely make it from boulder to boulder. Often the door panels of the vehicle are only inches from solid stone on both sides. At 2:00 p.m. we have traveled 15.7 miles since crossing the river in the lowlands and have reached an altitude of 3,600 feet. We are traveling on a secondary ridge overlooking a breathtaking view that faces southeast. Through tall oaks, pines, and trunkless palms (yet another species) there are vistas of miles and miles of mountains fading into the distance. On all sides, tall rock formations thrust out of the grassy meadows. These monolithic stones, etched with intricate patterns of yellow, red, and orange lichens, are surrounded by pines with outstretched branches that sweep toward the earth. This combination of forms in a setting of gauze-like layers of mountains and valleys bring to mind recollections of early Chinese watercolors.

Since we had no idea of the time involved in finding our way into these mountains, we failed to bring a tent or sleeping bags. There are only a few hours of daylight remaining to look for the magnolia, but despite this urgency, we know that it is necessary to eat and rest for a few moments. We are famished and exhausted from anxiety and the constant jostling of the vehicle bouncing from rock to rock. So why not stop here in the midst of a beautiful space? And just as important as food for the body, we would afford ourselves a moment to examine and admire the pines (*Pinus nubicola*) and palms (*Brahea moorei*).

Shortly after lunch we reach a stretch of road that has been crudely blasted out of the side of the mountain—barely wide and tall enough for the truck to squeeze through. Just inches from the wheels on the driver's side there is an abrupt drop of a thousand or more feet. The view is dramatic, but there is a sigh of relief from all as the road slowly turns west and widens. Although the shear stone walls are unnerving, they make an ideal habitat for a showy display of maroon, green,



*Magnolia tamaulipana*

and silver hechtias—some are even combinations of all these colors. The older plants have reached three to four feet across and their spiky, heavily serrated leaves swirl outward to form spectacular pinwheels flattened against gray stone.

Around 4:00 p.m., we reach the west side of another saddle between two mountains. The altimeter reads 4,000 feet. Growing between massive plates of smooth, gray limestone, mature oaks (*Quercus canbyii*) dot the landscape. This tough and uniquely beautiful tree is almost always found on dry and exposed sites. Strong winds sweep these rock surfaces clean, and only the toughest and most adaptable plants survive in areas like this. Agaves and dasyliirions compete for soil on the rocky ledge above the road. In the deep crevices we see cactus (*Mammillaria rubrograndis*), two species of zephyranthes and numerous echeveria, their fleshy, blue green, pink and mauve leaves pulled tight for protection against winter cold and drought. Huge boulders line the lower side. These are entwined with thick mounds of butterfly vine (*Mascagnia macroptera*). The lacy, bright yellow flowers have long fallen, but they have been followed by clusters of rusty brown seed pods that resemble butterflies in flight.

The xerophytic make-up of this stark limestone uplift gives no indication that magnolias could be growing anywhere in the vicinity, but suddenly the road makes a sharp turn and we veer east. There is a simultaneous question from all, "liquidambar?" In a distant valley, beneath a high northeast facing ridge, we see scores of trees with vibrant orange, yellow, and scarlet foliage (in Mexico, sweetgums (*Liquidambar styraciflua*) color up in late autumn and do not defoliate until January and February). The old plant inventory maps group *Liquidambar styraciflua* and *Magnolia grandiflora* growing together at the same location. If these distant, colorful trees are indeed liquidambar, there is a glimmer of hope. All are in agreement and confident that these are Mexican sweetgums and there is a feeling of excitement and anticipation.

Within moments we enter a whole new world of flora and fauna. The stone lined road gives way to gentle, rolling earth. Giant pines, oaks, and hickories are the dominant trees. We are flanked by mountains that are 8,000 to 9,000 feet, and the slopes are thick with sweetgums, their fall color intensified by the late afternoon sun and the contrasting evergreens. The



towering peaks act as rain magnets during the summer and provide shade and fog during the dry season. This, combined with deep and fertile red clay soil, has produced a forest of incredibly large trees. The dominant oak is *Quercus satorii*, many reaching a height of over 100 feet. We had seen this exceptionally handsome oak at Ranch del Cielo Biosphere Reserve, and it was growing with magnolias. Everything is beginning to fall into place. But where are the magnolias?

Driving out of the tall trees, we move onto a cleared meadow with grass sod that is kept mowed by grazing animals, and in front of us there is a magnificent view into a deep and heavily forested valley. The other sides of this pasture are lined with dense mounds of *Senecio aschenborianus* which are covered with large cymes of deep yellow flowers. It is 5:00 p.m. and the open space gives a false sense of remaining light, and the low winter sun on the senecio flowers creates a strange and dramatic setting. The road leads us into another pine-oak forest, and only a few hundred feet ahead we are in the midst of a thicket of young liquidambar trees. The road forks—the right turn appears to lead to higher elevations and the left turns sharply northeast. Our better judgment tells us that northeast will be cool and damp; fortunately, this time we are correct.

At 4,000 feet, the woods become dense, and under the canopy of foliage the remaining light is dim. We are in the midst of an extraordinary array of life. This gentle north slope creates a perfect setting for deciduous and evergreen quercus, pinus, carpinus, nyssa, carya, and persea. The understory is thick with *Taxus globosa*, vacciniums, and *Cornus florida* subsp. *urbiniana*. Gelsemium, mitchella, salvias, aquilegia, zephyranthes, beschorneria, and all sizes of ferns and mosses crowd the forest floor. Only a few feet into this magical space and we turn into a deep arroyo that is moist from seeping water. We know that at long last we are in the right place. "Here they are!" There are magnolia branches everywhere—above us and below. Some trees are thin and stately, reaching toward the sky. Several have been pushed over by rock slides and are growing prostrate along the incline, and others have air layered under the damp and thick mat of decaying leaves that gather between boulders. Trees whose trunks have been buried in broken stones are surviving and



Above: *Magnolia tamaulipana* foliage and fruit at northern site.  
Below: *Magnolia tamaulipana* 'Bronze Sentinel.'



sending up new leaders from exposed branches.

There are no flowers, and we are much too late for seed, but we carefully examine the rich green foliage and feel confident that this is not *Magnolia grandiflora*. But what is it? It must be the same magnolia as those found at Rancho del Cielo Biosphere Reserve, but the leaf structure and color appear to be noticeably different. Even among the ten to twelve trees at this location there are many variations.

We collect five air layered cuttings from fallen trees, making sure that there are two from a tree that has very dark, exceptionally long and narrow green leaves. The one or two delicate white roots are carefully wrapped in damp paper, placed in a plastic bag, and then stored in an empty cooler. We quickly record our mileage (21.45 miles), elevation (4,100 feet), and give the cuttings a collection number (T28M-8p-121790).

It is now dark and only glimpses of light pierce through the dense foliage. At this location there is no space to turn the vehicle around, so it is necessary to continue for another mile before finding a safe place to make this maneuver. In deep darkness and silence, we slowly retrace the day's journey back to Linares for a few hours of rest before heading out on another adventure. We are exhausted from tension and every bone is reacting to the constant joggling. But all are happy and excited within—we have found our way into a paradise-like setting with overwhelming diversity of flora and fauna and have located the mystery magnolia.

There are few remaining areas of the Sierra Madre Oriental that are virtually unspoiled. They will remain in this pristine state only if concerned people all over the world become aware of the natural treasures that are to be found in the valleys, canyons, rolling dry plains, and on the rugged peaks. Mexico must actively and assertively promote an attitude that will make all aware of the importance of these natural environments. Mexico is made up of dynamic cultures, and the people are aware and proud of this heritage. The Aztecs in the Valley of Mexico created one of the earliest botanical gardens—so the link between culture and flora goes back for many centuries. Mexico must take the lead in preserving and nurturing these precious resources, but no country can accomplish this monumental task alone. ✻

# Chronological Synopsis

## January, 1989

We are guests for several days at the eighteenth century Hacienda Santa Engracia. The owner, Senora Maria Aurora Canesco-V., arranged for Biologist Héctor Zamora-T. to take us to Rancho del Cielo Biosphere Reserve where we are first exposed to the evergreen magnolia from northeast Mexico. At the entry of what was once the village of San José, the State of Tamaulipas has erected a sign that states that the Biosphere is home of *Magnolia tamaulipana*. At the end of the expedition, Héctor presents us with a copy of Henri Puig and Rosa Bracho's book, *El Bosque Mesófilo De Montaña De Tamaulipas*. They refer to the magnolia found at the Biosphere as *Magnolia schiedeana*, thus the beginning of our confusion about the name.

## December, 1989

A small air layered cutting of an evergreen magnolia collected far below the Tropic of Cancer, near Gómez Farías, Tamaulipas, is planted at Peckerwood Garden, near Hempstead, Texas, and survives 4°F and 20 to 30 mile per hour winds with no damage to the foliage.

## October, 1990

At the request of Rob Nicholson and Melvin Shemluck we lead an expedition sponsored by the Arnold Arboretum of Harvard University for the purpose of Collecting *Taxus globosa* to be used in a cancer research project for the National Cancer Institute.

## December, 1990

Expedition to locate "mystery magnolia."

## March, 1991

Martin Grantham, Horticulturist in charge of the Meso-

american Garden, the University of California Botanical Garden at Berkeley, California, joins us on an expedition to observe magnolias at Rancho del Cielo Biosphere Reserve and those at a more northern location (approximately seventy-five miles northwest of Ciudad Victoria, Tamaulipas). Martin photographs flowers at Biosphere, but flower buds at northern location are months from opening. Martin's photograph was used in *The World of Magnolias* by Dorothy J. Callaway, Timber Press, Inc., 1994, Plate 70, titled *Magnolia schiedeana*.

We located a large colony of styrax which in 1992 was identified by Peter Fritch of the Rancho Santa Ana Botanic Garden in California as *Styrax glabrescens* var. *pilous*—probably its most northern siting.

### August, 1991

We are asked by Rob Nicholson and Melvin Shemluck of the Arnold Arboretum of Harvard University to lead an expedition for the purpose of locating *Wimmeria concolor* for the World Health Organization. After collecting samples for testing from wimmeria trees in the lowlands, we continue into the mountains to see the magnolias which are located approximately 75 miles northwest of Ciudad Victoria, Tamaulipas. Ten miles further into the mountains, we find another large colony of magnolias. These are growing in a damp, but open meadow and have developed into magnificent trees that reach a height of well over eighty feet. Even though these magnolias are growing in an open space and grazing livestock have pruned the lower limbs to about seven feet from the ground, their growth habit is upright and narrow. These are growing with liquidambar trees, one of which measures 6 1/2 feet in diameter, 6 feet above the ground.

In the vicinity we see: *Styrax youngae*—possibly the most southern location for this rare and beautiful snowbell which was first sited in Texas over one hundred years ago and has not been seen since in the United States; thickets of seldom seen *Hammamelis mexicana* in flower and with mature seed; *Clethra pringlei* at an altitude of 5,400 feet (In 1992, we make a selection of one of these trees that we call 'White Water.');

and *Cornus floccosa*, an evergreen dogwood with bright magenta fruit that are accented by dark green foliage that is distinctly silver beneath.

### **October, 1991**

We plan an expedition to study oaks in northeast Mexico around a time when the magnolias at the northern location may possibly have ripe seed. The area has received unseasonably heavy rainfall, the rivers are high, and the roads into the mountains washed out. We return disappointed.

### **March, 1992**

All of the air layered cuttings of the magnolia collected approximately 75 miles northwest of Ciudad Victoria, Tamaulipas, in December, 1990, have survived and are about one foot tall. Two plants are put in the ground for testing at Peckerwood Garden. Today these plants have reached a height of 5 feet.

### **April, 1992**

The magnolias from the northern location flush spring foliage, and it is apparent that the leaves of one plant are quite different. The one has leaves that unfurl purple-bronze and over a period of several weeks turn deep green. This plant continues to flush unique foliage intermittently during the summer. When mature, the leaves measure 9 1/2 to 10 inches long by 3 inches wide and have a pronounced mid-rib. The underside of the leaf is slightly tomentose and blue green. The foliage of this magnolia is so unusual and striking that we are calling it 'Bronze Sentinel' and hope to introduce it after several more years of observation. The foliage of the other plant is more typical of the trees found at the northern location. The leaves flush bronze green, gradually turn medium to dark green and have a very prominent light green mid-rib. A fine, pale green line borders the entire leaf. At maturity, they measure 8 1/4 inches long by 3 1/2 inches wide. The underside of the leaves are so finely pubescent that they appear to be covered with soft green felt. This high contrast and the halo which surrounds the leaf margins place these magnolias in a very special category.

In the garden, the growth habit of all the plants is somewhat fastigate. But the foliage of the northern colony is a much darker green, thicker, and more pubescent than that of the plant collected from near Gómez Farías. This variation of leaf character is possibly the result of the northern trees

adaptation to a drier environment. All have grown vigorously in our Texas climate—long and intense summer sun and abrupt changes of temperature during winter. We shared air layered rootings of plants from the northern location with the University of California Botanical Garden at Berkeley and the North Carolina State University Arboretum where J. C. Raulston reports that the young rooting was planted in the ground and survived 2°F this past winter—with no leaf damage.

### **May, 1992**

The air layered cutting of a magnolia from near Gómez Farías, Tamaulipas has reached a height of twelve feet and flowers for the first time.

### **July, 1992**

We return to the northern site approximately 75 miles northwest of Ciudad Victoria, for the purpose of seeing the magnolia in flower—photograph and make an herbarium pressing which has been deposited with the Arnold Arboretum of Harvard University. The flowers are creamy white and slightly smaller than *Magnolia grandiflora*, but they make up for any lack of size by their incredibly elegant sculptural form. The three innermost tepals curve up and fold inward just above the regal carpels and surrounding stamens. This baroque form is enhanced and exaggerated by the thick and somewhat heavy substance of the tepals. The fragrance is distinctly lemon, refreshing and not at all heavy or pungent like some other magnolias. Héctor Zamora-T. tells us that French perfume manufacturers have expressed interest in this lovely and unusual scent.

### **November, 1993**

At the northern location, we collect seed from rosy-red seed cones which are almost twice the size of those found on the trees at Rancho del Cielo Biosphere Reserve. We share seed with North Carolina State University Arboretum, University of California Botanical Garden at Berkeley, Germplasm Unit, United States National Arboretum, Chollipo Arboretum in South Korea, Arnold Arboretum of Harvard University, and Richard Figlar, past president of The Magnolia Society.

Viability of seed from these magnolias is very short, therefore, percentage of germination is low.

We are at the right place at the right time—one week later would have been too late because already a large population of black squirrels are clamoring around the branches, opening the cones, and eating most of the seed. The few seed that are left to fall and germinate are quickly devoured by grazing animals. To date we have not observed any regeneration from seed at this northern site.

We collect herbarium material of *Pinus nubicola* to send to John Silba, Consultant Botanist and Biologist, Lindhurst, New York, for identification and then deposit with New York Botanical Garden.

### December, 1993

"Mexican Magic," our article on recent introductions from Mexico is published in *American Nurseryman*. It includes a description of the magnolia selection from the northern location that we are calling 'Bronze Sentinel.' After much deliberation, we decide not to refer to it as *Magnolia* sp., but instead as *Magnolia schiedeana*.

### January, 1994

Richard Figlar reads the article in *American Nurseryman* and telephones to inform us that this magnolia has been recently named *Magnolia tamaulipana* and that he is mailing us a copy of J. Antonio Vázquez-G.'s manuscript "Magnolia (Magnoliaceae) in Mexico and Central America," in the process of being published in *Brittonia* 46(1), March, 1994, the New York Botanical Garden. At long last the mystery surrounding the magnolias found at Rancho del Cielo Biosphere Reserve and those approximately seventy-five miles north of Ciudad Victoria is solved. ~~10-10~~

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Reprints of "Magnolia (Magnoliaceae) in Mexico and Central America" are available from The Magnolia Society. Please see the last issue of *Magnolia Magazine* or contact the Treasurer for ordering information and cost.